

Joint Care of Parents and Infants in Perinatal Psychiatry

Anne-Laure Sutter-Dallay
Nina M-C. Glangeaud-Freudenthal
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Foreword

Why is motherhood such an important stage in a woman's and family's life?

Let us be reminded that the perinatal period is a time of a lot of psychological changes, which updates old conflicts, sometimes through several generations. This "intricacy" of stories, linking a woman story to a mother story, symbolizes this specific and particular state of the perinatal period, during which each woman has to "wake up" her proper motherhood to pass it on to the next generation. In the new generations, not only the young mother but also the father is requested for a "mothering" role for the newborn infant.

These psychological processes are quite distressing and confusing, and pregnancy causes a sort of "normal" psychopathology. When Winnicott described the "primary maternal preoccupation", specific of the immediate post-partum, he spoke about a kind of madness which invades the young mother. When a newborn child arrives in a family, each of its members loses a bit of their identity. The adult who is becoming a parent asks himself/herself in fact many questions: "Who am I?" "What have I become?" "What will happen to me?"

In perinatal psychiatry, many clinical situations we have to treat and manage correspond to an increase in normal process because of family difficulties without a more or less important psychic disorganization. Others are real psychiatric states that have to be managed parallel to the arrival of the baby. According to the intensity of the family destabilization and to the gravity of the mother's decompensation, it is necessary to propose healthcare frameworks adapted to each family.

Different methods of intervention exist all around the world: ambulatory healthcare services with home interventions (antenatal and postnatal counselling, therapeutic observation of the infant in his family, etc.), parents-child consultations and psychotherapies and, when it appears indispensable, hospitalizations of the "dyad".

This recent discipline is specific, and this is mostly due to its various modalities of cares and to the preventive dimension directed not only to the mother but also to the baby, the father and sometimes to the whole family. The structuring in various possible levels of interventions gives to perinatal psychiatry all its rightness in the practice of psychological care in this perinatal period.

Over the years, the use of a multidisciplinary approach to perinatal mental health by professionals from the medical, medico-social and social fields became an inescapable fact, creating a complex field of linked and complementary interventions, defining the work in "network" crucial in the perinatal period.

This handbook will give the “expert point of view” of professionals who have been working for a long time in those healthcare systems. They all have the desire to develop each scope of action in research or clinical terms, to represent the teamwork which they carry out every single day, to ameliorate the children’s and their family’s future.

Christine Rainelli MD,
President of the Marcé Society Francophone Group
(2014–2016)

Contents

Part I History and Overview

- 1 Introduction: History** 3
Anne-Laure Sutter-Dallay and Nicole Guedeney
- 2 Maternal Perinatal Psychopathology: Overview** 13
Roch Cantwell
- 3 Establishing Parent–Infant Interactions.** 25
Sylvie Viaux-Savelon

Part II Parental Mental Illness, Parenting Skills and Infant Development

- 4 Impact of Parental Psychiatric Illness on Infant Development** 47
Jeannette Milgrom, Jennifer Ericksen, and Anne Sved-Williams
- 5 Psychotropic Drugs and the Perinatal Period** 79
Anne-Laure Sutter-Dallay and Anita Riecher-Rössler
- 6 Parent-Infant Interaction Assessment** 93
Elisabeth Glatigny Dallay and Antoine Guedeney
- 7 Addressing Familial Violence and Child Abuse.** 109
Kylee Trevillion and Trudi Seneviratne

Part III Types of Care

- 8 Ambulatories Cares: Parent–Infant Psychotherapy
in Perinatal Mental Health.** 121
Jaqueline Wendland
- 9 Ambulatory Care: Home-Based Perinatal Interventions** 139
Julie Le Foll and Antoine Guedeney

10 Inpatient Mother and Baby Psychiatric Units (MBUs) and Day Cares 147
Nine M-C Glangeaud-Freudenthal, Christine Rainelli, Odile Cazas, Sylvie Nezelof, Michel Dugnat, François Poinso, and Anne-Laure Sutter-Dallay

Part IV Perinatal Care Management

11 Psychosocial Assessment and Depression Screening in the Perinatal Period: Benefits, Challenges and Implementation 167
Marie-Paule Austin and Dawn Kingston

12 A Crucial Therapeutic Instrument: Networking (The Example of the French Perinatal Networks) 197
Michel Dugnat and Dominique Dallay

13 Appropriateness of Care and Joint Decision-Making Strategies 207
Anne-Laure Sutter-Dallay, Antoine Guedeney, Nine M-C Glangeaud-Freudenthal, and Anita Riecher-Rössler

Part I

History and Overview

Anne-Laure Sutter-Dallay and Nicole Guedeney

In the perinatal period, about 15–20 % of women will present a mental health disorder (Gavin et al. 2005; Munk-Olsen et al. 2009). The economic cost of perinatal mental health, corollary of this human cost, evaluated in 2014 would amount to £GBP 8.1 billion per annual birth cohort according to a UK report (Bauer et al. 2014). These disorders possibly leading to poor quality of parent-child relationships are widely involved in predicting poor mental health in adulthood (Stansfeld et al. 2008; Ramchandani et al. 2008; Wickramaratne et al. 2011). The UK report translates this scientific knowledge by economic data: 3/4 (72 %) of the perinatal mental health costs are associated with the deleterious consequences of parental psychological disorders on child development. On the other hand, the influence of parental characteristics on the future of children can vary depending on social determinants such as familial income level (WHO 2014). Yet despite this negative finding, the prevention of parenting difficulties and early treatment of children in adverse situations results in developmental and economic benefits (WHO 2014).

The mechanisms involved in the relationship between parental psychiatric disorders and child development are complex. During the perinatal period, parental mental health represents one of the keys to the developmental health of children, and the psychological treatment of parents with psychiatric disorders is likely to reduce the intensity of symptoms and the duration of episodes (IsHak et al. 2015). As pointed out by Mazet and Lebovici (1998), perinatal psychiatry allows a dual approach: (i) a medical approach with the specificity of mental disorders occurring at this time of life and the risk of transmission to the child and (ii) a developmental psychology

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and a psychodynamic approach, regarding the developmental continuity of the subject, associated to a transgenerational risk for a newborn of parents suffering from a mental illness. This dual approach is essential to deal with the complexity of perinatal psychiatric treatments combining a curative aim (care of the parent) and a preventive aim (preventing the risk of dysfunction in the process of becoming parents and in parent-child relationships).

Historical Development of Perinatal Psychiatry

In the ancient world, it had already been noted that women were particularly vulnerable to mental disorders during the perinatal period. In the nineteenth century, in France, and for the first time in a scientific manner, attention was focused on perinatal psychiatric disorders, through the publications of Esquirol (1819, 1838), and more specifically of Marcé (1858b) with the *Traité de la folie des femmes enceintes, des nouvelles accouchées, et des nourrices*. Despite this very shrewd first approach, the interest in these disorders reappeared only one century later, mainly in English-speaking countries where the evacuation of infants during the Blitz had revealed the potentially deleterious effects of separation of a child from its family, and strongly oriented the attention of perinatal caregivers (Howard 2000). Mother-child hospitalisation began under the leadership of Douglas (1956), Main (1958) and Baker et al. (1961), when a patient, in 1948, asked for permission to take her baby with her during her admission in a psychiatric unit. At the same period, interest for perinatal mental health disorders and mother-infant relationship was growing in France with Racamier (1961) and in the USA with Grunebaum and Weiss (1963). In addition, the parallel work of psychoanalysts such as M. Klein, ethologists as K. Lorenz and H. Harlow and paediatric psychoanalysts such as D. Winnicott, associated with the development of attachment theory by J. Bowlby, all led to the development of the theoretical basis for these new types of care.

At last, during the following decades, in France, a major segment of perinatal psychiatry developed with the birth of Infant Psychiatry in the years 1970–1980, led by the child psychiatrists S. Lebovici, R. Diatkine and M. Soulé.

In the current dyadic care system in the UK, referral was for the psychiatric disorders of the parent, and the baby or the parent-infant relationship is considered from the point of view of the impact of these disorders or as a contributing factor to its outbreak. The French approach is more focused on the dialectic between parental disorders and the infant's development and mental health, mainly from psychoanalytic and developmental perspective, in terms of risks for the child development.

These initiatives and new domains of study were the first step in the early development of Mother and Baby joint mental health-care units in Britain, France, the USA, Australia, Belgium, the Netherlands, Germany, New Zealand and India, in the 1980 and 1990s (Sutter and Bourgeois 1996; Chardeau and Lafont 2007; Glangeaud-Freudenthal et al. 2014).

Scientific Development of Perinatal Psychiatry

Following on from those initial founding experiences, perinatal psychiatry developed further from the late 1970s under the leadership of adult psychiatrists in the English-speaking world (Kumar and Robson 1984; Brockington 1996). The first international publication using the term perinatal psychiatry was published in 1972 (Thelander 1972) although Pitt (1968) had already begun to individualise the concept of postnatal depression (PND), when the initial papers on puerperal psychoses date back to the 1950s (Morin et al. 1952; Balduzzi 1951; Gayral et al. 1950). Academic and scientific recognition of the speciality were achieved through the creation of the first Chair in Perinatal Psychiatry in London in 1980 at the Institute of Psychiatry and then occupied by Kumar, one of the pioneers of the discipline (Glangeaud-Freudenthal 2002). The Marcé Society, “An international society for the prevention and treatment of understanding mental illness related to childbearing”, was created in 1982 by a group of English and American psychiatrists, gathered around Kumar, Brockington and Hamilton (Glangeaud-Freudenthal 2003).

It is in this context, from the 1980s, that a really dynamic, research-based discipline appeared, through the study of the two main disorders of perinatal psychiatry: postnatal depression and puerperal psychosis. At that time, it was thought that these two mental disorders might provide understanding as to the biological determinism of mental illness. These early researches was conducted almost exclusively by adult psychiatrists and/or psychologists, meaning that it was mainly focused on maternal disorders at the expense of the baby development or on the psychological specificity of perinatal parenthood and parenting. These studies helped to highlight the fact that biological factors are often involved in the origin of puerperal psychosis while the aetiology of PND is basically multifactorial (factors of biological vulnerability or developmental, cultural and psychological factors).

From 1985, psychologists and psychiatrists interested in infant development began to study the characteristics of early mother-infant relationships in the context of maternal postnatal depression (Murray et al. 1991; Field et al. 1988). Meanwhile, scientific, socio-anthropological and psychosociological currents were defining parenthood as depending on the cultural context, and understanding that parenting was a changing role, requiring a mandatory adjustment in a limited period of time, more or less facilitated by the sociological context (Stern and Kruckman 1983). Indeed, sociological context contributes to the issues of recognition and acceptance by the parents themselves, by their family and, more broadly, by professionals and society, of the coexistence of the arrival of a baby and the possible onset of a mental illness. From the same socio-anthropological and psychosociological perspective, difficulties of access to care, resistance against systematic detection of psychosocial vulnerabilities and difficulties in setting up a medico-psycho-social care within a network between professionals are needed to be addressed for clinical research in perinatal psychiatry (Whitton et al. 1996; Dugnat 2002; Dugnat 2004).

During the 1990s, these different approaches led to the development of multifactorial models, in reference to the diathesis-stress model developed by Brown and Harris (Brown and Harris 1982), called “medico-psycho-social” models. These

models were especially designed for PND (O'Hara 1997; Milgrom et al. 2000) and helped to put into perspective the origin and/or the maintenance of parental psychopathology, individual factors of vulnerability (genetic, biological, intrapsychic), environmental factors (life events, cultural context) as well as the influence of interpersonal factors, such as, for example, baby-related factors. These multi-input models emphasised the intrinsic need for networking between professionals. Indeed, during the perinatal period, mental health professionals rarely have direct access to women with a mental disorder, whereas women are in contact with "non mental health" professionals through mandatory visits.

Specificities of Perinatal Psychiatry

The need for psychologists at maternity wards and better pathways to care through different levels of perinatal care from primary care to specialised perinatal care have been underlined in national guidelines and legal documents in some countries.¹ They emphasise the crucial need for anticipation of childbirth and postpartum especially for high-risk psychosocial families. They also emphasise the need to set up a multidisciplinary network that brings together medical (gynaecologists, paediatricians, general practitioners, etc.) and paramedical disciplines (midwives, nursery, nurses, psychologists, etc.) as well as social workers and other childcare professionals. This is essential for an efficient parent-infant joint care in perinatal psychiatry and mental health. They also underline the crucial need for early intervention and support of parenthood, from the prenatal period to postpartum, as an effective preventive factor.

The aims of these directives are prevention, quality of care and promotion of perinatal mental health, based on the concept of interaction and quality of communication between the various professionals involved in the perinatal period.

Specificity of Clinical Psychiatric Episodes in the Perinatal Period

Epidemiological studies around the beginning of this century show that the perinatal period is one of the psychological vulnerability period, especially with regard to regulation of emotion (Heim et al. 2000). Depressive episodes are common during

¹National guidelines

- French National Perinatal Guidelines 2005–2007 "Humanity, Proximity, Safety, Quality"
- National Institute for Health and Care Excellence (NICE) Antenatal and postnatal mental health: Clinical management and service guidance, updated edition, Clinical Guidance 192
- The Australian guideline Beyondblue: the national depression initiative. www.beyondblue.org.au
- The Royal College of Psychiatrists Guidelines
- Scottish Guidelines (SIGN)

pregnancy and postpartum, women are more likely to present with severe mental illness in the 3 months following the birth of a child than at any another period in their lives and they are almost twice as likely to be hospitalised in psychiatric institutions in the year following a birth (Cooper and Murray 1995).

The three major models in perinatal psychopathology – “severe blues”, postnatal depression and puerperal psychosis – are included within a wide range of mood disorders (Heim et al. 2000; Darves-Bornoz et al. 2001; Sutter-Dallay et al. 2004). Postnatal depression alone is the source of a huge number of studies and reports (Cantwell 2015). Its high frequency, especially in the first weeks of postpartum, the high rates of first episodes and the risk of recurrence associated with the notion of their potential impact on the psycho-emotional development of children (Cooper and Murray 1998) have contributed to the development of the notion that mental health in the perinatal period represents a specific public health issue. Yet international classifications do not recognise the specificities of these episodes of mood disorder, and it is only possible to specify that the episode began in the 4th (DSM-5, 2013) to 6th weeks (CIM10, 1993) of postpartum. Thus, the debate is still ongoing on the specificity of these disorders.

Dyadic Context: Impact of Psychiatric Disorders on the Exposed Infant

Dyadic context is the main element involved in the specificity of joint care in perinatal psychiatry. As Schore underlined (1994), the first relationship that infants develop with their preferred partners, mainly mothers, is the foundation for developing a unique personality, with its adaptive capacity, its vulnerabilities and its resistance against the particular forms of future pathologies. The mechanisms involved in mediating the deleterious effects of parental mental illness on child development are complex, are often interrelated and may have direct or indirect effects. They include prenatal (genetic transmission, intrauterine hormonal influence, exposition to psychoactive medications and drugs, etc.) and postnatal factors (parent-infant separations, deprivations, abuses, hampering of quality of parent-infant interaction, attachment disorders, etc.).

Thus, the problem of the impact of maternal illness on infant development and on the development of the attachment relationship always requires a carefully personalised assessment for each dyad, first of the maternal mental state, but also of the development of the baby and of their links to their environment (Kumar 2001; Sutter et al. 2003). All this knowledge leads to a major ethical issue, which is always the central concern of perinatal health professionals faced with risk assessment in the context of parental mental illness: what is the real ability of these parents to provide their baby with adequate nursing care, now and in the future? Then, the question arises of either the need to separate the baby and the parents or rather develop the possibility of a care project which will preserve both the physical and psychological safety of the child with its parents. These assessments are based, among others, on the concept of “parenting”, that was developed around the Children Act in 1989 in

the UK, with the development of clinical assessment to assist a court in making decisions about the welfare of a child (Reder and Lucey 1995). This assessment has several dimensions: the parents' relationship with the child, the family context and the child's contribution to interaction with him/her parents. It is also essential to assess the social environment, including support networks available and therapeutic and medical community resources. As it was embodied by the Children Act, the specificity of assessment of joint care, in perinatal psychiatry, is always dyadic and transactional.

Working in Networks During the Perinatal Period

As noted above, perinatal psychiatry needs to be practised within a multidisciplinary network (Dugnat 2002). Professionals in obstetrics and gynaecology, in paediatrics and in the medico-social field came first for primary parental difficulty screening. The perinatal period is a good time to get in contact with the parents and infant (some are mandatory during the pregnancy and postpartum follow-up) and for detection of risk factors associated with parents' mental health and impairment of physical and emotional development of the child. Professionals working in the field of perinatal health of women and children not only should contribute to the detection of perinatal psychiatric disorders but also should decide whether or not to refer to a mental health professional and, if so, they should know where to refer within their active professional network.

Specific Treatment of Psychiatric Disorders During Pregnancy and the Postpartum Period

Organisation of Psychiatric Perinatal Care

For future development and mental health of a child with a parent with mental health disorders, early efficient care given to the parents is crucial. Mother (father)-child care should be organised in a step care process, ranging from consultations, home visits and day-care approach to full-time mother-infant joint admissions. Those Mother and Baby Units can be considered the highest level of perinatal care, similar in infant somatic care to neonatal intensive care unit. They should also be a referring centre for perinatal psychiatric referral and they should work within a multidisciplinary network to provide continuity of care from the antenatal to the postnatal period, for the child and the mother.

Treatment

The first step of treatment is often an emotional support, provided by primary health-care professionals in a multidisciplinary team. When needed, the mental

health treatment is dealing, on one hand, with maternal factors and, on the other hand, with the child factors and parents-child interaction. More than in other fields of mental health, the choice of mothers for a treatment, between those offered to them, is essential to take into account, to build a strong therapeutic alliance and proper compliance to the treatment.

Foetus and child exposure to psychotropic drugs during pregnancy and/or breastfeeding is also a subject of concern. Consensus is emerging on the need to inform parents as to the benefits and risks of the different treatments concerning the maternal health, the pregnancy, the foetus and the future infant. Elements to consider for the decision are the risk for maternal pathology recurrence in case of treatment withdrawal, the psychotropic drug teratogenic and developmental impact on the foetus and the baby. If the mother is breastfeeding, assessment for the benefits of breastfeeding on the dyadic relationship, the risk of recurrence for the mother in case of withdrawal of the drug treatment, especially related to sleep deprivation and, for the baby, the risk of short-term effects of maternal drug that are in the milk, especially their impact on alertness and ability to eat, are mandatory.

The Limits of the Concept of Perinatal Psychiatry

Mother-infant joint care in perinatal psychiatry remains a recent field of mental health, but there is no more doubt about the need for such approach. Its multiple characteristics make it a paradigm of the complexity of “psychiatric disorder” taking into account, simultaneously in a given period, the developmental, psychological, sociological and cultural outlooks associated with the notion of interpersonal functioning. It allows an infinite number of fields for future research, while reimposing the idea that no mental disorder can be considered outside the context of its occurrence and its relationship with the psychological functioning of the subject. Through the multifactorial understanding of disorders, joint care obliges those involved to consider the many reasons behind each situation/logical consequences of each situation and leads perinatal mental health professionals to develop multifocal projects.

References

- Baker AA, Morisson M, Game JA (1961) Admitting schizophrenic mothers with their baby. *Lancet* 2:237–239
- Balduzzi E (1951) Puerperal, psychosis; attempted pathogenic interpretation. *Encéphale* 40:11–43
- Bauer A, Parsonage M, Knapp M, et al (2014) The costs of perinatal mental health problems. LSE & Centre for Mental Health. Available at http://socialwelfare.bl.uk/subject-areas/services-client-groups/adults-mentalhealth/centreformentalhealth/168376Costs_of_perinatal_mh.pdf
- Brockington I (1996) Motherhood and mental health. Oxford University Press, Oxford
- Brown GW, Harris T (1982) Disease, distress and depression. A comment. *J Affect Disord* 4:1–8
- Cantwell R (2015) Maternal perinatal psychopathology: joint care of parents and infants. In: Sutter-Dallay A.-L, Glangeaud-Freudenthal N. M-C, Guedeney A, Riecher-Rössler A (eds) *Joint care of parents and infants in perinatal psychiatry*, Springer. (in press)

- Chardeau P, Lafont V (2007) Unités mère-enfant en psychiatrie périnatale. EMC 37-170-A-10
- CIM10 Classification Statistique Internationale des Maladies et des Problèmes de Santé connexes (1993) 10^{ème} révision Organisation Mondiale de la Santé, Genève
- Cooper PJ, Murray L (1995) Course and recurrence of postnatal depression. Evidence for the specificity of the diagnostic concept. *Br J Psychiatry* 166:191–195
- Cooper PJ, Murray L (1998) Postnatal depression. *BMJ* 316:1884–1886
- Darves-Bornoz JM, Gaillard P, Degiovanni A (2001) Psychiatrie et grossesse : la mère et l'enfant EMC; 5-046-A-10, 37-660-A-10
- Diagnostic and statistical manual of mental disorders, 5th Edn (DSM 5) (2013) American Psychiatric Association Ed, USA, Arlington
- Douglas G (1956) Psychotic mothers. *Lancet* 1:124–125
- Dugnat M (2002) Santé mentale et psychiatrie périnatale: renouveler l'approche de la prévention. *Dialogue* 157:29–41
- Dugnat M (2004) Résistance à la prévention, reconnaissance de la périnatalité psychique. *Inf Psychiatr* 80:611–617
- Esquirol J E D (1819) De l'aliénation mentale des nouvelles accouchées et des nourrices. *Annales Médicales-chirurgicales des Hôpitaux de Paris* 1: 600–632
- Esquirol E (1838) *Traité des maladies mentales considérées sous le rapport médical, hygiénique et médico-légal*
- Field T, Healy B, Goldstein S et al (1988) Infants of depressed mothers show "depressed" behavior even with nondepressed adults. *Child Dev* 59:1569–1579
- Gavin NI, Gaynes BN, Lohr KN, et al (2005) Perinatal depression: a systematic review of prevalence and incidence. *Obstet Gynecol* 106:1071–1083. <http://www.ncbi.nlm.nih.gov/pubmed/16260528>
- Gayral L, Ferrier Y, Gleizes L (1950) Puerperal psychoneuroses; treatment and prognosis. *Toulouse Med* 51:323–336
- Glangeaud-Freudenthal NMC (2002) Channi Kumar's contribution to perinatal psychiatry. A personal tribute from France. *Psychol Med* 32:559–561
- Glangeaud-Freudenthal NMC (2003) Channi Kumar and the history of the marcé society. *Arch Womens Ment Health* 6(Suppl 2):79–82
- Glangeaud-Freudenthal N M-C, Howard L, Sutter-Dallay AL (2014) Treatment – mother-infant inpatient units. In: O'Hara M, Wisner K, Joseph J (eds) *Perinatal mental illness: guidance for the obstetrician-gynecologist*. *Best Pract Res Clin Obstet Gynaecol* 28:147–157
- Grunebaum HU, Weiss JL (1963) Psychotic mothers and their children: joint admission to an adult psychiatric hospital. *Am J Psychiatry* 119:928–933
- Heim A, Heim N, Philippe HJ et al (2000) Troubles psychiatriques du post-partum. EMC 5-110-B-10
- Howard LM (2000) The separation of mothers and babies in the treatment of postpartum psychotic disorders in Britain 1900–1960. *Arch Womens Ment Health* 3:1–5
- IsHak WW, Mirocha J, James D et al (2015) Quality of life in major depressive disorder before/after multiple steps of treatment and one-year follow-up. *Acta Psychiatr Scand* 131:51–60. doi:10.1111/acps.12301. <http://www.ncbi.nlm.nih.gov/pubmed/24954156>
- Kumar RC (2001) Maladie mentale de la mère et troubles sévères de l'attachement mère-nourrisson "l'enfant de n'importe qui". *Devenir* 13:47–75
- Kumar R, Robson KM (1984) A prospective study of emotional disorders in childbearing women. *Br J Psychiatry* 144:35–47
- Main TF (1958) Mothers with children in a psychiatric hospital. *Lancet* 272:845–847
- Marcé LV (1858a) *Traité de la Folie des Femmes Enceintes des Nouvelles Accouchées et des Nourrices, et Considérations Médico- légales qui se rattachent à ce Sujet*. Baillière, Paris
- Marcé LV (1858b, réédition 2002) *Traité de la folie des femmes enceintes, des nouvelles accouchées et des nourrices*. L'Harmattan, Paris
- Mazet P, Lebovici S (1998) *Psychiatrie Périnatale*. PUF, Paris

- Milgrom J, Martin PR, Negri L (2000) Treating postnatal depression. A psychological approach for health care practitioners. Wiley, Chichester
- Morin P, Guilly P, Badin J, Choukroun J (1952) Etiology of certain puerperal psychoses. *Bull Fed Soc Gynecol Obstet Lang Fr* 4:600–602
- Munk-Olsen T, Laursen TM, Mendelson T et al (2009) Risks and predictors of readmission for a mental disorder during the postpartum period. *Arch Gen Psychiatry* 66:189–195
- Murray L, Cooper PJ, Stein A (1991) Postnatal depression and infant development. *BMJ* 302:978–979
- O’Hara MW (1997) The nature of post partum disorders. In: Murray L, Cooper PJ (eds) *Postpartum depression and childhood development*. Guildford Press, New York, pp 3–31
- Pitt B (1968) Atypical depression following childbirth. *Br J Psychiatry* 114:1325–1335
- Racamier PC (1961) La mère et l’enfant dans les psychoses du post-partum. *Évol Psychiatri* 26:525–570
- Ramchandani PG, Stein A, O’Connor TG et al (2008) Depression in men in the postnatal period and later child psychopathology: a population cohort study. *J Am Acad Child Adolesc Psychiatry* 47:390–398
- Reder P, Lucey C (1995) Significant issues in the assessment of parenting. In: Reder P, Lucey C (eds) *Assessment of parenting. Psychiatric and psychological contributions*. Routledge, London, pp 3–17
- Schore AN (1994) Affect regulation and the origin of the self: the neurobiology of emotional development. Erlbaum, Hillsdale
- Stansfeld S, Head J, Bartley M et al (2008) Social position, early deprivation and the development of attachment. *Soci Psychiatry Psychiatr Epidemiol* 43:516–526
- Stern G, Kruckman L (1983) Multidisciplinary perspectives on postpartum depression: an anthropological critic. *Soc Sci Med* 17:1027–1041
- Sutter AL, Bourgeois M (1996) *Les unités mère-enfant en psychiatrie périnatale*. Collection Nodule, PUF, Paris
- Sutter AL, Murray L, Glatigny-Dallay E et al (2003) Newborn behavior and risk of postnatal depression in the mother. *Infancy* 4:589–602
- Sutter-Dallay AL, Dallay D, Verdoux H (2004) Psychic disorders during pregnancy and postpartum. *Rev Prat* 54:1137–1139
- Thelander HE (1972) Maternal guilt, prenatal and perinatal insults, and psychiatric guidance. *Pediatrics* 50:342
- Whitton A, Warner E, Appleby L (1996) Maternal thinkings and the treatment of postnatal depression. *Int Rev Psychiatry* 8:73–78
- WHO, Calouste Gulbenkian Foundation (2014) *Social determinants of mental health*. World Health Organization, Geneva
- Wickramaratne P, Gameraoff MJ, Pilowsky DJ et al (2011) Children of depressed mothers 1 year after remission of maternal depression: findings from the STAR*D-Child study. *Am J Psychiatry* 168:593–602

Roch Cantwell

Abstract

Pregnancy and the postnatal period are a time of specific vulnerability for women with pre-existing mental illness, and the early postpartum period places women at greater risk of severe mental disorder, and admission to psychiatric care, than at any other time in their lives. Early identification and intervention is of particular importance not only for the woman herself but also to minimise any impact on the developing relationship between mother and infant and to promote optimal infant mental health. Knowledge of the effects of pregnancy and childbirth on pre-existing mental disorder, the consequences of mental health problems for the pregnant woman and the risk factors that can predict maternal mental ill health provide a unique opportunity to prevent the onset or relapse of mental disorder at this time.

Introduction

Epidemiology of Mental Illness in Relation to Pregnancy and Childbirth

Mental illness is common. Depression has a lifetime prevalence of 4–10 % in the general population, with women having a rate 1.5–2.5 times that of men. Bipolar affective disorder and schizophrenia each affects approximately 1 % of the population. Pregnancy offers little protection against the continuation or development of mental illness, although risk of suicide and admission to inpatient psychiatric care are reduced at this time. Minor mental illness may be more common in early

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pregnancy and nearer to delivery. However, the early postpartum period places a woman at greater risk of severe psychiatric disorder and admission to psychiatric care than at any other time in her life. For some women, this risk can be identified allowing for preventative interventions to be put in place.

Risk in the Perinatal Period

Since 1996, the UK Confidential Enquiry into Maternal Deaths has separately examined all mortality in women during and after pregnancy where death has resulted from mental disorder (Oates and Cantwell 2011). Lessons learned include the strikingly increased risk of major mental illness that women face in the early postpartum period, reflected in the severity of their symptoms, the rapidity of onset and the violent nature of their suicide. While the stories of these women's illnesses and deaths each reflects a personal and family tragedy, they also assist us in identifying risk of illness and patterns of relapse, providing opportunities not only for better treatment but for prevention of onset of illness. In addition, they have helped identify gaps in service provision and delivery, leading to dedicated service development and improved standards of care.

While there is little evidence to suggest that pregnancy per se alters the risk of mental illness, the increased risk of early postpartum major mental illness was known to Marcé and Esquirol and delineated epidemiologically by Kendell et al. (1987). They demonstrated a 35-fold increase in the risk of admission to psychiatric hospital for women in the first postnatal month. They were also able to highlight that this elevated risk was largely limited to psychotic disorder. Subsequent studies have demonstrated that those women with a history of bipolar disorder or previous postpartum psychosis are at particular risk – as high as one in two – of early postpartum psychosis, a risk increased even further where there is, in addition, a family history of either disorder.

But risk is not limited to severe mental illness or indeed to the woman herself. Untreated anxiety disorders in pregnancy, and depression in the postnatal period, may have adverse effects on the parent-infant relationship and on child development. Similarly, other disorders, such as personality disorder or eating disorders, may adversely affect the pregnancy and the developing relationship between mother and infant.

There is distinctiveness about the presentation of new mental illness, such as postpartum psychosis, arising in relation to pregnancy and childbirth, and, for pre-existing disorder, there is a modifying effect of pregnancy and childbirth which may increase. An understanding of that particular risk and the modifying effects of pregnancy and childbirth is crucial to the development of appropriate clinical services for women and their families.

Normal Emotional Changes in Pregnancy and the Postpartum Period

For most women, childbirth is a much-anticipated event. However, around 50 % of pregnancies are not planned, and a proportion of those are unwanted. Even

where a pregnancy is wanted, ambivalence about the pregnancy, health-related anxieties or fears about inability to cope (particularly in first-time mothers) are common and normal. Increased emotional lability is usual in early pregnancy and may be exacerbated by the physical changes typical of the first trimester. Emotional changes are largely bound up with the psychological adjustments necessary in pregnancy but may also be contributed to by hormonal alterations. It is important to be able to distinguish these changes from those more clearly associated with mental illness.

Oates (1989) describes certain groups as having particular needs for increased support in relation to childbearing:

- Very young, single and unsupported mothers
- Women who themselves have poor experiences of mothering, where their own needs may conflict with those of their baby's
- Older mothers who may have over-idealised expectations of pregnancy and delivery and have problems adjusting to life changes after the birth
- Women who have pregnancies that are complicated by previous pregnancy loss, assisted conception, or those who require an emergency caesarean section

It is also important to remember that pregnancy may be a more vulnerable time for women in other respects. Women face an increased risk of domestic violence at this time, and around 30 % of domestic violence begins during pregnancy (Lewis 2001b). Risk factors associated with being a victim of domestic violence during pregnancy include young age, short-term relationship, misuse of alcohol or drugs, history of mental illness and family history of domestic violence (Cook and Bewley 2008). In light of this, it has been recommended that women should be seen alone on at least one occasion during their antenatal care, enquiries about violence should be routinely included in the antenatal history and information should be provided on legal rights and available supports. The social circumstances and needs of women with mentally disordered partners should also be considered.

Modifying Effects of Pregnancy and the Postpartum Period on Pre-existing Mental Illness

Adjustment to pregnancy, to the needs of a developing infant, or to the demands of increased engagement with health and social care professionals, may place additional pressures on women already compromised by severe or enduring illness and increase the risk of relapse. Biological and genetic factors play a significant role in the specific risk faced by women with bipolar disorder and may influence the course of other pre-existing disorders, particularly in the early postpartum. Conditions that might otherwise be regarded as mild in severity or interference with daily functioning will warrant prompt intervention, often at a higher level of intensity, because of the increased emotional and practical demands brought about by pregnancy and child-rearing.

Effects of Mental Illness on Pregnancy and the Postpartum Period

Women with pre-existing mental illness are even more likely, when compared with the general population, to have unplanned or unwanted pregnancies. They are more likely to suffer social disadvantage and to engage in behaviours, such as smoking and other substance use, which may compromise their pregnancies. Those mental disorders which are associated with social withdrawal and avoidance may lead to poorer engagement with maternity services and compromise best antenatal care. Severe and enduring disorders are associated with increased pregnancy and birth complications and with increased risk of sudden infant death syndrome.

Maternal Mental Illness, Child Welfare and Infant Development

Infanticide is a very rare outcome of maternal mental illness. However, some mental illnesses, such as schizophrenia, may compromise a woman's ability to engage with antenatal care, increasing the risk of adverse outcomes for the pregnancy. Furthermore, persistent anxiety in pregnancy, and untreated postnatal depression, may be linked to impaired social and cognitive development in children as they grow up (Talge et al. 2007). Antenatally, this may be mediated through disruption of the foetal hypothalamic-pituitary-adrenal axis. In the postnatal period, maternal depression may alter the quality of interaction between mother and child, leading to poorer social interaction.

The majority of women with mental health problems care for their children without difficulty. Where there are concerns that care may be compromised by severe illness, substance misuse or personality disorder, early involvement of social services is essential, ideally during pregnancy, to allow for a full evaluation of risk and for support, if required, to be coordinated.

Pre-existing Mental Disorder

Schizophrenia

Schizophrenia affects approximately 1 % of the general population and is slightly more common in men. Fertility is lowered among women with schizophrenia (Bundy et al. 2011), but the move away from institutional care, and increased use of second-generation antipsychotic drugs, which have a lower propensity to elevate prolactin, may contribute to increasing rates of pregnancy in this group. Women who switch from older drugs may not be aware of this and may place themselves inadvertently at risk of unwanted pregnancy. Women with schizophrenia are more likely to have unplanned and unwanted pregnancies and less likely to engage well with routine antenatal care. They have more adverse outcomes of pregnancy including increased risk of pregnancy loss and neonatal death (Howard LM 2005)¹⁴. Some of this increased risk may be due to confounders such as high rates of smoking and poorer physical health.

There is an increased risk of relapse of schizophrenia in the postnatal period, but the pattern of relapse into illness does not show the very early high risk found in bipolar disorder (Munk-Olsen et al. 2009). This may be explained by the likelihood that precipitants to relapse relate more to the psychosocial and emotional demands of increased contact with health and social care professionals and caring for a developing child. Although not universally poor, the outcome in terms of the mother remaining the primary carer for her child is often unfavourable (Kumar et al. 1995) leading to great distress for the mother and for those (including health professionals) who support her. Appropriate supports, including social services, should be engaged at an early stage in pregnancy to ensure sufficient help is available to the mother and her family. It is often difficult for women with schizophrenia to cope with frequent contact with health professionals during pregnancy, and there is a risk that they receive suboptimal care due to failure to attend antenatal care.

Bipolar Affective Disorder

Bipolar disorder has a lifetime prevalence of 0.4–1.6 %, with peak age of onset for women during reproductive years. Lifetime prevalence is likely to reach 4 % when less severe forms of the disorder are included. Genetic factors play an important role in aetiology, with heritability accounting for approximately 85 % of the variance (McGuffin et al. 2003), but episodes of illness may be triggered by stressful life events. Women with bipolar disorder are likely to be on maintenance therapy, which can include lithium, mood-stabilising anti-epileptics and second-generation antipsychotics. There are teratogenic risks associated with lithium and with the mood-stabilising anti-epileptics and sodium valproate and carbamazepine, but high risk too with regard to relapse of illness on discontinuation. Viguera et al. (2007) found that 71 % of bipolar women who discontinued prophylactic lithium treatment at onset of pregnancy relapsed at some point during that pregnancy, a twofold greater risk than for those continuing treatment.

Pre-existing bipolar disorder is one of the greatest risk factors for postpartum psychosis. Seventy per cent of women with bipolar disorder will experience relapse in the first 6 postnatal months if not taking mood-stabilising agents (Viguera et al. 2000). Irrespective of decisions about medication during pregnancy, all women should be offered prophylactic medication (usually lithium or a mood-stabilising antipsychotic) immediately following delivery. Given that most women with bipolar disorder return to full health between episodes, there is little evidence that they are any less able to care appropriately for their children, except during the acute phase of the illness.

Depressive and Anxiety Disorders

Given a lifetime prevalence of 4–10 %, with rates higher in women than men, many women may have a pre-existing depressive disorder at conception. Studies suggest

that 2–10 % of women are taking prescribed antidepressant treatment at the time of conception. Women are most likely to discontinue treatment, without consultation, on discovering a pregnancy (Ververs et al. 2006). This may place them at greater risk of relapse of illness. A past history of depressive illness is one of the strongest predictive factors for antenatal depression, which in turn is predictive of postnatal depression. Although depressive symptoms are probably as common in pregnancy as in the postnatal period, they often remain undetected.

For anxiety disorders, the course in pregnancy is likely to be related to the severity of illness pre-conceptually. Physiological changes in respiratory function during pregnancy may lead to an increased propensity to panic and anxiety, and panic may worsen in the postnatal period. Severe needle phobia may significantly compromise antenatal care. The recent Confidential Enquiry into Maternal Deaths reported one case of refusal to have bloods taken in pregnancy or thromboprophylaxis postnatally in a woman who died of thromboembolism (Oates and Cantwell 2011). Such patients require early referral and intervention, using behavioural techniques.

Tocophobia is the phobic dread of labour and delivery. It may arise before pregnancy (primary tocophobia) or during the first pregnancy. When it arises in second or subsequent pregnancies, it is often secondary to a previous adverse experience of delivery. Hofberg and Brockington (2000) were the first to describe this as a distinct entity in a series of 26 cases. Primary tocophobia may be a symptom of underlying depression or anxiety or has more distant antecedents, such as childhood sexual abuse or other sexual assault. Secondary tocophobia is usually a post-traumatic phenomenon (Hofberg and Ward 2003). These women often seek alternatives to vaginal delivery and without an empathic professional presence may see termination as their only option. Women who achieve their desired mode of delivery experience lower rates of psychological morbidity than those who are refused.

Eating Disorders

The fertility of anorexic women is significantly reduced. Women with bulimia may have menstrual irregularities despite a normal body mass index. While amenorrhoea is core to the full anorexic syndrome, many women have partial syndromes (commonly termed EDNOS – eating disorders not otherwise specified), which may include presentations where ovulation continues, or returns when weight loss is not so extreme. Eating disorders, including EDNOS, have some of the highest mortality rates of any psychiatric disorder. For this reason, attention to their detection and management in pregnancy and the postpartum period is essential.

Eating disorders (including partial syndromes) affect 5–7 % of women of child-bearing age (Micali and Treasure 2009). There is some evidence that eating disorder symptoms may improve in pregnancy, but the postnatal period can be associated with a worsening of symptoms, as efforts are made to lose weight gained in pregnancy. With regard to the impact of a pre-existing eating disorder on pregnancy, there is evidence from some studies of intrauterine growth restriction, miscarriage and preterm delivery (Kouba et al. 2005). Self-induced vomiting may lead to

electrolyte imbalance and severe weight restriction to delayed wound healing post-delivery.

Nausea of early pregnancy may exacerbate pre-existing bulimia and needs to be considered in the differential diagnosis of hyperemesis gravidarum. In a retrospective study of 96 women who were actively bulimic during pregnancy, there was a reduction in bulimic behaviours with each trimester (Morgan et al. 1999). Although one third of the patients were no longer bulimic in the postnatal period, more than half of the sample reported a deterioration in symptoms to worse than pre-pregnancy levels. Those most vulnerable to relapse had a history of anorexia nervosa or an unplanned pregnancy and had more severe symptoms at conception that persisted into the second trimester.

During and after pregnancy, women with eating disorders are also more likely to experience comorbid depressive disorder.

Substance Misuse Disorders

Substance misuse during pregnancy has been associated with a number of adverse effects upon the unborn child, but studies in this area are often confounded by variables such as adverse social circumstances, poor nutrition, cigarette smoking and concurrent use of multiple substances. Women with alcohol or drug problems often engage poorly with antenatal care, and their impaired physical health, including exposure to HIV and hepatitis, may place additional risks upon them and their pregnancy.

Excessive use of alcohol is relatively rare in pregnancy. As with other maladaptive behaviours, it tends to decrease during the antenatal period. Alcohol misuse may give rise to a number of physical complications for the woman, which may threaten or complicate pregnancy. These include nutritional deficiencies and liver and pancreatic disease. Withdrawal complications such as delirium tremens and seizures may also have adverse consequences. Excessive alcohol use is associated with disturbed organogenesis in early pregnancy and intrauterine growth retardation and neurodevelopmental delay in later pregnancy. Other teratogenic effects include abnormalities of the cardiac and urogenital systems, as well as eye, ear and limb anomalies. Foetal alcohol syndrome, and the more encompassing term, foetal alcohol effects, is characterised by craniofacial abnormalities, growth retardation and neurodevelopmental abnormalities, including impaired IQ, in the presence of maternal alcohol consumption (Pruett et al. 2013). The pathway for adverse effects on foetal development is complex, but there is evidence that alcohol is a direct teratogen, and there appears to be a dose-related response. Animal studies suggest that binge pattern drinking in pregnancy is particularly harmful, but there is no consensus about whether there may be a safe lower limit for consumption in pregnancy.

The use of illicit substances during pregnancy is common. One anonymous urine sample screening study in a UK inner-city clinic found that 16 % of women had taken one or more illicit substances during pregnancy (Sherwood et al. 1999). The effects of recreational drug use vary depending on the properties of the specific drug.

Motivation to change is often increased during pregnancy, which, combined with increased healthcare input and support, may allow significant change at a crucial time. However, the UK Confidential Enquiries into Maternal Deaths identified an often naive approach to assessment and management, with low levels of suspicion of ongoing use, a reluctance to apply independent drug testing and an acceptance of the woman's denial of use (Oates and Cantwell 2011).

Personality Disorders

Of the group of personality disorders, the emotionally unstable type is perhaps the most commonly diagnosed in young women. It is characterised by emotional instability, impulsivity, dysphoric mood, disturbances in self-image, chronic feelings of emptiness and self-destructive behaviour, including recurrent self-harm and drug or alcohol misuse. Such difficulties cause high levels of anxiety among health and social care professionals and may interfere with effective antenatal care. Impaired forward planning and tolerance of distress may increase anxieties regarding child welfare. There is increasing evidence to suggest that such personality difficulties may have their origins in early experiences of inconsistency and disruption in parenting. For these women, the time around pregnancy and early infant care may rekindle memories of their own early life difficulties, and interventions should take this into account. Effective management is usually provided through good joint working and communication between professionals and a clear and consistent treatment plan to which the patient agrees.

Newly Arising Mental Disorder

Postpartum Psychosis

Psychotic disorders arise after one in 500 births. Although the absolute risk for any woman is low, relative to other times in a woman's life, this period carries the highest risk of psychosis and psychiatric hospital admission (Kendell et al. 1987). The illness has its onset in the early postnatal period, 90 % occurring within the first month. Despite the name, a small proportion of cases have onset in late pregnancy. Almost all cases are affective in nature, that is, they present predominantly with mood disturbance in addition to the characteristic symptoms of psychosis – delusions, hallucinations, marked behavioural disturbance and loss of insight. Non-affective or schizophrenia-like presentations are much less common. Typically, the presentation is one of rapid fluctuations of mood (often with a mixture of manic and depressive symptoms), perplexity, confusion and markedly altered behaviour. Ideas of self-harm may be driven by delusions of guilt, self-worthlessness or hopelessness. Thoughts of harm concerning the baby or other children are rare but always require enquiry and careful assessment. Initial symptoms may be non-specific, often including anxiety and labile mood. Failure to recognise such prodromal symptoms,

coupled with rapid progression to frank illness over a short period of time, is a recurrent theme in psychiatric deaths reported to the Confidential Enquiry (Oates and Cantwell 2011).

Several factors have been identified that significantly increase the risk of psychosis. Of greatest importance is a previous history of postpartum psychosis or bipolar disorder. A first-degree relative with bipolar disorder or previous postpartum psychosis increases this risk further (Jones and Craddock 2001). With one or more of these risks, a woman may have a greater than one in two risk of developing postpartum psychosis. Identification of risk is particularly important, as there is evidence that preventative interventions, when started in the immediate postpartum period, are effective in reducing progression to illness. Interventions include lithium, mood-stabilising antipsychotic drugs and measures to protect sleep.

With treatment, prognosis for the episode is very good, and most women will make a complete recovery, but remain at a one in two risk of future postpartum episodes. There is also a significantly increased risk, perhaps as high as 60 %, of non-postpartum recurrence, in which case criteria are likely to be met for bipolar disorder.

The aetiology of postpartum psychosis remains uncertain. The dramatic, early presentation is suggestive of a link with major hormonal changes normally occurring after childbirth. The strong association with bipolar disorder implies a genetic predisposition, and evidence has emerged of a specific familial risk for postpartum episodes in bipolar disorder (Jones and Craddock 2001). It has been suggested that the rapid reduction in oestrogen levels is linked to the development of dopamine receptor hypersensitivity, which in turn may trigger the onset of psychosis in predisposed individuals (Wieck et al. 1991). Serotonergic neurotransmitter systems have also been implicated in causation. So far, however, there is little evidence for the use of hormonal treatments in routine management.

Postnatal Depression

In contrast to postpartum psychosis, non-psychotic depression often presents later in the postnatal period, with a peak occurrence at around 6 weeks. While there is some evidence of a telescoping in the incidence of depression in the first postnatal weeks, the overall prevalence of 10–15 % in the first year is not very different from the prevalence of mild to moderate depression at any other time in a woman's life, including in pregnancy. Similarly, the symptoms of depression in the antenatal and postnatal period do not differ greatly from those at other times, depression usually presenting with a combination of the triad of affective, cognitive and behavioural symptoms mentioned earlier. Some studies suggest a greater predominance of obsessional symptoms in postnatal depression. For some women, these may take the form of obsessional worries or fears that she may cause harm to her baby. Much less commonly, there may be true infanticidal thoughts. Thoughts of self-harm are not uncommon and should be followed up with sensitive enquiry as to the depth and strength of these feelings.

Unlike postpartum psychosis, where risk factors are largely biological, psychosocial factors play the greatest part in the development of non-psychotic depression. Most important are a past history of depression, psychological problems during pregnancy, poor social support, lack of a confiding relationship and recent adverse life events (O'Hara and Swain 1996). Weaker associations have been found with obstetric complications, history of abuse, lower socio-economic status and perception of poor obstetric experience. Unfortunately, these risk factors have poor specificity and so, while allowing for heightened awareness, cannot be used to accurately predict the development of depression in any one individual. Untreated postnatal depression is also closely associated with disturbed mother-baby interaction and with adverse effects on infant cognitive and emotional development.

Psychological Aspects of Pregnancy Loss

Around one in five pregnancies will end in spontaneous loss before 20 weeks. Early loss is often not associated with the same acknowledgement and support attending stillbirth or neonatal death. In the absence of an obvious cause, miscarriage may also lead to a greater sense of self-blame and guilt. Around 40 % of women will go through a typical bereavement process, similar to that following stillbirth or neonatal death, with emotional reactions that may include numbness, disbelief, social withdrawal, anger, guilt, sadness and anxiety, leading eventually to acceptance and resolution. Depressive symptoms are present, at a rate 2–4 times that of the general population in the first 6 months (Neugebauer et al. 1997), and anxiety symptoms are similarly elevated. In most cases, symptoms have returned to background levels by 1 year. However, some women may experience an abnormal or prolonged grief reaction and depressive or anxiety disorder.

Interventions to reduce the risk of psychological morbidity are poorly researched. Women consistently say they wish for greater access to psychological support, and there is some evidence for the benefit of psychological interventions. Where benefit has been demonstrated, it has mostly been for interventions targeted at those displaying early difficulties, rather than for general approaches to all women who miscarry. However, an empathic approach, and acknowledgement of the significance of the loss, is important for all women.

Late pregnancy and early neonatal loss are likely to result in a normal grief reaction. Some controversy surrounds the common practice of encouraging parents to spend time with, hold and dress their dead infants. One study found an increased risk of depression, anxiety and post-traumatic stress disorder in subsequent pregnancy, where women had time with their infants, and that greater exposure was correlated with more subsequent problems (Hughes et al. 2002). Best practice is to allow parents to decide for themselves whether they wish contact with their dead infants, without assumption from staff that such exposure is the correct or desired option (Hughes and Riches 2003).

The link between induced abortion and mental health is shrouded in controversy. The most recent, and extensive, review of the literature to date suggests that

for women with an unwanted pregnancy, the risk of adverse mental health consequences is the same, whether the outcome is an induced abortion or term delivery (AoMRC, 2011). Certain factors, such as a negative attitude to abortion or pressure from a partner to have an abortion, may increase risk of adverse mental health outcomes. Overall, however, the most reliable predictor of mental health problems post-abortion is having a history of mental health problems before the abortion.

References

- Academy of Medical Royal Colleges (2011) Induced abortion and mental health: a systematic review of the mental health outcomes of induced abortion, including their prevalence and associated factors. Academy of Medical Royal Colleges, London
- Bundy H, Stahl D, MacCabe JH (2011) A systematic review and meta-analysis of the fertility of patients with schizophrenia and their unaffected relatives. *Acta Psychiatr Scand* 123:98–106
- Cook J, Bewley S (2008) Acknowledging a persistent truth: domestic violence in pregnancy and the puerperium: what is normal? *J R Soc Med* 101(7):358–363
- Hofberg K, Brockington IF (2000) Tokophobia: an unreasoning dread of childbirth. *Br J Psychiatry* 176:83–85
- Hofberg K, Ward MR (2003) Fear of pregnancy and childbirth. *Postgrad Med J* 79:505–510
- Howard LM (2005) Fertility and pregnancy in women with psychotic disorders. *Eur J Obstet Gynecol Reprod Biol* 119(1):3–10
- Hughes P, Riches S (2003) Psychological aspects of perinatal loss. *Curr Opin Obstet Gynecol* 15:107–111
- Hughes P, Turton P, Hopper E et al (2002) Assessment of guidelines for good practice in psychosocial care of mothers after stillbirth: a cohort study. *Lancet* 360:114–118
- Jones I, Craddock N (2001) Familiarity of the puerperal trigger in bipolar disorder: results of a family study. *Am J Psychiatry* 158:913–917
- Kendell R, Chalmers J, Platz C (1987) Epidemiology of puerperal psychosis. *Br J Psychiatry* 150:662–673
- Kouba S, Hallstrom T, Lindholm C et al (2005) Pregnancy and neonatal outcomes in women with eating disorders. *Obstet Gynecol* 105:255–260
- Kumar R, Marks M, Platz C et al (1995) Clinical survey of a psychiatric mother and baby unit: characteristics of 100 consecutive admissions. *J Affect Disord* 33(1):11–22
- Lewis G (2001b) Domestic violence. In: Lewis G, Drife J (eds) *Why mothers die 1997–1999. Fifth Report of the Confidential Enquiries into Maternal Deaths* RCOG Press, London, pp 241–251
- McGuffin P, Rijdsdijk F, Andrew M et al (2003) The heritability of bipolar affective disorder and the genetic relationship to unipolar depression. *Arch Gen Psychiatry* 60:497–502
- Micali N, Treasure J (2009) Biological effects of a maternal ED on pregnancy and foetal development: a review. *Eur Eat Disord Rev* 17:448–454
- Morgan J, Lacey J, Sedgwick P (1999) Impact of pregnancy on bulimia nervosa. *Br J Psychiatry* 174:135–140
- Munk-Olsen T, Munk Laursen T, Mendelson T et al (2009) Risks and predictors of readmission for a mental disorder during the postpartum period. *Arch Gen Psychiatry* 66:189–195
- Neugebauer R, Kline J, Shrout P et al (1997) Major depressive disorder in the six months after miscarriage. *JAMA* 277:382–388
- Oates MR (1989) Normal emotional changes in pregnancy and the puerperium. *Baillieres Clin Obstet Gynaecol* 3:791–804
- Oates MR, Cantwell R (2011) Deaths from psychiatric causes. In: Lewis G (Ed), *Centre for Maternal and Child Enquiries (CMACE). Saving Mothers' Lives: reviewing maternal deaths to*

- make motherhood safer: 2006–08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. *BJOG* 118(Suppl 1):1–203
- O'Hara MW, Swain AM (1996) Rates and risk of postnatal depression – a meta-analysis. *Int Rev Psychiatry* 8:37–54
- Pruett D, Waterman EH, Caughey AB (2013) Fetal alcohol exposure: consequences, diagnosis and treatment. *Obstet Gynecol Surv* 68:62–69
- Sherwood RA, Keating J, Kavvadia V et al (1999) Substance misuse in early pregnancy and relationship to fetal outcome. *Eur J Pediatr* 158:488–492
- Talge NM, Neal C, Glover V (2007) Antenatal maternal stress and long-term effects on child neurodevelopment: how and why? *J Child Psychol Psychiatry* 48:245–261
- Ververs T, Kaasenbrood H, Visser G, Schobben F, de Jong-van den Berg L, Egberts T (2006) Prevalence and patterns of antidepressant drug use during pregnancy. *Eur J Clin Pharmacol* 62:863–870
- Viguera AC, Nonacs R, Cohen LS et al (2000) Risk of recurrence of bipolar disorder in pregnant and nonpregnant women after discontinuing lithium maintenance. *Am J Psychiatry* 157:179–184
- Viguera AC, Whitfield T, Baldessarini RJ (2007) Risk of recurrence in women with bipolar disorder during pregnancy: prospective study of mood stabilizer discontinuation. *Am J Psychiatry* 164:1817–1824
- Wieck A, Kumar R, Hirst AD et al (1991) Increased sensitivity of dopamine receptors and recurrence of affective psychosis after childbirth. *Br Med J* 303:613–616

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Abstract

The quality of early parent–child relationships has an important impact on children’s social, emotional, and cognitive developmental outcomes. As a consequence, dysregulation in parent–child interactions is linked to the development of children’s problematic behaviors and has been suspected of contributing to pervasive developmental impairments among infants. Aside from individual behaviors and characteristics, understanding parent–child interactions lies at the heart of early childhood psychopathology. Child psychiatrists, perinatal clinicians, and researchers have conducted experiments and developed theories about early parent–child interactions since the beginning of their discipline. We expose here the evolution’s history of the principal concepts concerning the parent–infant interaction establishment and the state of knowledge of this complex and dynamic phenomenon.

Introduction

The impact of the quality of parent-child relationships on children's social, emotional, and cognitive development has been highlighted for years by many studies (Feldman 2007; Harrist and Waugh 2002). These studies have shown significant correlations between the quality of the parent–child relationship and children’s developmental outcomes (e.g., social competence) (Black and Logan 1995; Saint-Georges et al. 2013), emotion regulation (Field 1987), and access to symbolic play (Keren et al. 2005). As a consequence, dysregulation in parent–child interactions has been linked to the development of children’s problematic behaviors (Choe et al. 2013; Field 1987). Additionally, atypical parent–child interactions are suspected of

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contributing to pervasive developmental impairments among infants, such as autism (Wan et al. 2013). Aside from individual behaviors and characteristics, understanding parent–child interactions lies at the heart of early childhood psychopathology. Perinatal clinicians and researchers have conducted experiments and developed theories about early parent–child interactions.

Evolution of Parent–Infant Interaction Approach

Maternal Deprivation

Since the beginning of child psychiatry with Itard’s description of the wild child (Constant 2014), the importance of parent–child interactions and the social environment have been widely acknowledged as playing a central role in early developmental processes. At the end of the nineteenth century, Archambaud and Parrot attributed even greater influence to psychological factors on children’s troubles growing up in institutions with no stable caregiver.

These first works focused on mother deprivation and its consequences. In this way, the works about the “hospitalism” phenomenon initially described by Pfaundler (1915) highlighted the somatic consequences of maternal deprivation apart from the hygienic and somatic care provided to these children in institution.

In the 1930s, as part of the same movement, psychiatrists and psychoanalysts around the world analyzed side effects of fostering children in institutions. David Levy, in the *American Journal of Orthopsychiatry*, published the first description of “affective indifference” in a young child following affective deprivation. He called this phenomenon “primary affect hunger” in children removed very early from their mothers and brought up in institutions and multiple foster homes. These children, though often pleasant on the surface, seemed indifferent underneath. He questioned whether there could be a “deficiency disease of the emotional life, comparable to a deficiency of vital nutritional elements within the developing organism.” A few psychiatrists, psychologists, and pediatricians were also concerned by the high mortality rate in hospitals and institutions obsessed with sterility to the detriment of any human or nurturing contact with babies.

During the years of World War II, evacuated and orphaned children were the subject of studies that outlined their reactions to separation, including the ability to cope by forming relationships with other children. The research of psychoanalyst R. Spitz (1946) on the effects of maternal deprivation and *hospitalism* focused on infants who had experienced abrupt, long-term separation from the familiar caregiver. Spitz adopted the term *anaclitic depression* to describe the child’s reaction of grief, anger, and apathy to partial emotional deprivation (the loss of a loved object) and proposed that when the object of love is returned to the child within 3–5 months, recovery is prompt, but that after 5 months, the child will show the symptoms of increasingly serious deterioration.

Then, following the observations and experiments with animals conducted by Lorenz and Harlow (Harlow and Zimmermann 1958; Lorenz 1935), John Bowlby

developed his attachment theory (Bowlby 1969). He used his direct experience with deprived children through his work at the London Child Guidance Clinic to investigate children's early lives. Bowlby proposed that two environmental factors were fundamental in early childhood. The first was death of the mother, or prolonged separation from her; the second was the mother's emotional attitude toward her child. He developed his attachment theory in *Maternal Care and Mental Health* published in 1951. He described it to be essential that the infant and young child should experience a warm, intimate, and continuous relationship with his mother (or permanent mother substitute/caregiver) in which both found satisfaction and enjoyment. Given this kind of relationship, emotions of guilt and anxiety (characteristics of mental illness when in excess) would develop in an organized and moderate way.

At the same period, in a psychoanalytic perspective, Donald Winnicott observed that immediately after giving birth, the mother becomes fixated with the infant to the point where everything and everyone else plays a secondary role. This, he theorized, made her even more sensitive to the infant's needs. He called this state "Primary Maternal Preoccupation" and described the "good enough" mother's characteristics (Winnicott 1947, 1969).

The attachment theory included the development of the concept of the affectional bond, sometimes referred to as the emotional bond, which is based on the universal tendency of humans to attach, i.e., to seek closeness to another person and to feel secure when that person is present. Bowlby proposed that babies have an innate need from birth to form emotional attachments, i.e., bonds, because this increases the chances of survival by ensuring that they receive the care they need. Bowlby did not describe mutuality in attachment. Actually, the biological aspect of bonding is well studied, particularly the hormonal regulation within a continuum between the prenatal and postnatal periods.

The studies of Bowlby focused on infants' behaviors and mothers' attachment pattern, but it is with the emergence of the developmental movement that the baby will really be considered as a partner in the interaction.

Baby as Partner in the Interaction: Developmental Movement

For a long time, the baby was considered to be passive, being subjected to his environment and particularly to his/her mother. First, in the 1930s, Mélanie Klein proposed a concept of child development based on her psychoanalyses of young children, where she considered that the infant and the toddler had their self-psychic and relational life.

In the last 40 years, the developmental field as it relates to babies has made very significant advances. The abilities of both baby and fetus have been increasingly demonstrated.

We know now that young children can represent the acts of others and their own acts in multiple dimensions. In his experiments, Andrew Meltzoff (1995) found that 18-month-old infants could perform target manipulations that adult experimenters

attempted and failed, suggesting that the infants could represent the object-manipulating behavior of adults as involving goals and intentions.

According to Meltzoff, the infant's innate understanding that others are "like me" allows it to recognize the equivalence between the physical and mental states apparent in others and those felt by the self. For example, the infant uses his own experiences orienting his head/eyes toward an object of interest to understand the movements of others who turn toward an object, that is, that they will generally attend to objects of interest or significance.

So, these studies suggest that babies can recognize cross modal equivalences between the acts they see others perform and their own tactile–kinesthetic sense of self. The infant's ability to imitate others and the recognition of self-other equivalences is now considered as the starting point for social cognition, the origin of empathy, and as the trigger for a *theory of mind*, which demonstrated that through understanding the acts of others we come to know their emotions.

Thus, Simon Baron-Cohen (1991) identified the infant's understanding of attention in others, a social skill found by 7–9 months of age, as a "critical precursor" to the development of *theory of mind*. Understanding others people's intentions is another critical precursor to understanding other minds because intentionality, or "aboutness," is a fundamental feature of mental states and events.

These studies are closely connected to the discovery of neuron mirrors. At first studied in primate species and birds, researchers discovered in humans a small number of neurons that fired or reached peak activity both when an individual performed a task and observed a task. Other neurons seem to have anti-mirror properties, that is, they responded when the participant performed an action but were inhibited when the participant witnessed that action.

This phenomenon has been observed with respect to emotions, with the same cerebral areas being activated when a subject feels an emotion or observes someone feeling the same emotion. According to Decety's experiments (Cheng et al. 2014), mirror neurons could be linked to the development of empathy. All children's skills are linked to the interaction between the child and his caregiver.

Intersubjectivity

The psychoanalytic approaches of interaction initially focused on self-construction and interaction as of the basis for the development of intersubjectivity. In his theory on "the interpersonal world of the child," Daniel Stern (1985) describes the development of four interrelated *senses of self*: *emergent self*, *core self*, *subjective self*, and *verbal self*. These senses of self develop over one's lifespan, but make significant developmental strides during sensitive periods in the first 2 years of life. According to this theory, the mother or any other primary attachment figure plays a critical role in helping the infant with this developmental process.

His work provides the background for the development of intersubjectivity, i.e., the capacity to think as an individual and to take into account the mental world of others. These skills are based on the capacity of the baby to interact. Feldman (2007) underlines the role of synchrony within parent–child interactions as the principal mechanism for the development of intersubjectivity in the child.

Dynamic Model of Interaction

With the advent of the “interactionist” movement, the model of the mother–baby relationship was modified. It was described not just as a relation on a linear causality mode or as addition of the mother’s and the child’s factors but as a transactional or interactional dynamic (Escalona 1968). Transactional theory considers that the environment (mother or father) and the newborn influenced each other in a continuous process of development and change. This model described the complex chain of bidirectional processes, which are described not in a closed circle but rather in a spiral.

Thus, the relationship between the baby and his environment is actually considered as a set of bidirectional processes, where the baby is not only influenced by his environment but is also at the origin of considerable modifications. This further supports the concept of interaction. The interaction defines itself as the mutual influence of two phenomena, two subjects with a notion of reciprocity and interdependence. Generally, the interactions are defined as all the dynamic phenomena that take place in the time between an infant and his different partners.

In analyzing synchrony as the unfolding dance between matched and mismatched states, (Tronick and Cohn 1989) pointed out that mother and child spend most of their playtime in mismatched rather than matched states, yet most of the mismatch is repaired in the next step. By highlighting the concepts of mismatch and repair, the theoretical focus shifts to the way dyads repair moments of miscoordination as the central component of intimate relationships and of the synchrony experience. A major function of the co-regulatory process, therefore, is the self-correcting capacities of the dyad and the infant’s growing appreciation that relationships are not always fully attuned to one’s needs. The interactive partnership between an infant and caregiver, usually called a dyad, is actually defined and explored as a single unit.

Because the relationship between an infant and his caregiver is bidirectional in nature, the dyad should be thought of as a dynamically interacting system. An infant can influence the care he receives from the caregiver in the ways he behaves. Given the dynamic relationship between an infant and his caregiver, a specific interest in the flow characterizing the exchange of information during infant–caregiver interactions has emerged, leading to the study of rhythm (balance between partners), reciprocity (the partners’ ability to show adaptation to each other), and synchrony (the dynamic and reciprocal adaptation of the temporal structure of behaviors between interactive partners). The recent discovery of both biological correlates of behaviorally synchronic phenomena and statistical learning validated the crucial value of studying synchrony during child development.

Temporal Component and Synchrony

The dynamic and temporal component of the interaction is highlighted by most of the authors but difficult to assess. This dynamic is transversal, i.e., one moment and

its interaction, but also longitudinal, i.e., an evolution during the development of the child and the adaptation of the parent.

A lot of words and concepts are used to describe this temporal component of interactions, underscoring its complexity. Some focus more on concordance of the act and affect concordance. Others focus on *reciprocity* and *Contingence* and even speak of *Harmony* (Lebovici and Stoleru 1999). Micro- and macroanalysis with videotaped sequences has itself allowed to best analyze the rhythmicity and synchrony components and allows access to the temporal and rhythmic structure of the interaction. Stern describes the repetitive–rhythmic structure of the interaction that he calls *kinetic sentences* and *interactive dance*. In her broad studies, Feldman assesses the *synchrony* component of the interaction (Feldman 2007).

Synchrony is defined as the dynamic and reciprocal adaptation of the temporal structure of behaviors between interactive partners and implies the following: (i) Behaviors include verbal and nonverbal communicative and emotional behaviors (e.g., gestures, postures, facial displays, vocalizations, and gazes) and (ii) synchronous interactions entail coordination between partners and intermodality. Caregivers and their children are able to respond to each other using different modalities starting from birth (Leclere et al. 2014)

Indeed, synchrony describes the intricate “dance” that occurs during short, intense, playful interactions; it builds on familiarity with the partner’s behavioral repertoire and interaction rhythms; and it depicts the underlying temporal structure of highly aroused moments of interpersonal exchange that are clearly separated from the stream of daily life.

Despite the similarities between synchrony and other established constructs in the mother–child relationship, synchrony is different in a number of meaningful ways. Synchrony encompasses both the mother’s and the child’s responsivity and their emotional capacity to respond to each other. During early development, synchrony involves a matching of behaviors, emotional states, and biological rhythms between parents and infants that together forms a single relational unit (dyad). Affiliative bonds, defined as selective and enduring attachments, are formed on the basis of multiple genetic, hormonal, brain, autonomic, epigenetic, behavioral, and mental processes that coordinate to establish the parent–infant bond. Oxytocin, considered to be the principal bonding hormone, appears to enhance physiological and behavioral readiness for social engagement in parent–infant interactions. Its biology is not fully elucidated but is, in part, related to epigenetic mechanisms.

We might thus consider a definition of interaction at three levels according to Bernieri, 1988: (1) the biological rhythms between mother and child with co-regulation and cycles, beginning during pregnancy, and even present after birth with other caregivers such as the father (Weisman et al. 2013); (2) imitation and simultaneous behaviors, well described as contingency, reciprocity, etc., through sequences of micro- and macro-rhythms (Harrist and Waugh 2002) that might be considered in parallel with micro- and macro-synchrony; and (3) unity of the dyad, as a system to study its globality, a systemic approach developed by Palo Alto Cybernétique (Codruța and Hainic 2011).

Timeline of the Interaction's Development

Perinatal Period

Prenatal attachment and maternal representations during pregnancy are linked to the early mother–infant pattern and subsequently influence infant development and well-being (Feldman 2007; Field et al. 2003; Fonagy et al. 1991; Siddiqui and Hagglof 2000; Viaux-Savelon et al. 2012). These parental representations (Ammaniti 1991), such as a mother's representations of herself as a mother and of the future baby, influence the early interactions and the child's style of attachment. These representations are constructed even before conception, from the desire to have a child and intergenerational projections of the family construction. The construction of these representations is dynamic throughout the prenatal and postnatal periods. Numerous environmental factors might disrupt this dynamic. The representation of the child in the mother's mind contains conscious and unconscious elements: fantasies, character traits, feelings toward the child, as well as her representation of herself as a mother, her representation of her own mother, the child's father, and others (Viaux-Savelon 2014).

In the preconceptional period, difficulties getting pregnant might interfere with a woman's confidence on becoming a mother. During pregnancy, the influence of prenatal diagnosis such as amniocentesis and routine ultrasound scans during the different trimesters of pregnancy has been analyzed in a growing corpus of research (Götzmann et al. 2002; Petersen and Jahn 2008; Viaux-Savelon et al. 2012). For example, ultrasound visualization of the fetus increases woman's confidence in their childcare abilities, strengthens the relationship between mother/father and child, and intensifies positive emotions toward the child. The parents begin to view the child as a separate individual. However, when prenatal diagnosis signals possible fetal abnormalities, the situation becomes altogether different. Women followed up for prenatal fetus diagnosis more frequently suffered from negative emotions related to the risk of discovering pathological changes in the fetus. As a result, they were more likely to experience anxiety for the child's health and their future parenthood. They identified themselves with the role of parent to a lesser degree, and a smaller number of them considered the child as a separate individual.

During Pregnancy

The first chapter of the new life begins during pregnancy. At the start of this period, the process of parenthood is engaged and the premise of mother–child interactions presents. Missonnier described it as “ROV,” virtual object relationship (Missonnier 2007).

Signs of this relationship are highlighted at the biological level, such as oxytocin mutual regulation (Feldman 2007) and reactions of the fetus to the mother's voice, stress, etc., observable during fetal sonography through fetal movement and modulation of heartbeats.

Studies by DeCasper and Spence (1986) and Kisilevsky et al. (2009) showed that 32-week-old GA fetuses discriminate their mother's voice from that of a female stranger, suggesting recognition/learning of some property of her voice. Moreover, this so particular vocal cue used by mothers, with high-pitched vocalizations specific to mother-child interaction, is observed around the fourth semester, when the mother perceives fetal movements. Moreover, prenatal stress has been shown to impair the quality of the mother-infant interaction in both animal (Kaiser et al. 2003) and human studies (Field, et al. 2003; Gerardin et al. 2011).

On the other hand, the emergence of the fetal biological clock (sleep-wake cyclicity) and sympathetic control over heart rhythms are dated to the last trimester of pregnancy, following structural and functional brain development, including the assembly of brain nuclei, rapid increase in synaptic growth, and maturation of neurochemical systems (Peirano et al. 2003).

The phase shift for the sleep-wake cycle occurs between 30 and 31 weeks of gestational age, while the phase shift for cardiac vagal tone, an index of parasympathetic control over heart rhythms, follows between 33 and 34 weeks of gestation. Infants with more mature biological rhythms at term age show higher levels of mother-infant synchrony at 3 months. The degree of maturity in each biological rhythm is uniquely predictive of mother-infant synchrony, indicating that each oscillator marks a specific pathway to the emergence of synchrony.

Concerning the endocrine system, the principal hormones studied were cortisol as the stress hormone and prolactin and oxytocin as the bonding hormones. Maternal behavior is supported by hormonal systems that undergo change during pregnancy and sensitize mothers to infant cues, such as oxytocin and prolactin (Grattan et al. 2001). Oxytocin, a neuropeptide released during uterine contraction and milk ejection, has been implicated in the initiation of maternal behavior in mammals and in close bonds throughout life (Kosfeld et al. 2005).

Average oxytocin levels across pregnancy and the postpartum period predicted not only the frequency of maternal bonding behaviors but also the degree of its coordination with the newborn's alert state, pointing to the role of oxytocin in setting the stage for bonding in humans as well as in the development of coordinated interactions (Feldman 2007). Mothers who provided more coherent and emotionally rich narratives regarding their newborns and the maternal role were found to engage in more elaborate postpartum behaviors.

Breastfeeding has been reported to foster the early postpartum maternal bond, via touch, response, and mutual gazing. Furthermore, following pregnancy, the production of *oxytocin* during *lactation* increases *parasympathetic* activity, thus reducing *anxiety* and theoretically fostering bonding.

Father bonding is also observed at the behavioral and biological levels. Regulation of oxytocin in fathers has been also observed in several studies (Weisman et al. 2013). The *progesterone*, a hormone more usually associated with pregnancy and maternal bonding, may also control the way men react toward their children. Specifically, it was found that a lack of progesterone reduced aggressive behavior in male mice and stimulated them to act in a fatherly way toward their offspring.

Postpartum

Some experiments have demonstrated a special attentiveness of infants to the human face (Johnson et al. 1991). This enhances our knowledge of early imitation, suggesting that infants can detect equivalences between self and others very early. Meltzoff and Moore found that 12–21-day-old infants imitated tongue protrusion, mouth opening, lip protrusion, and hand movements. Such inborn contingency detection was first described by Condon and Sander (1974), who showed that neonates move their limbs in coordination with the adult's speech and that contingent sequences between infant body movements and adult behavior are observed even among very low birth weight preterm infants (Eckerman et al. 1995). Interestingly, contingent reactivity in neonates has been described only in face-to-face paradigms, suggesting that the temporal patterning of social interactions may be triggered at the very first moment that biological dispositions (i.e., face preference) are integrated with critical environmental inputs (a real human face).

Interactions between infants and their partners are generally admitted to occur at three different levels: behavioral, affective, and fantasy (Mazet and Lebovici 1998). The behavioral level is the level most often studied due to its experimental accessibility. However, it is no simple task to describe parent–child behavioral interactions due to the multiple modalities of interaction to explore and classify.

Behavioral interactions, also called *real* interactions, concern how child behavior and mother behavior adapt each other. These interactions between mother and baby are directly observable and manifest themselves in three main areas: touch, gaze, and vocalization. Behavioral interactions concern how the baby is hugged, supported, held, manipulated, and touched. Winnicott speaks of physical holding and psychical holding, i.e., the way a mother holds her baby in her mind through her psychic representations. He also describes the handling, how the child is handled, manipulated by the mother. A set of corporal plays is developed between both partners. Ajuriaguerra (Ajuriaguerra 2012) called it “the tonic dialog.” This dialog permits corporal adjustments between mother and child. Interaction takes place between both partners' postures and muscular tonus. The baby contributes actively to this tonic dialog. He/She can snuggle in the mother's arms, adjust to the mother's body, or grow stiff and push away from her.

Skin to skin is an interactive modality linked to the tonic dialog. Right after delivery, the mother touches the newborn's body, with the fingertips at first and then, after a few minutes, using her entire hand to caress it. From week to week, the skin-to-skin contacts grow rich with instrumental touch and non-instrumental touch and with playful or affective tone. This might involve caresses, prickles, or kisses. The child's responses are perceived as an invitation or a refusal to continue.

The baby's smile is naturally a strong effective behavior, gratifyingly so for his mother or other partner. A mother will feel gratified by the smiling baby, who gazes at her and snuggles up cozily in her arms. Conversely, a baby who avoids her gaze, grows stiff in her arms, cries a lot, and rarely smiles will seriously worry her.

Visual interactions consist of eye-to-eye dialog, called mutual gaze, which is a privileged modality of communication between child and mother, leading to

mother's strong affects. Winnicott spoke of "mirror": mother gazes at the baby and her facial expression is linked to what she is seeing. According to Winnicott, gaze is the first organizer, serving as a basis for the first relation of object. This concept has been completed by the Bion model of maternal reflective capacity and of alpha function (Bion 2003).

Since birth, breastfeeding is a privileged time to express this mutual gaze and affective reciprocity. For the baby, this meeting of the mother's gaze induces a magnet effect, and the longer this encounter lasts and is sustained by the mother, the more frequent it will become, as described by the interactive spiral (Mazet and Stoleru 2003).

Vocal interactions are also an important modality of communication expressing the baby's needs and affects. The baby's shouts and tears are the first language of the newborn. His vocalizations give a tempo to the interaction and allow the child to anticipate and organize his self. Vocal interactions are important for harmonizing the relationship. According to Bowlby (1969), vocal interactions play an important role in attachment. Shouts and tears constitute an "acoustic umbilical cord" between child and mother. They trigger an intense emergency affect, which mobilizes the mother to act and put an end to the child's state of distress. In this way, the child's vocalizations and expressions activate interaction and proximity with the mother.

The parental affect linked to the baby's shouts is influenced by their frequency and duration, which vary for each infant. These shouts can make the mother doubt her mothering skill and arouse some aggressiveness or distress in her. From the very start of the relationship with her baby, and even in prepartum, a mother uses voice modality. In the neonatal period, the baby's motricity is induced by the mother's voice and synchronized with it.

Our understanding of language acquisition was profoundly modified by the knowledge of the processes of early interactions. Today, language development is considered partially the development of dialog. It is therefore considered that the process of mother-child interaction is fundamental in the development of the language. At first, a mother speaks to her baby by using motherese adapted to the newborn. The baby discerns the physical characteristics of the language: prosody, rhythm, height, intonations but not by the contents of the speech, inaccessible to his understanding. The works of Stern on maternal prosody assessed an evolution over the course of the first months. Motherese is characterized by physical characteristics of the sound (syntactic simplification, repetition of words, slowness, high pitch) and is spontaneously adapted by the mother and other partners to the age of the child. On the other hand, the newborn's language is characterized by silent breaks longer than the vocalization emissions, a regular rhythm synchronized to the baby's rhythmicity. At about the 4-month stage, the mother's words are often repeated and facial expressions strengthened. The baby is interested in the facial expression. The mother uses prosodic and rhythmic variations to sustain the child's interest. When the baby is 12–24 months old, the mother's language changes in content. She points at objects in the environment to the child and speaks about them. The mother's speech facilitates and sustains the child's exploration of his environment.

The *affective interactions* concern the emotional and affective climate of the interactions, the pleasant or disagreeable feeling of the interaction. They describe the mutual influences of the affective life of the baby and his mother. Stern spoke about *affective attunement* between the child and the mother.

Affects establish the main subject of communication in the “play between mother and newborn,” particularly during the first weeks and months. The global affective attunement of these exchanges between both partners highlights the feelings of pleasure, well-being, sadness, boredom, indifference, insecurity, excitement, and even hatred. Besides, the behavioral interactions sustain the affective interactions. Mothers speak to their baby of their emotions and feelings. The mother gazes at her baby and, thanks to her empathy skill, perceives her baby’s feeling and offers him/her an interpretation using words, vocalizations, gestures, etc.: “you are happy, you are fussy, you would like...,” “mummy is happy to see how happy you are.” Koren and Oppenheim (Koren-Karie et al. 2002) developed a very useful tool to evaluate this empathic reflective skill of parents vis-à-vis their child’s mind. This Insightfulness Assessment allows the clinician and the researcher to underline the weakness and the strengths of parental reflexive empathy.

On the other hand, the baby perceives a part of his mother’s emotional state. Indeed, he recognizes whether she is “as usual” or not. In the first months, the mother’s prosody and tonico-postural adjustments give him indicators as to the mother’s emotional state, a long time before he can understand what her words mean. In his work, Stern insists on the concept of intermodality and transmodality. Each partner of the dyad responds to the other’s signal not only by means of the imitation modality but also by elaborating and complicating the signal using other channels of communication (voice/gesture, etc.). He spoke about “matching” intermodality or transmodality between the mother and child. Attunement behaviors are observed from the first interaction, but it is at around 9 months that affective attunement is completely developed, when the baby discovers that he and the partner have separate thoughts.

Experiments, such as the “Still Face” and “strange situation” (Ainsworth and Bell 1970), have highlighted babies’ sensitivity to their mothers’ affective state. In this experiment, a 3-month-old baby is placed comfortably in front of his mother. The experimenter asks the mother to play with him for a while and then stop all play and keep a “still face.” This unexpected behavior of the mother triggers an immediate reaction in the baby. At first, he tries to catch his mother’s attention by an active search for a smile or reaction. Next, he quickly becomes confused and ill at ease.

The *fantasy interactions* are well described by Cramer and Lebovici, among others (Cramer and Palacio-Espasa 1993; Lebovici et al. 1989). They consider the fantasy interactions to be the mutual influence of mother’s and baby’s psychic life in their imaginary, fantastical, and unconscious modalities. Fantasy interactions give sense to behavioral interactions. Fantasies evidence the modalities of investment of objects via the pulses or the desires. In the psychoanalytic perspective, they underlie all relations. Proximity to a baby, his presence in the mother’s arms, generally reactivates in adults the imaginary and fantastical life. Mothers speak easily of their imaginary child. A baby, just after conception, is the object of projection of the

“family mandate, which can confirm virtues or repair dramas.” The confrontation between the imaginary baby and the real baby leads to mourning. The imaginary and fantastical life of the parents is linked to their affective life, but also to their own history and their relationship with their own parents. The imaginary and fantasy life of the baby develops bit by bit out of that of his parents. For example, a maternal fantasy concerning the danger of separation influences the mother’s behavior toward her baby, particularly during a separation event. The anxious behavior of the child in this situation shows that the baby shares with his mother an emotional experience of dangerousness, which contributes to his own fantasy life.

Interaction’s Development Until First Year

In charting the weekly development of mother–infant co-regulation from birth to 3 months of age, Lavelli and Fogel (2005) showed that, in the first month of life, coordinated interactions circled around simple attention paid by the infant to the mother’s face. The mother’s holding environment is also the place where synchrony begins, biologically, behaviorally, and interpersonally. Rhythmic patterns of neonate activity, such as crying, nursing, or sucking, serve as the earliest means of communication (Wolff 1967; Burke 1977; Crook 1979), and mothers model interaction rhythms on such patterns, for instance, the “burst–pause” pattern typical of early face-to-face play (Tronick et al. 1977).

From the first minutes following delivery, a mother touches her newborn’s body. Corporal interactions are expressed by corporal adjustments between the mother and child. During this period, skin-to-skin modality is used between partners as a tonic dialog, which sustains the interaction. In this neonatal period, the baby’s motricity is induced by the mother’s voice and synchronized with it. The mother speaks to her baby using motherese adapted to the newborn, and the baby distinguishes physical characteristics of these maternal vocalizations. The newborn, for his part, can already express various affects, such as interest, disgust, and surprise. Imitation is the most frequent modality of interaction at this stage. Parents imitate the child’s actions, facial expressions, body movements, or vocalizations. Until the age of 6 months, the chain of parental behavior is typically acknowledging – imitating – elaborating. After the first 2 months of life, touch gives way to gaze as the central mode of interpersonal relatedness and gaze synchrony becomes the main channel for social interactions throughout life (Wright 1991).

At around 2 months, a more complex behavioral pattern emerges, emotional expressions become coordinated with visual attention, and transitional behavior reveals more complex sequential relationships between the partners’ behaviors that involved infant cooing, gazing, and smiling. According to Trevarthen and Aitken (Trevarthen and Aitken 2003), these early expressions of social coordination in the neonatal period function as “primary intersubjectivity,” a preliminary phase of human relatedness that sets the stage for more reciprocal modes of interpersonal mutuality.

Between the ages of 2 and 3 months, parent–infant interactions begin to show a clear temporal structure, in terms of behavior matching, sequential relations, and time series parameters. Interactions at this age involve repetitive–rhythmic cycles of behaviors in different modalities, including gaze, touch, affective expression, body orientation, manual actions, and arousal indicators. Already at 3 months old, infants are sensitive not only to shifts in the relational behaviors directed at them but also to microlevel signals in the interactions of others (studies about triadic interaction).

At the 3-month stage, the sharing of social gaze between parent and child becomes the central modality of coordinated interactions (Tronick et al. 1980). For instance, parents tend to touch their infants affectionately and infants begin to respond with touch that gradually grows into an intentional loving touch. Episodes of parental and infantile loving touch are often integrated into moments of gaze synchrony in both infant–mother and infant–father play (Feldman and Eidelman 2004). Co-vocalizations, moments in which parent and child vocalize “in unison,” begin to appear at that age and often occur during episodes of shared gaze (Beebe and Gerstman 1980).

At 3–4 months of age, infants are not yet able to manipulate objects, and their only opportunity for active participation in the world is through the give and take of social exchange. Thus, the synchronous interactions are of the “infant-lead-mother-follows” type (Feldman and Greenbaum 1997). A mother uses oft-repeated words and sustains this communication with exaggerated facial expressions, which arouse the baby’s interest. The mother uses prosodic and rhythmic variations to sustain the child’s interest, and around the fourth month, other expressions are added at infant’s repertoires: anger, enjoyment, and little later fear.

Between the ages of 3 and 9 months, several interactive configurations consolidate while others decrease in frequency. At 3 and 6 months, positive maternal engagement precedes the infant becoming positive, but such sequential links were not observed at 9 months (Cohn and Tronick 1987), pointing to the growing independence of the infant’s positive engagement from the mother’s moment-by-moment support.

Touch synchrony – the coordination of affectionate touch with episodes of shared gaze – increases significantly from 3 to 9 months with the development of infant fine motor skills (Granat 2005). The most pronounced change across this period is observed in the infant’s growing interest in objects and the dyadic focus on toy manipulation.

Between 3 and 9 months, episodes of shared gaze decrease while shared attention to objects increases (Landry 1995). Objects become the focus of parent–infant play in the second half-year, highlighting the dynamic relationship between developments in the motor domain – which allow infants to crawl, grasp, and manipulate objects – and the development of social competencies.

As infants enter the age of intersubjectivity at around 9 months (Stern 1985), the lead–lag structure is altered and interactions are mainly of the mutual synchrony type, where both partners are responsive to each other’s rhythms. The person–person–object “joint attention” abilities emerging at around 9 months provide the basis for intentional action and theory of mind skills (Tomasello et al. 2005). At 9 months, affective attunement is completely developed (Stern). At this age, a baby discovers that he and others think separately. These are the premises of intersubjectivity and theory of mind (Stern 1985). After 12 months, parents tend to elaborate more and

extend the child's action, and the imitation modality decreases. When the child is 12–24 months old, the content of his mother's language changes. She points at objects in the environment to the child and speaks about them. Her speech facilitates and sustains the child's exploration of his environment.

Interactions are now mainly of the mutual synchrony type, where both partners are responsive to each other's rhythms. Familiarity with the partner's play is higher, and the specificity of the relationship grows, facilitating a quicker match (Feldman and Greenbaum 1997). Toward the end of the first year, there appears the ability to symbolically reference and intentionally communicate affective-behavioral patterns, which requires the further differentiation of self from others and the capacity to reflect on mental processes (Fogel and Thelen 1987; Tomasello et al. 2005).

Partners

Because the mother is a privileged partner of the infant, classically, the interactions are described between an infant and his mother. However, researchers are increasingly interested in other partners in the interactions, who also influence the emotional development of the infant (Lebovici et al. 1989).

Thus, the specificity of father-child interactions has also been highlighted (Feldman 2003). During father-child interactions, object-oriented play is more frequent and tends to co-occur with basic smiles, whereas mother-child play includes more vocalizations. Father-child interactions centered on physical games or games with an object focus rather than on attention to microlevel face-to-face signals, and play with father is shown to be as synchronous as play with mother.

Cultural Component

It is important to note, however, that early interactions are shaped by cultural norms. Different patterns of interactive behavior may be more or less salient in different cultures. Parents in Western societies tend to provide more gaze, vocalizations, and object presentation and structure these behaviors in specific coordinated sequences. Parents in African, Middle Eastern, or Far Eastern cultures, on the other hand, provide more bodily contact, and interactions contain less gaze, voice, and object use or the synchronization of these behaviors into timed patterns (Feldman and Masalha 2010; Rabain-Jamin 1989).

Triad

However, interaction has also been studied as a "triad." Using a paradigm called the Lausanne Triadic Play, Fivaz-Depeursingue (Fivaz-Depeursingue et al. 2007) applied microlevel coding to triadic interactions and showed that 3-month-old infants were already able to synchronize their behavior with two social partners and respond to

subtle interactive signals between their parents. On the basis of specific behaviors in each subsystem, four types of family “alliances” were described: disordered, collusive, stressed, and cooperative, each depicting specific configurations of behaviors in the facial, vocal, and postural channels and each defining types of families along a spectrum ranging from pathological to growth promoting. Recent studies by this team focused on the prenatal triadic representations.

Gender of Child

It has been suggested that synchrony builds on the infant’s biological rhythms and extends it to social relatedness (Lester et al. 1985). The female newborn exhibits higher social orientations, observed in longer periods of eye contact and more smiles and rhythmical mouthing, whereas the male newborn displays frequent peaks of excitement, quicker rapidity of buildup, and higher reflex startling (Korner 1969).

Parent–Infant Interaction Disorders

At each stage of this dynamic process, certain events can disrupt it, on either the caregiver’s or infant’s side. On the caregiver’s side, it might be depression, mental disease, or somatic disease. On the infant’s side, it might be prematurity, genetic syndrome, facial malformations, etc. (Braarud et al. 2013; Guedeney et al. 2012). The quality of the relationship between mother and child is apparent in all daily activities, which give rhythm to the baby’s life: the care, the feeding, and the play times. Depending on the adjustment between the mother and the baby at each interaction and during the timeline, the interaction will be either harmonious or disharmonious. The adjustments of the interaction are evidenced by each partner’s perception of signals, decoding of these signals, and the adequacy of each partner’s response.

When the infant is healthy, the factors that will facilitate a harmonious affective development are characterized by an emotional availability of the caregiver, flexibility, stability, continuity, and coherence at the time of the caregiver’s responses. When these conditions are not fulfilled, the interactions would be perturbed at their various levels of expression. Symptoms would appear in the infant (psychological disorders with somatic symptoms, depression, etc.). These symptoms can hide insecure attachment, emotional deprivation, neglectness, a relation invaded by adult fears or instability, etc. But pathology of the child can also perturb the interaction and underline parental difficulties that could have been easily overcome by the parents without this pathology: preterm child, genetic syndrome, facial malformations, etc.

Thus, in assessing the parent–infant relationship, the DC 0–3 R’s recommendation to the clinician is to consider multiple aspects of the relationship dynamic, including (DC: 0–3 R. 2005) the overall functional level of both the child and the parent; the level of distress in both the child and the parent; the adaptive flexibility of both the child and the parent; the level of conflict and resolution between the

child and the parent; and the effect of the quality of the relationship on the child's developmental progress. Troubles during early interactions carry consequences affecting a baby's development and are therefore important to prevent, screen, diagnose, and treat as early as possible.

References

- Ainsworth MD, Bell SM (1970) Attachment, exploration, and separation: illustrated by the behavior of one-year-olds in a strange situation. *Child Dev* 41:49–67
- Ajuriaguerra J (2012) Comparaisons entre les notions de syndrome d'instabilité psychomotrice et de syndrome hyperkinétique. *Enfances and Psy* 54(1):147–157
- Ammaniti M (1991) Maternal representations during pregnancy and early mother-infant interactions. *Psychiatr Infant* 34(2):341–358
- Baron-Cohen S (1991) Precursors to a theory of mind: understanding attention in others. In: Whiten A (ed) *Natural theories of mind: evolution, development and simulation of everyday mindreading*. Basil Blackwell, Oxford, pp 233–251
- Beebe B, Gerstman L (1980) The “packaging” of maternal stimulation in relation to infant facial-visual engagement. *Merrill-Palmer Quarterly* 26:321–339
- Bion WR (2003) *Aux sources de l'expérience* (trans: Robert F). PUF, Paris
- Black B, Logan A (1995) Links between communication patterns in mother-child, father-child, and child-peer interactions and children's social status. *Child Dev* 66:255–271
- Bowlby JQ (1969) *Attachment and loss. 1: attachment*. Pimlico, London
- Braarud HC, Slinning K, Moe V et al (2013) Relation between social withdrawal symptoms in full-term and premature infants and depressive symptoms in mothers: a longitudinal study. *Infant Ment Health J* 34(6):532–541
- Burke PM (1977) Swallowing and the organization of sucking in the human newborn. *Child Dev* 48:523–531
- Cheng Y, Chen C, Decety J (2014) An EEG/ERP investigation of the development of empathy in early and middle childhood. *Dev Cogn Neurosci* 10:160–169
- Choe DE, Sameroff AJ, McDonough SC (2013) Infant functional regulatory problems and gender moderate bidirectional effects between externalizing behavior and maternal depressive symptoms. *Infant Behav Dev* 36:307–318
- Codruta P, Hainic C (2011) The interactive dimension of communication: the pragmatics of the palo alto group. *J Commun Culture* 1(2):4
- Cohn JF, Tronick EZ (1987) Mother-infant face-to-face interaction: The sequencing of dyadic states at 3, 6, and 9 months. *Dev Psychol* 23:68–77
- Condon WS, Sander LW (1974) Synchrony demonstrated between movements of the neonate and adult speech. *Child Dev* 45:456–462
- Constant J (2014) Jean marc gaspard Itard (1774–1838). *Neuropsychiatr Enfance Adolesc* 62(2):128–130
- Cramer B, Palacio-Espasa F (1993) *La pratique des psychothérapies mères-bébés. Etudes cliniques et techniques*. PUF, Paris
- Crook CK (1979) The organization and control of infant sucking. In: Reese HR, Lipsitt LP (eds) *Advances in child development and behavior*, vol. 14, Academic, New York, pp. 209–252
- Zero to three (2005) *Diagnostic classification of mental health and developmental disorders of infancy and early childhood: revised edition (DC:0-3R)*. ZERO TO THREE Press, Washington, DC
- DeCasper AJ, Spence MJ (1986) Prenatal maternal speech influences newborns' perception of speech sounds. *Infant Behav Dev* 9(2):133–150
- Escalona SK (1968) *The roots of individuality: normal patterns of development in infancy*. Tavistock Publications, London

- Eckerman CO, Oehler JM, Hannan TE, Molitor A (1995) The development prior to term age of prematurely born newborns' responsiveness in an en face exchange. *Infant Behav Dev* 18:283–297
- Feldman R, Greenbaum CW (1997) Affect regulation and synchrony in mother-infant play as precursors to the development of symbolic competence. *Infant Ment Health J* 18:4–23
- Feldman R, Eidelman AI (2004) Parent-Infant Synchrony and the Social-Emotional Development of Triplets. *Dev Psychol* 40:1133–1147
- Feldman R (2007) Parent-infant synchrony and the construction of shared timing; physiological precursors, developmental outcomes, and risk conditions. *J Child Psychol Psychiatry* 48(3–4):329–354
- Feldman R (2003) Infant-mother and infant-father synchrony: The coregulation of positive arousal. *Infant Ment Health J* 24:1–23
- Feldman R, Masalha S (2010) Parent-child and triadic antecedents of children's social competence: cultural specificity, shared process. *Dev Psychol* 46(2):455–467
- Feldman R, Weller A, Zagoory-Sharon O et al (2007) Evidence for a neuroendocrinological foundation of human affiliation: plasma oxytocin levels across pregnancy and the postpartum period predict mother-infant bonding. *Psychol Sci* 18(11):965–970
- Field T (1987) Interaction and attachment in normal and atypical infants. *J Consult Clin Psychol* 55(6):853–859
- Field T, Diego M, Hernandez-Reif M et al (2003) Pregnancy anxiety and comorbid depression and anger: effects on the fetus and neonate. *Depress Anxiety* 17(3):140–151
- Fivaz-Depeursinge E, Frascarolo F, Lopes F et al (2007) Parents-child role reversal in triogue play: case studies of trajectories from pregnancy to toddlerhood. *Attach Hum Dev* 9(1):17–31
- Fogel A, Thelen E (1987) Development of early expressive and communicative action: Reinterpreting the evidence from a dynamic systems perspective. *Dev Psychol* 23:747–761
- Fonagy P, Steele H, Steele M (1991) Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Dev* 62(5):891–905
- Gerardin P, Wendland J, Bodeau N et al (2011) Depression during pregnancy : is the developmental impact earlier on boys? A prospective case-control study. *J Clin Psychiatry* 72(3):378–387
- Granat A (2005) Emotional regulation processes among infants of mothers with depressive and anxious disorders: Affective-behavioral aspects. PhD dissertation, Department of Psychology, Bar-Ilan University
- Grattan DR, Pi XJ, Andrews ZB et al (2001) Prolactin receptors in the brain during pregnancy and lactation: implications for behavior. *Horm Behav* 40(2):115–124
- Guedeny A, Marchand-Martin L, Cote S (2012) Perinatal risk factors and social withdrawal behaviour. *Eur Child Adolesc Psychiatry* 21(4):185–191
- Götzmann L, Kölbl N, Schönholzer S et al (2002) Suspected fetal malformation in ultrasound examination: the partner's distress and attitudes towards ultrasound. *Ultraschall Med* 23(5):333–337
- Harlow HF, Zimmermann RR (1958) The development of affective responsiveness in infant monkeys. *Proc Am Philos Soc* 102:501–509
- Harrist AW, Waugh RM (2002) Dyadic synchrony: its structure and function in children's development. *Dev Rev* 22:555–592
- Johnson MH, Dziurawiec S, Ellis H, Morton J (1991) Newborns' preferential tracking of face-like stimuli and its subsequent decline. *Cognition* 40:1–19
- Kaiser S, Heemann K, Straub R et al (2003) The social environment affects behaviour and androgens, but not cortisol in pregnant female guinea pigs. *Psychoneuroendocrinology* 28(1):67–83
- Keren M, Feldman R, Namdari-Weinbaum I et al (2005) Relations between parents' interactive style in dyadic and triadic play and toddlers' symbolic capacity. *Am J Orthopsychiatry* 75(4):599–607
- Kisilevsky BS, Hains SMJ, Brown CA et al (2009) Fetal sensitivity to properties of maternal speech and language. *Infant Behav Dev* 32:59–71

- Koren-Karie N, Oppenheim D, Dolev S et al (2002) Mother's insightfulness regarding their infants' internal experience: relations with maternal sensitivity and infant attachment. *Dev Psychol* 38(4):534–542
- Korner AF (1969) Neonatal startles, smiles, erections, and reflex sucks as related to state, sex, and individuality. *Child Dev* 40:359–370
- Kosfeld M, Heinrichs M, Zak PJ et al (2005) Oxytocin increases trust in humans. *Nature* 435(7042):673–676
- Landry SH (1995) The development of joint attention in premature low birth weight infants: Effects of early medical complications and maternal attention-directing behaviors. In: Moore C, Dunham PJ (eds) *Joint attention: Its origins and role in development*. Hillsdale, NJ, Erlbaum
- Lavelli M, Fogel A (2005) Developmental changes in the relationship between infant's attention and emotion during early face-to-face communication: The 2-month transition. *Dev Psychol* 41:265–280
- Lebovici S, Mazet P, Visier J et al (1989) L'évaluation des interactions précoces entre le bébé et ses partenaires. Eshel, Paris
- Lebovici S, Stoleru S (1999) *Le nourrisson, la mere et le psychanalyste : les interactions precoces*, 5th edn. Bayard, Paris
- Leclere C, Viaux S, Avril M et al (2014) Why synchrony matters during mother-child interactions: a systematic review. *PLoS One* 9(12), e113571
- Lester B, Hoffman J, Brazelton TB (1985) The rhythmic structure of mother–infant interaction in term and preterm infants. *Child Dev* 56:15–27
- Lorenz K (1935) Der Kumpan in der Umwelt des Vogels. Der Artgenosse als auslösendes Moment sozialer Verhaltensweisen. *J Ornithol* 83:289–413
- Mazet D, Lebovici S (1998) *Psychiatrie périnatale, parents et bébé : du projet d'enfant aux premiers mois de la vie*. PUF, Paris
- Mazet P, Stoleru S (2003) *Psychopathologie du nourrisson et du jeune enfant, Developpement et interactions precoces*. Masson, Paris
- Meltzoff A (1995) Understanding the intentions of others: re-enactment of intended acts by 18-month-old children. *Dev Psychol* 31(5):838–850
- Missonnier S (2007) Le premier chapitre de la vie ? Nidification foetale et nidation parentale. The first chapter of life ? *Fetal Nesting Parent Nidation* 50(1):61–80
- Peirano P, Algarín C, Uauy R (2003) Sleep-wake states and their regulatory mechanisms throughout early human development. *J Pediatr* 143(4 Suppl):S70–S79
- Petersen J, Jahn A (2008) Suspicious findings in antenatal care and their implications from the mothers' perspective: a prospective study in Germany. *Birth* 35(1):41–49
- Pfaundler M (1915) Vorfensterlager zur Freiluftbehandlung von Säuglingen. *Eur J Pediatr* 13(5):282
- Rabain-Jamin J (1989) Culture and early social interactions. The example of mother-infant object play in African and native French Families. *Culture et interactions sociales précoces. L'exemple des jeux mère-enfant dans des familles africaines et françaises* 4(2):295
- Saint-Georges C, Chetouani M, Cassel R et al (2013) Motherese in interaction: at the cross-road of Emotion and cognition? (a systematic review). *PLoS One* 8(10)
- Siddiqui A, Hagglof B (2000) Does maternal prenatal attachment predict postnatal mother-infant interaction? *Early Hum Dev* 59(1):13–25
- Spitz RA (1946) Anaclitic depression. *The Psychoanalytic Study of the Child* 23:14–31
- Stern D (1985) *The interpersonal world of the child. A view from psychoanalysis and developmental psychology*. Basic Books, New York
- Tomasello M, Carpenter M, Call J, Behne T, Moll H (2005) Understanding and sharing intentions: The origins of cultural cognition. *Behavioral and Brain Sciences* 28:675–691
- Trevarthen C, Aitken K (2003) Intersubjectivité chez le nourrisson : recherche, théorie et application clinique. *Devenir* 15(4):309–428
- Tronick EZ, Als H, Brazelton TB (1977) Mutuality in mother-infant interaction. *J Comm* 27:74–79

- Tronick EZ, Als H, Brazelton TB (1980) Monadic phases: A structural descriptive analysis of infant-mother face to face interaction. *Merrill-Palmer Quartely* 26:3–24
- Tronick EZ, Cohn JF (1989) Infant-mother face-to-face interaction: age and gender differences in coordination and the occurrence of miscoordination. *Child Dev* 60(1):85–92
- Viaux-Savelon S (2014) Le diagnostic antenatal. In: Guedeney A (ed) *Petite enfance et psychopathologie*. Elsevier Masson, Paris, pp 171–190
- Viaux-Savelon S, Dommergues M, Rosenblum O et al (2012) Prenatal ultrasound screening: false positive soft markers may alter maternal representations and mother-infant interaction. *PLoS One* 7(1), e30935
- Wan MW, Green J, Elsabbagh M et al (2013) Quality of interaction between at-risk infants and caregiver at 12–15 months is associated with 3-year autism outcome. *J Child Psychol Psychiatry* 54(7):763–771
- Weisman O, Delaherche E, Rondeau M et al (2013) Oxytocin shapes parental motion during father-infant interaction. *Biol Lett* 9(6):20130828
- Winnicott DW (1947, 1969). *La haine dans le contre-transfert*. De la pediatrie à la psychanalyse. Payot, Paris
- Wolff PH (1967) The role of biological rhythms in early psychological development. *Bulletin of the Menninger Clinic* 31:197–218
- Wright K (1991) *Vision and separation: Between mother and baby*. Northvale, NJ, Jason Aronson

Part II

Parental Mental Illness, Parenting Skills and Infant Development

Impact of Parental Psychiatric Illness on Infant Development

4

Jeannette Milgrom, Jennifer Ericksen,
and Anne Sved-Williams

Abstract

The impact of maternal mental health on parenting and infant development is significant. Whilst all women experience a range of emotions during their transition to parenthood, some will develop symptoms of anxiety and depression that resolve themselves over time, whereas others may develop a mental health disorder that requires treatment. This chapter will consider a range of perinatal mental health disorders both antenatally and postnatally and their effect on the developing infant. High and low prevalence disorders will be covered (including major depressive disorders and psychotic illnesses) as well as the particular difficulties women with borderline personality experience (BPD) when parenting. The latter condition is particularly associated with maternal emotional dysregulation postnatally (Yelland et al. *Australas Psychiatry*, 2015) and has profound effects on

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parenting capacity and infant development (Newman et al. *Aust N Z J Psychiatry* 45:109–22, 2011).

A range of mechanisms and factors that mediate or moderate the association between maternal psychiatric disorders and infant outcomes will be considered, including the significance of the early mother-infant relationship and psychosocial factors that often contribute to the development of mental health disorders (Robertson et al. (*Gen Hosp Psychiat* 26: 289–295, 2004); Beck (*Nurs Res* 50:275–285, 2001); Beck (*Nurs Res* 45:225–230, 1996); O’Hara and Swain (*Int Rev Psychiatry* 8:37–54, 1996)). Implications for treatment will also be covered.

Antenatal Depression and Anxiety

Around 1 in 10 pregnant women will experience antenatal depression of sufficient severity to meet criteria for major or minor depression (Gavin et al. 2005). The effect on pregnant women is devastating, as they struggle with their flat affect and a variety of symptoms that may include lowered mood and/or pervasive loss of interest, weight loss or gain, sleep disturbance, lack of energy, feeling agitated or slowed down, worthlessness or guilt, loss of concentration and possibly thoughts of death, suicide and sometimes infanticide. Many depressed pregnant women will also experience co-morbid anxiety symptoms, and a significant proportion will meet diagnostic criteria for anxiety disorders (Mauri et al. 2010). Britton (2011) reports a high prevalence of anxiety symptoms in pregnant women (up to in 25 %), often typified by excessive worry that is hard to control, restlessness, irritability, muscle tension, difficulty concentrating or a range of somatic symptoms. A complex interplay between anxiety and depressive symptoms in pregnancy has been described (Rallis et al. 2014) including a higher probability of postnatal depression for women with antenatal anxiety (Austin et al. 2007).

Effects of Antenatal Depression and Anxiety on Infant Development

Much research endeavour has focused on the effects of maternal antenatal anxiety and stress (including stressful life events (SLE) and natural disasters) and also on the effects of maternal antenatal depression on foetal, infant and child developmental outcomes.

There is substantial evidence that antenatal maternal depression, anxiety and stress are associated with negative effects on child development (Monk et al. 2012; Talge et al. 2007; Van den Bergh et al. 2005). These effects are seen soon after birth, with reports of newborn fussiness, non-soothability and altered infant heart rate variability in infants whose mothers were depressed in pregnancy (Monk et al. 2012; Zuckerman et al. 1990).

Consistently reported longer-term problems include attention deficit hyperactivity disorder (Van Batenburg-Eddes et al. 2013; Rodriguez and Bohlin 2005;

O'Connor et al. 2002a) and emotional difficulties (Van Den Bergh and Marcoen 2004; O'Connor et al. 2002b). Impaired cognition (some studies, not all, have shown small associations), motor skills (inconsistent results) and language development (Zhu et al. 2014; Charil et al. 2010; Bergman et al. 2007; Di Pietro et al. 2006; Laplante et al. 2004; Huizink et al. 2003) have also been reported. In addition, the associations specifically between antenatal depression and children's developmental outcomes (Waters et al. 2014; Hayes et al. 2013; Grigoriadis et al. 2013) appear to have enduring effects to adolescence (Pearson et al. 2013; Pawlby et al. 2009; Van den Bergh and Marcoen 2004).

Clinically significant effects on child outcomes for both depression and anxiety have been reported even with mild to moderate symptoms (O'Connor et al. 2014).

Mechanisms Antenatally

The effects of antenatal depression and anxiety on child outcomes appear to be mostly due to direct effects on the developing foetus (e.g. Glover 2015; Glover 2014; Bergman et al. 2007; O'Connor et al. 2002a). It has been suggested that circulating maternal stress hormones (such as cortisol) can affect foetal programming with long-term changes in the infant's hypothalamic-pituitary-adrenal (HPA) axis (de Weerth et al. 2005).

There are some empirical reports of changes in cortisol levels in pregnant women who are depressed and anxious (Pluess et al. 2010; Evans et al. 2008; Field et al. 2004; Lundy et al. 1999), but their relationship with later child outcome is still being investigated (Glover 2014; O'Connor et al. 2013). Other biological pathways have been proposed, including changed placental permeability and changes involving serotonin (Glover 2015). Further biological pathways are likely to be elucidated in humans which will build on the clear demonstration of abnormal effects due to prenatal stress on the offspring's brain in animal studies. More than 5000 articles have been published in the last 7 years (Schuurmans and Kurrasch 2013; Charil et al. 2010; Van de Hove et al. 2006) suggesting such an association.

Glover (2015) estimates that around 10–15 % of the attributable load in child emotional/behavioural outcomes appears to be due to prenatal maternal anxiety and depression (Glover 2015; O'Donnell et al. 2014). Other factors which may also explain some variance including genetics, postnatal mood and behaviours or obstetric sequelae linked to depression and anxiety in pregnancy, including poor self-care, inadequate maternal nutrition, drug or alcohol abuse, preterm birth and low birth weight (Monk et al. 2013; Dayan et al. 2006; Austin 2003; Orr et al. 2002; Chung et al. 2001; Coverdale et al. 1996).

Implications for the Treatment of Antenatal Depression

Surprisingly, despite the strong association between mood in pregnancy and infant outcomes, there are few reports on the effectiveness of psychological treatments for pregnant women with depression and anxiety (Sockol 2015; Dennis and Hodnett 2007). In pregnancy, we know that many women express a preference for

non-pharmacological treatments due to concerns about the impact on the developing foetus and there is a need to carefully balance costs and benefits to the foetus of pharmacological interventions (Galbally et al. 2014; Marroun et al. 2014; Domar et al. 2013; Healy et al. 2010). Of the antenatal psychological treatments reported (as distinct from preventive programmes), many are limited by small sample sizes and methodological problems. Nevertheless, a variety of studies have reported improvement in antenatal depression with interpersonal therapy (Spinelli et al. 2013), massage or acupuncture (Dennis and Dowswell 2013), cognitive-behavioural therapy (CBT) (Green et al. 2015; Burns et al. 2013; McGregor et al. 2013; O'Mahen et al. 2013) and mindfulness (Woolhouse et al. 2014). The pilot study by Milgrom et al. (2015) is the first to demonstrate not only the efficacy of CBT treatment in pregnancy for maternal mood but also the beneficial impact on infant milestones including communication abilities, problem solving and stress reactivity to 9 months of age. Further research on longer-term protective effects of early treatment is needed.

Postnatal Depression and Anxiety

Around 12 % of new mothers have either a minor or major depressive episode 3 months after delivery, and 7 % have a major depression (Gavin et al. 2005). Depressed mood is accompanied by a range of symptoms, as described for antenatal depression. High anxiety is also often co-morbid and compounds the situation (Wisner et al. 2013; Milgrom et al. 2005). Many of these women will have been depressed in pregnancy, as antenatal depression is a powerful predictor of postnatal depression (Milgrom et al. 2008). In addition, symptoms of postnatal depression become more difficult to manage when coupled with the demands and need to care for an infant.

Short-Term Effects of Postnatal Depression (PND) on the Infant

Maternal depression following childbirth impacts on infants both in the short and the longer term. In the short term, a range of detrimental effects on the mother-child relationship have been reported (Pawlby et al. 2008; Grace et al. 2003; Murray et al. 2003; Hay et al. 2001; Murray et al. 1999; Beck 1998; Murray and Cooper 1997; Murray et al. 1996). Typically, in the months after birth, depressed mothers have less eye contact and responsiveness with their infants and are often disengaged and emotionally flat (Reck et al. 2004; Murray et al. 2003; Field 1997; Murray and Cooper 1997). Infants of depressed mothers in turn show increased sad affect and distress (Field et al. 1990).

More than two-third of mother-infant relationships are classified as dysfunctional following postnatal depression, as measured by the Parenting Stress Index (PSI) (Milgrom et al. 2015; Milgrom et al. 2011; Milgrom et al. 2006; Milgrom et al. 2005; Milgrom and McCloud 1996).

Longer-Term Consequences and Postnatal Depression

Longer-term consequences for infants of depressed mothers include poor social and cognitive outcomes to school age (Bernier et al. 2010; Stams et al. 2002; NICHD Early Child Care Research Network 1999; Murray et al. 1996), poor early school performance (Cairns et al. 1998; Stein et al. 1991), attention deficit hyperactivity disorder (Galera et al. 2011; Mount et al. 2010), poorer self-regulatory capacities (Feldman et al. 1999) and anxiety (Stein et al. 2014). For example, gaze aversion and fussiness at 3 months has been reported to correlate with shorter attention spans and language production delays at 3 years (Field et al. 1985; Pawlby and Hall 1980). This is consistent with studies showing that the quality of the mother-infant interaction is an important contributor of later social competence (Kelly and Barnard 2000) and the development of a secure child attachment (Fuentes et al. 2009; Koren-Karie et al. 2002; Raval et al. 2001; Isabella 1993; Ainsworth et al. 1978).

Women diagnosed with a depressive disorder postpartum were shown in a 3-year longitudinal study to continue to score low on an attachment subscale of the Parenting Stress Index (PSI) (Milgrom and McCloud 1996). In a meta-analysis of clinical samples using diagnostic interviews to recruit depressed women, infant attachment insecurity has been reported (Coyl et al. 2002; Atkinson et al. 2000; Martins and Gaffan 2000).

Effects of maternal depression on development have been reported to adolescence (Feldman 2010). A compounding effect may exist as antenatal depression (AND) increases the risk of adolescent depression (Pearson et al. 2013) and is associated with disorganised attachment, independently of the effects of postnatal depression (Hayes et al. 2013). Chronicity of depression appears important with an additive effect on child psychiatric disorders to 6 years for mothers with chronic and severe symptoms (Matijasevich et al. 2015).

Postnatal Anxiety

Disentangling the effects of depression and anxiety is difficult as co-morbidity is high. Nevertheless, some studies suggest independent effects of both anxiety and depression on child outcomes. Glasheen et al. (2010) conducted a systematic review of the effects of postnatal maternal anxiety on children and found an association between anxiety and emotional difficulties in the child. Bosquet Enlow et al. (2011) reported that mothers with PTSD had infants with an increased risk of experiencing emotional regulation difficulties even after depressive symptoms had been adjusted for.

Mechanisms Postnatally

The impact of postnatal depression and anxiety on child development may occur via a number of possible mechanisms.

The mother-infant relationship is likely to be an important mediator between depression trajectories and infant and child development (e.g. Campbell et al. 2007).

Increasingly, the quality of the early mother-infant relationship is considered a foundation for learning, language, interpersonal relationships and emotional regulation, and this is supported by both the empirical and theoretical literature. A number of theories explain the important role of maternal sensitivity in supporting infant development as her sensitivity functions as a model for the child's own emotional development and regulation of emotions (McElwain and Booth-LaForce 2006; Stams et al. 2002). Early mother-infant interactions involve micro-exchanges of behaviours between the child and mother (Tronick and Weinberg 1997; Stern 1985; Brazelton et al. 1974). A successful interaction requires an emotionally attuned, 'sensitive' mother who is aware of her infant's cues and is contingently responsive. Tronick (1989) and Jaffe et al. (2001) described the micro-exchanges between mother and infant and the need for both matching and mismatching as the mother supports the infant's capacities to regulate behaviour and affect. Behavioural synchrony is another related aspect of the mother-infant interaction which plays an important role in the formation of attachment between mothers and their babies (Penman et al. 1983, 1984).

Depression may interfere with these processes (Monk et al. 2008; Joormann et al. 2007; Weinberg et al. 2006; Tronick and Weinberg 1997).

Whilst postnatal depression appears to influence the mother-infant interaction and it is the quality of this early relationship that appears central to later infant development, a biopsychosocial model implicates numerous influences in this chain of events. Figure 4.1 depicts the major biopsychosocial factors contributing to postnatal depression which in turn may also influence infant development. These are detailed below:

Pre-existing Vulnerability Factors

In a large study involving >40,000 pregnant women, Milgrom et al. (2008) reported factors found to have predictive value for postnatal depression. Six variables were found: antenatal depression, antenatal anxiety, major life events, practical/emotional support, partner support and previous history of depression.

Whilst these factors emerge consistently in studies of psychosocial risk factors in depressed mothers, other important risk factors that will impact on a woman's parenting capacity include a mother having had a poor relationship with their own mother, any history of or current domestic or family violence (Howard et al. 2013a), childhood abuse (Banyard et al. 2003; Pears and Capaldi 2001) or drug and/or alcohol abuse (Ross and Dennis 2009). These experiences, especially those in early life, may contribute to a reduced competence in parental care and interactive abilities (Raphael-Leff 1991). In addition both depression and parenting need to be understood in the context of a woman's cultural and religious beliefs, major traumas (including migration due to war) as well as the experience of growing up with family members struggling with their own mental health problems (Stein et al. 2014).

Howard et al. (2014) in reviewing the evidence conclude that a history of any psychopathology and psychosocial adversities are key predictors of mental health disorders in the perinatal period, but few systematic reviews exist, and there is a need for more studies using standardised diagnostic measures, longitudinal approaches and comparison groups. The impact of psychosocial risk factors on the infant warrants further investigation.

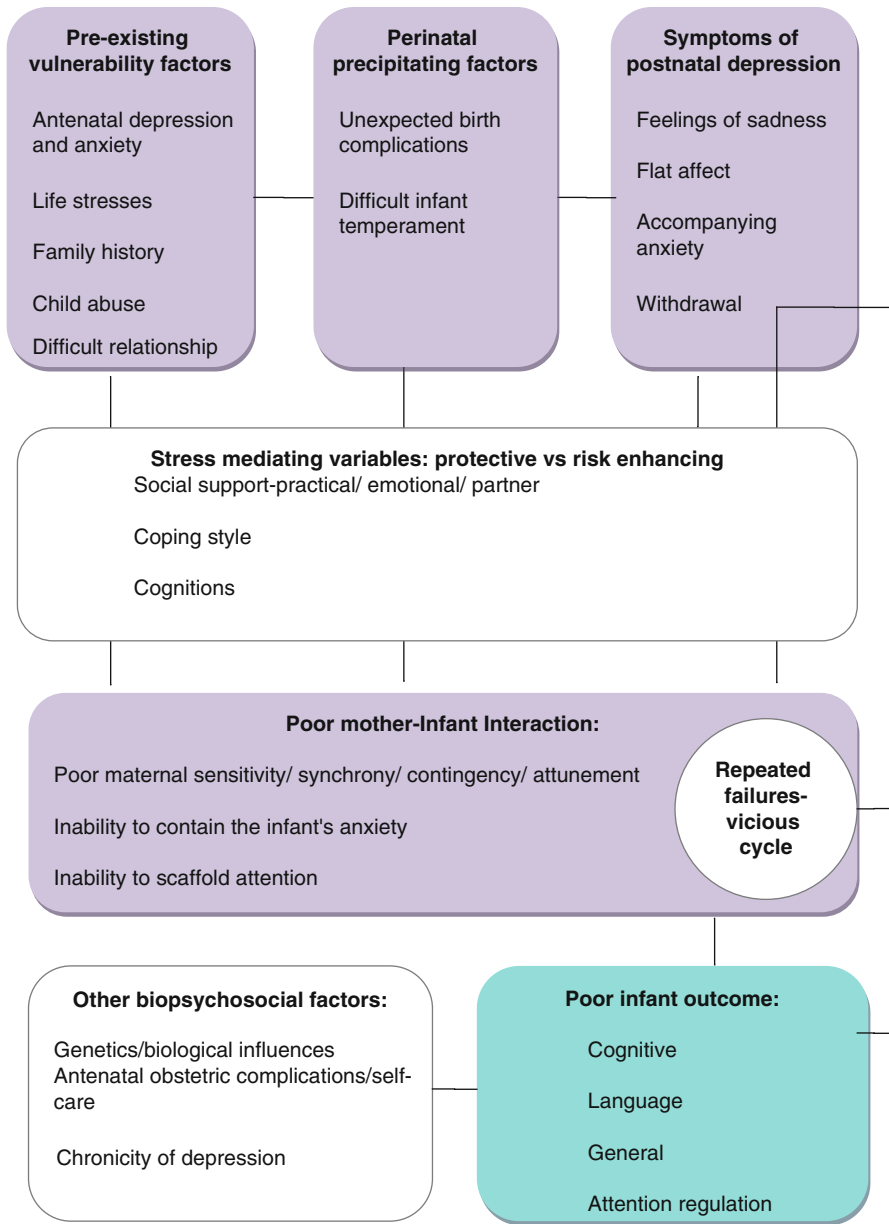


Fig. 4.1 The impact of postnatal depression on the mother-infant interaction and development can be conceptualised as having multiple influences as illustrated (Adapted from Milgrom et al. 1999)

Perinatal Precipitating Factors

A wide range of stressors including a difficult or premature birth, illness or an infant with a difficult temperament (e.g. infants who are very reactive) may reduce a mother's capacity to respond to her infant as well as her feelings of competence (Teti et al. 1990). Feelings and symptoms of depression may be precipitated in vulnerable mothers.

Symptoms of Postnatal Depression and Anxiety and the Direct Effect on Interactions

Feelings of sadness, flatness, general loss of interest as well as anxiety make it difficult for depressed women to be emotionally available and engage in a responsive interaction with their infant. A successful interaction requires a series of the micro-behavioural exchanges that may be impaired due to symptoms of both depression and anxiety. Parental responsiveness, or *contingency*, during social interactions is considered key to early interaction and involves the ability to notice and respond appropriately and immediately to infant cues. Depressed women can find it difficult to engage their infants in an animated way and so are less likely to maintain their infant's attention or contain to their infant's anxiety. The latter is likely to be further compromised if a mother is also anxious.

The extent of the impact of depression will be moderated by a number of factors that can both accentuate difficulties or be protective.

Stress Mediating Factors: Maternal Cognitive Style and Social Support

Maternal cognitive style may moderate the effects of depression on parenting (Whitton et al. 1996; Cutrona and Troutman 1986). For example, maternal self-efficacy in particular may influence how a mother interacts with her infant and behaves in ways that lead to low rates of reinforcement from their infants.

In addition, a mother with a poor sense of competence may think her baby would be better off without her and feel a sense of failure as a parent, further contributing to her depression (Cox 1988). Cognitions regarding close relationships have been found to raise the risk for depression (Murray 2014; Gjerde 1995; Gore et al. 1993). On the other hand, high maternal self-efficacy could serve as a protective factor for coping with a demanding infant making it less likely she will experience depressed mood.

Other mediating variables may include parenting skills and resources. Stein et al. (2014) recently suggested that 'maternal programming' may differentiate some mothers who have a predisposition to positive parenting. Maternal reflective functioning (RF) capacity or 'mentalisation' has also been proposed as a mediating factor. Fonagy and colleagues (Fonagy et al. 2002) define the construct as referring to the mother's capacity to understand her baby's behaviour whilst considering the baby's underlying mental states and intentions. There is a growing literature suggesting that maternal reflective capacities make it possible to accurately recognise and sensitively respond to the baby's internal states of arousal and are the key to sensitive care giving and ultimately secure attachment. Further, a parent high in RF can see their child as different from themselves in its needs, feelings, desires and intentions. Maternal representations of the baby and maternal caregiving behaviour are

thought to be the manifestations of reflective functioning (Slade et al. 2005; van Ijzendoorn 1995). Grienberger et al. (2005) have proposed that reflective functioning is a mechanism in the transgenerational transmission of attachment.

Similarly, social support including parenting alliance may have a protective function partly by enhancing maternal self-efficacy beliefs (Abidin 1995). Satisfaction with partners has been found to be correlated with positive mother-infant interactions (Klaus et al. 1982).

Poor Mother-Infant Interactions and Child Outcomes

Impaired mother-infant relationship may be a prime mechanism whereby postnatal depression and anxiety exert an impact on child development.

As described earlier, there is evidence that poor sensitivity to infant distress is a predictor of a child's early social, emotional, cognitive and behavioural self-regulation (Parfitt et al. 2014; Leerkes 2011; Clark et al. 2008; Cirulli et al. 2003; Stams et al. 2002). In a study designed to test the mediating role of early interactions in a sample of women with PND, poor child cognitive and behavioural outcomes at 4 years of age were found to be mediated by maternal responsiveness at 3 months postpartum (Milgrom et al. 2004, 2006).

Recently, Murray et al. (2015) have speculated that whilst *maternal responsiveness* (or contingency) appears to be important for child cognitive development, other interactional behaviours may also influence later cognitive performance, such as the mother's ability to support the infant's attention and engagement with the environment (Eshel et al. 2006; Slater 1995; Fagen and Ohr 1985). On the other hand, parental sensitivity to the infant's emotions may assist in developing emotional regulation, and being affectively attuned to the child's behaviour may provide 'emotional scaffolding' where an infant's difficult emotions such as anxiety are contained.

A direct effect on brain development is also implicated. There is a growing awareness of the importance of early experiences in shaping infant brain development, based on animal studies as well as emerging evidence from human infants. During the first 3 years of life, brain development is at its fastest and the brain is at its most malleable showing evidence of plasticity and susceptibility to stress. Stressful experiences may influence brain organisation, and disrupted mother-infant interaction may be an important source of stress (Mustard 2008; Cirulli et al. 2003; Perry et al. 1995). Brain development in turn underpins cognitive, behavioural and social development. Recently, we were able to demonstrate that sensitivity training for parents in the Neonatal Intensive Care Nursery, involving assisting parents to recognise subtle premature infant cues, resulted in improved brain connectivity on MRI at 40 weeks gestation (Milgrom et al. 2010).

The Vicious Cycle

Dysfunctional mother-infant interactions may be resistant to change due to ongoing negative vicious cycles of repeated interactive failures (Meager and Milgrom 1996). Interactional difficulties appear to persist even when depression improves.

'A mother preoccupied with her sadness finds it difficult to engage with her infant who in turn may learn to gaze avert and may be less responsive. These infant

behaviours then lead to feelings of rejection in the mother and further withdrawal on both parts' (Milgrom et al. 1999). As early as 3 months of age, infants of depressed mothers appear to generalise their depressed style of interaction to non-depressed adults (Field et al. 1985). Mothers may depend on the responses they get from their babies for a sense of their own competence or effectiveness as a parent (Beebe 2010).

Other Biopsychosocial Factors

Importantly, chronicity of depression appears a key factor. Postnatal depression has shown consistent association with a range of poorer cognitive outcomes in children, with the persistence of the depression of particular importance. Other factors that may influence the relationship between depression and child development include socio-economic status (SES), gender, antenatal complications, illness, prematurity and genetic factors (Stein et al. 2014).

Implications for Treatment

Currently, treatment of postnatal depression generally targets maternal mood without a focus on the infant. Given the accumulating evidence that maternal depression impacts on child cognitive, behavioural and socio-emotional development and the likelihood that sensitivity in the mother-infant interaction is important, a number of studies have explored whether addressing the mother's depression alone improves outcomes for the infant. In a randomised trial of specialised treatments for PND (Milgrom et al. 2005), 162 mothers with PND were randomly assigned to a number of treatments including CBT ($n=46$) and routine care ($n=33$). Despite the success of these interventions in treating the depressive episode, the mother-infant relationship was not substantially changed (Milgrom et al. 2006). Whilst 73 % of depressed women had a dysfunctional relationship with their baby before treatment, following treatment 56 % continued to have dysfunctional relationships (compared to 3 % of non-depressed women; Milgrom et al. 2006). This is despite a significant reduction in depression below clinical thresholds. It appears that once relationship difficulties are triggered by PND, they may persist, despite improvement in maternal depression. Other studies report similar findings, using a range of depression treatments, and all show that a substantial proportion of disturbed mother-infant interactions persist without direct intervention (Forman et al. 2007; Cooper and Murray 1997).

As a result, there is growing interest in the evidence for the effectiveness of mother-infant interventions. A number of reviews and meta-analyses of mother-infant treatments have been conducted (Barlow et al. 2015; Doughty 2007; Bakermans-Kranenburg et al. 2003) although many of these interventions have not been developed or evaluated in the context of PND.

Existing programmes include interactional coaching (Field 1997); 'Wait, Watch and Wonder' (Muir 1992); 'Brazelton Neonatal Assessment Protocol' (Brazelton et al. 1974); parent-infant psychotherapy (McDonough 1993; Fraiberg 1980); and interventions targeting maternal reflective functioning such as 'Minding the Baby'

(Slade et al. 2005; Marvin et al. 2002) based on theories and developmental research describing the elements of a 'good-enough' parent interaction (Fonagy et al. 1995; Stern 1985; Winnicott 1965).

In a major systematic review of interventions that included mother-infant outcomes in the context of PND, only eight trials met inclusion criteria, but all interventions showed some improvements in mother-infant relationships (Poobalan et al. 2007). A number of studies have also shown beneficial effects in child cognitive, emotional and social development (e.g. Field et al. 2000; Cohen et al. 1999). However, only two studies have evaluated brief interventions in RCTs and a recent Cochrane Review describes these latest developments in parent-infant psychotherapy for improving parent and infant well-being (Barlow et al. 2015; Murray et al. 2003; Horowitz et al. 2001).

Surprisingly, many evaluations of mother-infant treatments have not specifically combined treatment of maternal mental health with mother-infant relationship difficulties. This is despite the finding that chronicity of depression is a key factor in later child outcomes.

The HUGS programme (Milgrom et al. 2006) is a brief 4-session intervention addressing mother-infant difficulties. This approach is in line with the conclusions by Bakermans-Kranenburg et al. (2003) that short-term mother-infant interventions (i.e. less than five sessions) appear to be as effective as 5–16 session interventions and more effective than long-term (16+ sessions) interventions.

The HUGS (Happiness, Understanding, Giving and Sharing) programme is novel in that mother-infant work is combined with treatment of maternal depression and anxiety postnatally. Although full remission of depression is not necessary to benefit from mother-infant intervention, some reduction in depressive symptoms is desirable as emotional unavailability is likely to seriously interfere with successful interactions. The 4-session HUGS programme is added to a well-evaluated 9-week cognitive-behavioural therapy intervention for PND (Milgrom et al. 2005) and builds on the therapeutic 'momentum' and skills learnt in the 9-week programme. Two essential elements central to the mother-infant relationship are targeted: (i) parent skills in communication, observation and responsiveness and (ii) distorted maternal internal representations. Exercises build on the pioneering work of Field (1997), who showed behavioural-level skills, can profoundly change interactions. Even small changes (around 10 %) in maternal responsiveness directly mediate substantial differences in outcome at 4 years (e.g. IQ) for children of depressed mothers (Milgrom et al. 2004). Thus, key behaviours are targeted for change in a brief intervention in order to begin a trajectory of positive interactions and break the cycle of negativity.

Initial findings suggest HUGS is a promising intervention for improving mother-infant relationship difficulties associated with depression (Milgrom et al. 2006). The weekly rate of improvement during HUGS (4.9 points per week) on the Parenting Stress Index was more than threefold higher than during the 9-week PND programme (1.6 points per week) and fell below threshold for dysfunctional interactions. In a playgroup adaptation of HUGS (Community HUGS), elements of the maternal depression treatment, play and movement were combined with HUGS to form a 10-week playgroup for women with adjustment difficulties. Post-treatment

scores on the PSI short form dropped below the threshold (<90) for clinically significant levels of parenting stress (pretreatment: $M=91.56$, $SD=17.67$; post-treatment: $M=81.00$, $SD=16.72$) (Ericksen et al. in preparation).

In summary, although encouraging, existing mother-infant intervention studies have been limited methodologically, most notably non-randomised designs and small sample sizes. Further research with larger sample sizes and infant follow-up is needed, and a current study is underway (Milgrom and Holt 2014).

Father's Mental Health

Research into the role of fathers' mental health in outcomes for infants and the impact on their relationship with their partners is a growing field (Ramchandani et al. 2011, 2013) but outside the scope of this chapter. A brief description of pertinent issues is provided below.

In the perinatal period, around 5 % of new and expectant fathers will experience depression, anxiety and other forms of emotional distress (Condon 2004; for a more detailed review of the incidence of paternal perinatal depression, see Fletcher et al. 2015). Paternal mental health disorders (depression, anxiety and other forms of distress) are also associated with increased risk of emotional and behavioural disorders in offspring (Gutierrez-Galve et al. 2015; Velders et al. 2011) including language development (Paulson et al. 2009) and depression at 18 years (Pearson et al. 2013).

The review by Stein and colleagues (Stein et al. 2014) concludes that maternal and paternal postnatal depression have similar effects on the child's behavioural outcomes but that maternal depression has a greater effect on the child's emotional development. The younger the child in the study, the greater the effect of maternal depression, with older children more affected by paternal depression (Connell and Goodmans 2002).

Depression in fathers may also contribute to maternal distress, just as maternal depression can affect their partner's mental health. Living with a depressed partner is itself a risk factor for depression (Burke 2003). Thus, given the reciprocal relationship between maternal and paternal depression/distress, it is important to also assess whether the partner's mental health is an issue that needs to be addressed, either in the context of the mother's presentation or independently. In addition the relationship between the couple may be at risk (Milgrom and McCloud 1996).

Women with Severe Mental Illness and Their Infants

Psychotic illnesses, mainly schizophrenia and bipolar mood disorder, but also those related to substance misuse, clearly make a major impact on women who are unfortunate enough to suffer from these conditions which as a group are traditionally called the severe mental illnesses (SMI). For many decades it has been observed that deleterious impacts are highly likely to extend to their infants and families (Sved Williams 2004). Until relatively late in the twentieth century, genes and environment

were dichotomised in debates about causation of problem outcomes in offspring. As science has expanded on many fronts including genetic, molecular, neuroscientific, radiological and epidemiological, more sophisticated models focus on the interaction between heredity and environment and how one influences the other in patterns which are likely to begin antenatally and then flow through into early postnatal life (Saffery and Novakovic 2014). In this section some of these more general issues will be summarised before providing more specific information relating to each of the SMIs mentioned already and also to borderline personality disorder.

Winnicott's goal of good-enough parenting is generally used to consider parents tuning in sensitively to their infants enough of the time to meet their needs (Winnicott 1965), as described earlier. Sadly, for parents with SMI, Maslow's hierarchy of needs (Maslow 1943) may provide a better framework to consider whether outcomes for infants of parents with mental illness (IOPMI) are good enough, as it is clear that SMI can interfere with provision of adequate parenting at all levels including at quite fundamental levels of need, such as the need for safety, adequate food and sleep and appropriate accommodation.

In broad general terms, relevant individual factors determining outcome for infants include genetic inheritance of both parents, risk and protective factors for physical and emotional health during pregnancy and birth and early life experiences related to attuned parenting. Beyond this, epidemiological studies clearly show that socio-economic status, parental education and single-parent status have a cumulative effect on child health (Bauman et al. 2006), and these risk factors are frequently present in marginalised women with SMI. Cutler et al. describe the crucial role that early life plays in the co-evolution of socio-economic status and adult health (Cutler et al. 2008). People with SMI are more likely to be unemployed, marginalised by society and living in poverty, and so these general factors are likely to impact substantially. The complex patterns of factors involved at individual and societal levels are extremely well summarised diagrammatically by Leight et al. (2010) and are consistent with Maslow's (1943) hierarchy of needs beginning with basic physiological needs (food, water, etc.), to safety (resources, health, property, etc.), love (friendship, family, etc.), esteem (self-esteem, respect by others, etc.) and self-actualisation (creativity, acceptance, etc.). Leight et al. (2010) draw on the original concepts from Misra et al. (2003) and present an integrated perinatal health and mental health framework beginning with distal factors (genetic, physical and societal) to proximal factors (biomedical and behavioural/psychological) and processes. Perinatal events and outcomes then follow (such as perinatal mental health issues), as also described by Milgrom et al. in Fig. 4.1.

Studies of pregnant women with SMI often focus on medical outcomes of pregnancy, in particular low birth weight, prematurity and neonatal deaths. There is no doubt that prematurity adds to the potential for negative outcomes on a large range of fronts including perinatal death, neurodevelopmental difficulties, breastfeeding problems, cerebral palsy, asthma in childhood, poor school performance, schizophrenia and young adult diabetes (Machado et al. 2014; Allen et al. 2011).

Neurodevelopment is increasingly better understood through a range of complex investigations and studies across several disciplines. Marques et al. (2013) review

maternal nutrition perinatally and its interrelationship with immune system development and neurodevelopmental disorders. Sherman et al. (2015) focus on gut microbiota specifically and the interplay with neurodevelopment. The focus for Swain et al. (2014) is the oxytocin system postnatally in both mothers and fathers. Functional magnetic resonance imaging (fMRI) provides insights into the brain circuits in fronto-limbic systems involved in parental responses to infants and the interrelationship with oxytocin in parental responsiveness to infant cues. They propose that these factors may be modifiable, for instance, with the administration of oxytocin.

Thus, there is increasing knowledge at micro- and macrolevels of some of the potential mechanisms by which healthy pregnancy and early life and its antithesis prematurity, low birth weight and poor maternal care may influence life-long developmental patterns, as first suggested by Barker (1990). For women with SMI, risk factors of prematurity and low birth weight are further complicated by higher rates of smoking (Judd et al. 2014; Nguyen et al. 2013), substance use and psychotropic medication as well as other lifestyle factors of intimate partner violence (Frayne et al. 2014), presumably with higher levels of risk. Much is still unknown; for instance, a recent review (McCull et al. 2013) found insufficient research on the nutritional state of pregnant women with SMI to form any conclusions regarding status. Research to provide more factual information and further elucidate the interplay between these many individual and general factors will provide more answers in the next decade about pathways to better outcomes.

Schizophrenia

Schizophrenia is generally considered to be the SMI with the most enduring overall effects on the quality of daily life and mental functioning. The features of this illness have been well reviewed already in this book, but in brief, the so-called 'positive' symptoms such as delusions and hallucinations may impact directly on the infant by perhaps guiding the woman to behave strangely, sometimes harmfully, to her infant, whereas the 'negative' symptoms cause the mother to be withdrawn, perhaps slow to learn and disorganised, all of which can potentially interfere dramatically with her ability to respond to her infant appropriately. Infants born to mothers with schizophrenia have been less well studied than those born to anxious or depressed women despite its universality across cultures and its generally accepted prevalence of 1 %, although a more recent study showed that countries with bigger income disparity between rich and poor appear to have higher rates (Burns et al. 2014).

Sadly, schizophrenia has effects for women and their infants from preconception onwards. During the earlier twentieth century, women with schizophrenia were regarded as less fertile than the general population (Laursen and Munk-Olsen 2010). In the last 30 years, treatments have changed so women with SMI are now based in the community rather than in single-sex asylums. Next, second-generation antipsychotics (SGA) are generally the current drug treatments of choice, and these medications do not increase prolactin levels with attendant infertility as with the

first-generation antipsychotics (FGA). Thus, a more recent study (Vigod et al. 2012) shows trends towards change, with a general fertility rate of 1.16 % higher in women with schizophrenia conceiving in 2007–2009 compared to a decade earlier. It still seems that fertility rates are lower for women with schizophrenia (Laursen and Munk-Olsen 2010).

From conception, risks for women with schizophrenia mount. Whilst miscarriage rates are little mentioned in the literature, it is clear that there are substantial foetal and neonatal concerns with this maternal illness. Bennedsen (1998) summarised many potential risk factors for low birth weight (LBW), preterm birth and neonatal death in both the general population and women with schizophrenia. In the general population, these include smoking, alcohol, illicit substance use and psychotropic medication, all of which have significantly increased rates in the schizophrenic population. Not surprisingly, therefore they also found (Bennedsen et al. 1999) increased rates of preterm and LBW births in women with schizophrenia. Jablensky et al. (2005) discuss higher incidence of obstetric complications such as placental abruption, LBW and cardiovascular complications in offspring. As the obstetric complications were more common in women who already had this diagnosis prior to delivery, they conclude that maternal risk factors along with biological and behavioural concomitants of this illness may be major determinants of outcomes rather than genetic risk.

In a series of 63 patients, Matevosyan (2011) found higher rates of smoking, older age and less antenatal care in the mothers and a doubled risk of low APGAR scores, intrauterine growth retardation and congenital abnormalities in the offspring. Finally, Vigod et al. (2014) in a large Canadian study describe many maternal health complications including pre-eclampsia, venous thromboembolism and gestational diabetes and infants who were more likely to be preterm, small for gestational age and also large for gestational age, the latter factor highly likely to be related to the maternal use of SGAs.

Postnatally, studies have focused on the quality of interaction between the mother and infant and also longer-term outcomes. Most studies have found mothers to lack sensitivity and responsiveness to their infants, with associated infant avoidance (Riordan et al. 1999; Wan et al. 2007), maternal unresponsiveness, understimulation, inattention, a lack of expressed positive affect (both physical and verbal), expressions of hostility and a disorganised parenting routine (Snellen et al. 1999). Wan et al.'s later study (2008) identified markedly low rates of positive maternal responsiveness.

Pawlby et al. (2010) have challenged some of these findings in that not only were mothers with schizophrenia similar to other mothers in a healthy control group in their videotaped interactions with their infants but also that these mothers could learn to improve their interactions in a mother-baby unit by learning to talk more to their infants.

In trying to align these conflicting findings, it is clear that sample sizes generally are small, with many combining all mothers with SMI so group sizes of women with schizophrenia are small, usually around 15 mothers.

A more recent larger-scale prospective longitudinal study focusing on neurological problems (Buka et al. 2013) found a twofold increase at birth in these problems

in infants of 58 mothers with schizophrenia compared with both infants of mothers with affective psychotic illnesses and a control group.

Studying women discharged from mother-baby units, Howard et al. (2004) noted that women with schizophrenia may have some parenting capacity. These authors found many women were discharged from a mother-baby unit (MBU) with their infants, with approximately 30 % requiring social services supervision. The latter outcome was more common with lower social class and partner psychiatric illness. Snellen et al. (1999) described 40 % of mothers with schizophrenia needing child protective service involvement after leaving an MBU, although 87 % of mothers were discharged with their infants, a much higher figure than the 50 % in an earlier study by Kumar et al. (1995).

In summary, infants of mothers with schizophrenia have many potential risk factors which may throw them from optimal life pathways, beginning with increased genetic risk, complicated by many adverse factors antenatally and then further compounded by postnatal interactional difficulties with their mother identified in the majority of studies.

Space precludes a full account of infant outcomes when pregnant and postnatal women abuse illicit substances. It is clear that infants suffer substantial compromise. Johnson and Balain (2014) provide an overview of outcomes with substance misusing mothers and neonatal abstinence syndrome in their offspring in a UK neonatal nursery over 5 years. Some authors focus on specific substance abuse such as amphetamines (Diaz et al. 2014; Gorman et al. 2014), cocaine (Molnar et al. 2014) and cannabis (Jacques et al. 2014; Saurel-Cubizolles et al. 2014). Beyond pregnancy-related effects, the general effects of psychosis will pertain to these infants as well as the often chaotic lifestyle and drug-seeking focus of affected women. Infants need parents who keep them in mind, and this is not always the case with substance-abusing mothers. Whilst some will reduce or cease their use because of pregnancy (Haug et al. 2014), this is certainly not a universal finding (Wong et al. 2014).

Resilience and positive outcomes however have long been studied alongside the gloomy prognosticators discussed (Anthony 1987), and the challenge remains to better identify the modification of risk and enhancement of protective factors. Providing support for women of childbearing years who have schizophrenia in the view of several authors begins with genetic counselling (Hippman et al. 2014), contraceptive advice and active illness management with advice on lifestyle prior to conception (Grootens 2014; Seeman 2013). Others (Nguyen et al. 2013) have suggested better antenatal care with improved team work from perinatal psychiatrist, obstetrician, patient and her family with highly proactive follow-up given the array of potential problems. Cigarette smoking, for instance, can be targeted (Howard et al. 2013b), although this group found that whilst women were motivated to quit, they found it difficult to do so.

Postnatally, services such as mother-baby units (MBUs) offer comprehensive care for the mother and infant, which includes active treatment of the illness, mother-infant interactional help and also the active involvement of child protection services where necessary to help keep mother and infant together and functioning well. At Helen Mayo House, an MBU in South Australia, a typical admission would be that of Claudia and her 1-week-old infant Basil, admitted directly from an obstetric facility

because of midwife concern regarding Claudia's parenting. Claudia had chronic schizophrenia, reasonably well stabilised on high-dose quetiapine, a second-generation antipsychotic, but she was blunted in her affect, slow to learn and sometimes lacking in concentration, making it hard for her to stay with her infant for the time he needed to bottle-feed – she had decided antenatally that breastfeeding would be too hard for her. It was clear that Claudia wished to care for Basil but found it too hard to do so without help and that she was isolated, with no extended family support and no ongoing contact with Basil's father. During her 5-week stay in the MBU, Claudia gradually learned to make bottles with sufficient cleanliness, feed them to Basil in his time frame and master the other tasks of parenting such as changing and bathing him. At discharge, she moved to accommodation for single mothers, with in-house support, with a longer-term plan for private accommodation with a parent support worker, childcare and ongoing mental health care. This was all supervised by child protection workers, supported by legal orders to ensure ongoing appropriate care for Basil.

Community programmes for women with SMI have recently been reviewed (Bee et al. 2014) with disappointing findings in terms of child outcomes, although it is clear the mothers value support provided. For those who bear both the mother with schizophrenia and the infant in mind, challenges remain in ensuring all is well enough on both fronts (Seeman 2004).

Bipolar Mood Disorder and Puerperal Psychoses

Many authors have attempted to delineate the features of postpartum bipolar mood disorder (BPAD) and puerperal psychoses, and whilst differences are occasionally highlighted, the literature on effects on infants of both of these conditions is relatively small, and in some cases, distinctions are unclear (Jones et al. 2014). Thus, they will be considered together as it is likely that most influences on infant outcomes will be similar.

Although studies generally cannot tease out effects of illness from effects of medications used to treat the illness, it seems clear that women with BPAD carry risk for adverse obstetric and neonatal outcomes. Two large birth register cohorts have had similar results. Lee and Lin (2010) in a large Taiwanese study found significant increases in prematurity, small for gestational age and low birth weight infants. Maccabe et al.'s (2007) large Swedish study found similar results, even after controlling for smoking. Working in a high-risk antenatal clinic setting which included women with schizophrenia, BPAD and non-psychotic SMI, an Australian study (Nguyen et al. 2013) concluded that there were increased rates of obstetric and neonatal complications, confounded by increased risk factors including rates of smoking, alcohol and substance misuse as well as psychotropic medications. Finally, Nguyen et al. (2014) in their retrospective study between 2005 and 2008 of all pregnancies in Californian women diagnosed with BPAD reported many adverse perinatal outcomes, including maternal health problems such as gestational hypertension and diabetes and infant problems such as higher rates of preterm birth, intra-uterine foetal death and infant death. The consequences of mood-stabilising and antipsychotic medications have been reviewed elsewhere in this book, and it is clear

that whilst there may be compounding effects of medication and illness, there are also beneficial effects of good illness control in pregnancy, and perhaps pregnancy and birth outcomes are no worse (Boden et al. 2012).

Postnatally, in the main, authors focus on best treatment of BPAD which of course is relevant to infant outcome (Jones et al. 2014). There are clearly some disastrous outcomes for infants of mothers with puerperal psychosis. In a German series of 96 patients reviewed over a period of 20 years, Kapfhammer and Lange (2012) noted 6 maternal suicides and 2 infanticides, findings similar to earlier studies. However, some (e.g. Noorlander et al. 2008; Hipwell et al. 2000) suggest that where safety is not an issue, children of puerperally psychotic mothers may find it easier to relate positively to their infants than those with depression.

Not surprisingly, some longer-term follow-up studies show significant compromise for offspring, (e.g. Doucette et al. 2014; Radke-Yarrow et al. 1992). A 23-year follow-up by Abbott et al. (2004) also found high rates of mental illness in offspring of women with puerperal psychosis. These studies do not tease out genetic and environmental contributions.

These somewhat gloomy predictors of problems for offspring are tempered by those such as Simeonova et al. (2014) who focus on defining potential resilience factors which may be found by longitudinal studies with a wider focus. Glangeaud-Freudenthal et al. (2011) also elaborate factors which may lead to better outcomes in their French series on women and their infants admitted to mother-baby units.

Best practice on current information must therefore include a summary of the risks of bipolar mood disorder itself and the pharmacological interventions and potential problem outcomes for offspring. Risk does not necessarily lead to development of problems studied. Maximising preconception counselling, contraception where chosen, pregnancy mood stability and postnatal care for mother and infant will be well received by people with this condition. Most are likely to choose reproducing, hopefully with expert help during pregnancy as recommended by Nguyen et al. (2013). Specialised perinatal mental health teams and mother-baby units provide excellent care, and thus, a team approach to care of vulnerable families which includes partners and extended family in treatment approaches with a biopsychosocial approach will usually be appreciated and appropriate (Sved Williams et al. 2008).

Borderline Personality Disorder (BPD)

BPD is a severe mental illness, and despite its high prevalence in psychiatric admissions and in particular in a mother-baby unit (Sved Williams et al. 2013), and in young women, very little research has focused directly on effects on infants and on management perinatally. It is at least as prevalent as BPAD with one recent American study (Tomko et al. 2014) confirming previous findings of an incidence of 2.7 % in a community sample.

Much of the literature which focuses on stress antenatally in the context of chronic depression and anxiety, already summarised in this chapter, may be relevant to borderline personality disorder. Thus, it can be assumed that foetuses of mothers

with BPD are at risk through pregnancy, but no data is available to confirm this assumption. To date, only one study (Blankley et al. [in press](#)) has looked at obstetric and neonatal outcomes for mothers diagnosed with BPD in pregnancy, and this is a retrospective survey, with prospective studies sorely needed.

Postnatally, disastrous outcomes can occur. Friedman and Resnick (2007) summarised infanticides committed by mothers with BPD, noting the possibility of its recurrence but not quantifying the risk.

Looking at developmental outcomes postnatally, there has been some interest in understanding not only the genesis of borderline personality disorder in mothers but also its potential for intergenerational transfer of problems to offspring. Whilst earlier theories focused mainly on child abuse in its various forms as causative of BPD (well summarised by Kuo et al. 2015), more recent studies have compiled a nuanced understanding of interaction between genetic inheritance and style of parenting (Steele and Siever 2010) flowing through to its neurobiological basis (Newman et al. 2011). Linehan (1993, p 50) has emphasised the role of invalidation from mothers combined with heredity and parenting factors. Several authors have specifically identified maternal withdrawal in mothers when their infants are distressed, which Lyons-Ruth group have found to be the predictor of most compromised outcomes when those infants have reached adulthood (e.g. Easterbrooks et al. 2012), and this finding is consistent with Linehan's work.

The few authors who have studied mother-infant interactions between women with BPD and their infants have consistently shown women who find it difficult to attend to their infant's distress and may show frightened or frightening behaviours themselves (White et al. 2011; Hobson et al. 2009). It is possible to see the genesis of offspring who in turn have not been supported well enough to regulate their emotions, thus perhaps leading to intergenerational continuity of problems.

Specific treatments for the group of mothers with BPD include mentalisation-based approaches (Markin 2013; Fonagy et al. 2011). Other forms of mother-infant psychotherapy aimed at increasing maternal sensitivity and positive response to her infant are described by an increasing number of authors in this relatively unstudied area (Denard et al. 2013; Newman and Stevenson 2008).

Conclusions

For many perinatal women, the effects of anxiety and depression make for lives with great unhappiness and infants whose developmental pathways may be compromised. For women with ongoing chronic depression and anxiety, the effects are greater. Nevertheless, researchers are continually progressing effective treatments for these conditions in combination with parent-infant interventions with promising results. The role of fathers in both the genesis of problems and protection from problem outcomes is being elucidated. At the societal level, beneficial effects are being seen and approaches to stigma have been partially successful in some countries (Reavley and Jorm 2012), and this in turn aids campaigns focused on early interventions generally in families with young children (1001 Critical Days on <http://www.1001criticaldays.co.uk>). In many families targeted by this campaign, high stress, anxiety and depression are likely to be present. Finally,

emphasis must be given to the usually positive outcomes for infants, both with and without intervention, in families with risk factors but also strengths, reflective capacity and resilience. Risk factors are not synonymous with poor outcomes, and research will continue to define both the minimisation of risk and the maximisation of resilience to change the balance of outcomes more.

For women with severe maternal mental illnesses (SMIs), there are clearly increased and varied effects on infants. The most severe include the effects of compromised pregnancy, in particular LBW and prematurity, to heightened chances of early death as adults from a large range of mental and physical health problems. In the first postnatal year, many authors have found deficits in parenting, including direct harm to infants, problems in attunement with compromised attachment relationships and life patterns of developmental dysregulation.

What hope is there for families with a member with SMI? Older notions of stigma abound. Historically, a mad woman with a child has not been treated kindly. Much of the literature on women with SMI is deficit based and problem focused. There are however more positive ways to view women with SMI and their offspring, beginning with the rapid inroads which science is making to elucidate the mechanisms by which problems occur. Some are beginning to propound changes during pregnancy, e.g. to diet (Prescott 2015) and other health-related behaviours (e.g. Davis et al. 2014). Others are moving to ensure best care of women with SMI perhaps beginning preconceptionally (Temel et al. 2014) and then in pregnancy ensuring coordinated care (Nguyen et al. 2013) as well as psychoeducational interventions directed towards ceasing or reducing toxins such as cigarettes, alcohol and illicit substances. Postnatally treatment will vary depending, for instance, on the availability of mother-baby units or other intensive postnatal evidence-based treatments both for the illness itself and for psychosocial support. Negative attitudes towards mental illness generally must be tackled perhaps particularly in low-income countries where outcomes are more compromised as well as ensuring appropriate treatment for sufferers (Stein et al. 2014). A focus from forward thinking world leaders such as Seeman and Howard et al. on kindly and humane treatment of mothers with SMI provides inspiration towards improving health and social circumstances worldwide for this compromised group.

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References

- Abbott R, Dunn VJ, Robling SA, Paykel ES (2004) Long-term outcome of offspring after maternal severe puerperal disorder. *Acta Psychiatr Scand* 110(5):365–373
- Abidin R (1995) Parenting stress index manual, 3rd edn. Psychological Assessment Resources Inc, Odessa
- Ainsworth MDS, Blehar MC, Waters E, Wall S (1978) Patterns of attachment: a psychological study of the strange situation. Lawrence Erlbaum, Hillsdale

- Allen MC, Cristofalo EA, Kim C (2011) Outcomes of preterm infants: morbidity replaces mortality. *Clin Perinatol* 38(3):441–454
- Anthony EJ (1987) *The invulnerable child*. Guilford Press, New York
- Atkinson L, Paglia A, Coolbear J, Niccols A, Parker KC, Gruger S (2000) Attachment security: a meta-analysis of maternal mental health correlates. *Clin Psychol Rev* 20:1019–1040
- Austin M (2003) Targeted group antenatal prevention of postnatal depression: a review. *Acta Psychiatr Scand* 107(4):244–250, doi: 10.1034/j.1600-0447.2003.00086x
- Austin MP, Tully L, Parker G (2007) Examining the relationship between antenatal anxiety and postnatal depression. *J Affect Disord* 101(1):169–174
- Bakermans-Kranenburg MJ, van IJzendoorn MH, Juffer F (2003) Less is more: meta-analyses of sensitivity and attachment interventions in early childhood. *Psychol Bull* 129(2):195–215
- Banyard VL, Williams LM, Siegel JA (2003) The impact of complex trauma and depression on parenting: an exploration of mediating risk and protective factors. *Child Maltreat* 8:334–349
- Barker DJ (1990) The fetal and infant origins of adult disease. *BMJ* 301:1111
- Barlow J, Bennett C, Midgley N, Larkin SK, Wei Y (2015) Parent-infant psychotherapy for improving parental and infant mental health. *Cochrane Database Syst Rev* 1:CD010534. doi: [10.1002/14651858.CD010534.pub2](https://doi.org/10.1002/14651858.CD010534.pub2)
- Bauman LJ, Silver EJ, Stein RE (2006) Cumulative social disadvantage and child health. *Pediatrics* 117(4):1321–1328
- Beck CT (1996) A meta-analysis of the relationship between postpartum depression and infant temperament. *Nurs Res* 45(4):225–230, doi: 10.1097/00006199-199607000-00006
- Beck CT (1998) The effects of postpartum depression on child development: a meta-analysis. *Arch Psychiatr Nurs* 12:12–20
- Beck CT (2001) Predictors of postpartum depression: an update. *Nurs Res* 50(5):275–285, doi: 10.1097/00006199-200109000-00004
- Bee P, Bower P, Byford S, Churchill R, Calam R, Stallard P, Abel K (2014) The clinical effectiveness cost-effectiveness and acceptability of community-based interventions aimed at improving or maintaining quality of life in children of parents with serious mental illness: a systematic review. *Health Technol Assess* 18(8):1–250
- Beebe B (2010) Mother-infant research informs mother-infant treatment. *Clin Soc Work J* 38(1):17–36
- Bennedsen BE (1998) Adverse pregnancy outcome in schizophrenic women: occurrence and risk factors. *Schizophr Res* 33:1–26
- Bennedsen BE, Mortensen PB, Olesen AV, Henriksen TB (1999) Preterm birth and intra-uterine growth retardation among children of women with schizophrenia. *Br J Psychiatry* 175:239–245
- Bergman K, Sarkar P, O'Connor TG, Modi N, Glover V (2007) Maternal stress during pregnancy predicts cognitive ability and fearfulness in infancy. *J Am Acad Child Adolesc Psychiatry* 46(11):1454–1463, doi: 10.1097/chi.0b013e31814a62f6
- Bernier A, Carlson SM, Whipple N (2010) From external regulation to self-regulation: early parenting precursors of young children's executive functioning. *Child Dev* 81:326–339
- Blankley G, Galbally M, Snellen M, Power J, Lewis A (2015) Borderline personality disorder in the perinatal period: early infant and maternal outcomes. *Australas Psychiatry* doi:10.1177/1039856215590254. [Epub ahead of print]
- Bodén R, Lundgren M, Brandt L, Reutfors J, Andersen M, Kieler H (2012) Risks of adverse pregnancy and birth outcomes in women treated or not treated with mood stabilisers for bipolar disorder: population based cohort study. *BMJ* 8(345):e7085
- Bosquet Enlow M, Kitts RL, Blood E, Bizarro A, Hofmeister M, Wright RJ (2011) Maternal post-traumatic stress symptoms and infant emotional reactivity and emotion regulation. *Infant Behav Dev* 34:487–503
- Brazelton TB, Koslowski B, Main M (1974) Origins of reciprocity: the early mother-infant interaction. In: Lewis M, Rosenbloom L (eds) *Effects of the infant on its caregiver*. Wiley, New York, pp 49–79
- Britton JR (2011) Infant temperament and maternal anxiety and depressed mood in the early postpartum period. *Women Health* 51(1):55–71

- Buka SL, Seidman LJ, Tsuang MT, Goldstein JM (2013) The New England family study high-risk project: neurological impairments among offspring of parents with schizophrenia and other psychoses. *Am J Med Genet B Neuropsychiatr Genet* 162(7):653–660
- Burke L (2003) The impact of maternal depression on familial relationships. *Int Rev Psychiatry* 15(3):243–255
- Burns A, O'Mahen H, Baxter H, Bennert K, Wiles N, Ramchandani P et al (2013) A pilot randomised controlled trial of cognitive behavioural therapy for antenatal depression. *BMC Psychiatry* 13(1):33
- Burns JK, Tomita A, Kapadia AS (2014) Income inequality and schizophrenia: increased schizophrenia incidence in countries with high levels of income inequality. *Int J Soc Psychiatry* 60(2):185–196
- Cairns R, Cairns BD, Xie H, Leung MP (1998) Across generations: academic competence and aggressive behaviours in young mothers and their children. *Dev Psychol* 34:1162–1174
- Campbell SB, Matestic P, von Stauffenberg C, Mohan R, Kirchner T (2007) Trajectories of maternal depressive symptoms maternal sensitivity and children's functioning at school entry. *Dev Psychol* 5:1202–1215
- Charil A, Laplante DP, Vaillancourt C, King S (2010) Prenatal stress and brain development. *Brain Res Rev* 65(41):56–79
- Chung TKH, Lau TK, Yip ASK, Chiu HFK, Lee DTS (2001) Antepartum depressive symptomatology is associated with adverse obstetric and neonatal outcomes. *Psychosom Med* 63:830–834
- Cirulli F, Berry A, Alleva E (2003) Early disruption of the mother–infant relationship: effects on brain plasticity and implications for psychopathology. *Neurosci Biobehav Rev* 27(1):73–82
- Clark CAC, Woodward LJ, Horwood LJ, Moor S (2008) Development of emotional and behavioral regulation in children born extremely preterm and very preterm: biological and social influences. *Child Dev* 79(5):1444–1462
- Cohen NJ, Muir E, Lojkasek M, Muir R, Parker CJ, Barwick M, Brown M (1999) Watch, wait, and wonder. *Infant Ment Health J* 20:429–451
- Condon J (2004) The first-time fathers study: a prospective study of the mental health and wellbeing of men during the transition to parenthood. *Aust N Z J Psychiatry* 38:56–64
- Connell AM, Goodmans SH (2002) The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behaviour problems: a meta-analysis. *Psychol Bull* 128:746–773
- Cooper PJ, Murray L (1997) The impact of psychological treatments of postpartum depression on maternal mood and infant development. In: Murray L, Cooper PJ (eds) *Postpartum depression and child development*. Guilford Press, London, pp 201–220
- Coverdale JH, McCullough LB, Chervenak FA, Bayer T (1996) Clinical implications and management strategies when depression occurs during pregnancy. *Aust N Z J Obstet Gynaecol* 36:424–429
- Cox JL (1988) Childbirth as a life event: sociocultural aspects of postnatal depression. *Acta Psychiatr Scand Suppl* 344:75–83
- Coyl DD, Roggman LA, Newland LA (2002) Stress, maternal depression, and negative mother–infant interactions in relation to infant attachment. *Infant Ment Health J* 23(1–2):145–163
- Cutler DM, Lleras-Muney A, Vogl T (2008) *Socioeconomic status and health: dimensions and mechanisms*. NBER Working Paper No 14333. National Bureau of Economic Research, Inc, Cambridge, MA
- Cutrona CE, Troutman BR (1986) Social support infant temperament and parenting self-efficacy: a mediational model of postpartum depression. *Child Dev* 57:1507–1518
- Davis AM, Warmbach K, Nelson E, Odar C, Lillis T, McKinley A, Gallagher M (2014) Health behaviour change in pregnant women: a two-phase study. *Telemed J E Health* 20(12):1165–1169
- Dayan J, Creveuil C, Marks MN, Conroy S, Herlicoviez M, Dreyfus M, Tordjman S (2006) Prenatal depression prenatal anxiety and spontaneous preterm birth: a prospective cohort study among women with early and regular care. *Psychosom Med* 68(6):938–946
- de Weerth C, Buitelaar JK, Mulder EJH (2005) Prenatal programming of behavior physiology and cognition. *Neurosci Biobehav Rev* 29(2):207–208

- Denard S, Sutter-Dallay AL, Glatigny-Dallay E, Loustau N, Lacaze I, Rimbaud C, Verdoux H (2013) Borderline personality disorders and attachment disorders during the perinatal period. *Arch Womens Ment Health* 16(Suppl 1):S91
- Dennis CL, Dowswell T (2013) Interventions (other than pharmacological psychosocial or psychological) for treating antenatal depression. *Cochrane Database Syst Rev* 7:CD006795. doi: [10.1002/14651858.CD006795.pub3](https://doi.org/10.1002/14651858.CD006795.pub3)
- Dennis CL, Hodnett E (2007) Psychosocial and psychological interventions for treating postpartum depression. *Cochrane Database Syst Rev* 4:CD006116. doi: [10.1002/14651858.CD006116.pub2](https://doi.org/10.1002/14651858.CD006116.pub2)
- Di Pietro JA, Novak MF, Costigan KA, Atella LD, Reusing SP (2006) Maternal psychological distress during pregnancy in relation to child development at age two. *Child Dev* 77(3):573–587
- Diaz SD, Smith LM, LaGasse LL, Derauf C, Newman E, Shah R, Arria A, Huestis MA, Della Grotta S, Dansereau LM, Neal C, Lester BM (2014) Effects of prenatal methamphetamine exposure on behavioral and cognitive findings at 7.5 years of age. *J Pediatr* 164(6):1333–1338
- Domar AD, Moragianni VA, Riley DA, Urato AC (2013) The risks of selective serotonin reuptake inhibitor use in infertile women: a review of the impact on fertility pregnancy neonatal health and beyond. *Hum Reprod* 28:160–171
- Doucette S, Levy A, Flowerdew G, Horrocks J, Grof P, Ellenbogen M, Duffy A (2014) Early parent-child relationships and risk of mood disorder in a Canadian sample of offspring of a parent with bipolar disorder: findings from a 16-year prospective cohort study. *Early Interv Psychiatry*. doi:[10.1111/eip.12195](https://doi.org/10.1111/eip.12195)
- Doughty CJ (2007) Effective strategies for promoting attachment between young children and their parents. *Hist Teach Assoc Techn Brief* 6(2)
- Easterbrooks MA, Bureau JF, Lyons-Ruth K (2012) Developmental correlates and predictors of emotional availability in mother-child interaction: a longitudinal study from infancy to middle childhood. *Dev Psychopathol* 24(1):65–78
- Eshel N, Daelmans B, Mello MCD, Martines J (2006) Responsive parenting: interventions and outcomes. *Bull World Health Organ* 84(12):991–998
- Evans L, Myers M, Monk C (2008) Pregnant women's cortisol is elevated with anxiety and depression - but only when comorbid. *Arch Womens Ment Health* 11(3):239–248, doi: [10.1007/s00737-008-0019-4](https://doi.org/10.1007/s00737-008-0019-4)
- Fagen JW, Ohr PS (1985) Temperament and crying in response to the violation of a learned expectancy in early infancy. *Infant Behav Dev* 8(2):157–166
- Feldman R, Weller A, Leckman JF, Kuint J, Eidelman AL (1999) The nature of a mother's tie to her infant: maternal bonding under conditions of proximity separation and potential loss. *J Child Psychol Psychiatry* 40:929–939
- Feldman R (2010) The relational basis of adolescent adjustment: trajectories of mother-child interactive behaviors from infancy to adolescence shape adolescents' adaptation. *Attachment & Human Development* 12(1–2):173–192. doi: [10.1080/14616730903282472](https://doi.org/10.1080/14616730903282472)
- Field TM (1997) The treatment of depressed mothers and their infants. In: Murray L, Cooper PJ (eds) *Postpartum depression and child development*. Guilford Press, New York, pp 221–236
- Field T, Sandberg D, Garcia R, Vega-Lahr N, Goldstein S, Guy L (1985) Pregnancy problems postpartum depression and early mother-infant interactions. *Dev Psychol* 21:1152–1156
- Field T, Healy BT, Goldstein S, Guthertz M (1990) Behavior-state matching and synchrony in mother-infant interactions of nondepressed versus depressed dyads. *Dev Psychol* 26(1):7
- Field T, Pickens J, Prodromidis M, Malphurs J, Fox N, Bendell D, Yando R, Schanberg S, Kuhn C (2000) Targeting adolescent mothers with depressive symptoms for early intervention. *Adolescence* 35(138):381–414
- Field T, Diego M, Hernandez-reif M, Vera Y, Gil K, Schanberg S, Gonzalez-Garcia A (2004) Prenatal maternal biochemistry predicts neonatal biochemistry. *Int J Dev Neurosci* 114(8):933–945, doi: [doi:10.1080/00207450490461305](https://doi.org/10.1080/00207450490461305)
- Fletcher R, Garfield C, Matthey S (2015) Fathers' perinatal mental health. In: Milgrom J, Gemmill AW (eds) *Identifying perinatal depression and anxiety: evidence-based practice in screening, psychosocial assessment and management*. Wiley-Blackwell, Chichester

- Fonagy P, Steele M, Steele H, Leigh T, Kennedy R, Mattoon G, Target M (1995) Attachment, the reflective self, and borderline states: the predictive specificity of the adult attachment interview and pathological emotional development. In: Goldberg S, Muir R, Kerr J (eds) Attachment theory: social, developmental, and clinical perspectives. Analytic Press Inc, Hillsdale, pp 233–278
- Fonagy P, Gergely G, Jurist E, Target M (2002) Affect regulation mentalization and the development of self. Other Books, New York
- Fonagy P, Luyten P, Strathearn L (2011) Borderline personality disorder mentalization and the neurobiology of attachment. *Infant Ment Health J* 32(1):47–69
- Forman DR, O'Hara MW, Stuart S, Gorman LL, Larsen KE, Coy KC (2007) Effective treatment for postpartum depression is not sufficient to improve the developing mother-child relationship. *Dev Psychopathol* 19(2):585–602
- Fraiberg S (1980) Clinical studies in infant mental health. Basic Books, New York
- Frayne J, Brooks J, Nguyen TN, Allen S, Maclean M, Fisher J (2014) Characteristics of men accompanying their partners to a specialist antenatal clinic for women with severe mental illness. *Asian J Psychiatr* 7(1):46–51
- Friedman SH, Resnick PJ (2007) Child murder by mothers: patterns and prevention. *World Psychiatry* 6(3):137–141
- Fuertes M, Lopes-dos-Santos P, Beeghly M, Tronick E (2009) Infant coping and maternal interactive behavior predict attachment in a Portuguese sample of healthy preterm infants. *Eur Psychol* 14(4):320–331
- Galbally M, Snellen M, Lewis A (eds) (2014) Psychopharmacology and pregnancy: treatment efficacy, risks, and guidelines. Springer, Berlin
- Galéra C, Côté SM, Bouvard MP, Pingault JB, Melchior M, Michel G, Boivin M, Tremblay RE (2011) Early risk factors for hyperactivity-impulsivity and inattention trajectories from age 17 months to 8 years. *Arch Gen Psychiatry* 68(12):1267–1275
- Gavin NI, Gaynes BN, Lohr KN, Meltzer-Brody S, Gartlehner G, Swinson T (2005) Perinatal depression: a systematic review of prevalence and incidence. *Obstet Gynecol* 106(5):1071–1083
- Gjerde PF (1995) Alternative pathways to chronic depressive symptoms in young adults: gender differences in developmental trajectories. *Child Dev* 66(5):1277–1300
- Glangeaud-Freudenthal NM-C, Sutter AL, Thieulin AC, Dagens-Lafont V, Zimmermann MA, Debourg A, Khshnood B (2011) Inpatient mother-and-child postpartum psychiatric care: factors associated with improvement in maternal mental health. *Eur Psychiatry* 26(4):215–223
- Glasheen C, Richardson GA, Fabio AA (2010) A systematic review of the effects of maternal anxiety on children. *Arch Womens Ment Health* 13:61–74
- Glover V (2014) Maternal depression anxiety and stress during pregnancy and child outcome: what needs to be done. *Best Pract Res Clin Obstet Gynaecol* 28(1):25–35, doi: 10.1016/j.bpobgyn.2013.08.017
- Glover V (2015) Prenatal stress and its effects on the fetus and child: possible underlying biological mechanisms. *Adv Neurobiol* 10:269–283
- Gore S, Aseltine RH Jr, Colten ME (1993) Gender, social-relationship involvement, and depression. *J Res Adolesc* 3(2):101–125
- Gorman MC, Orme KS, Nguyen NT, Kent EJ, Caughey AB (2014) Outcomes in pregnancies complicated by methamphetamine use. *Am J Obstet Gynecol* 211(4):429
- Grace SL, Evidar A, Stewart DE (2003) The effect of postpartum depression on child cognitive development and behavior: a review and critical analysis of the literature. *Arch Womens Ment Health* 6(4):263–274, doi: 10.1007/s00737-003-0024-6
- Green SM, Haber E, Frey BN, McCabe RE (2015) Cognitive-behavioral group treatment for perinatal anxiety: a pilot study. *Arch Womens Ment Health* 18(4):631–638. doi:10.1007/s00737-015-0498-z
- Grienberger J, Slade A, Kelly K (2005) Maternal reflective functioning and the caregiving relationship: the link between mental states and mother-infant affective communication. *Attach Hum Dev* 7(3):299–311
- Grigoriadis S, Vonder Porten EH, Mamisashvili L, Tomlinson G, Dennis C-L, Koren G (2013) The impact of maternal depression during pregnancy on perinatal outcomes: a systematic review and meta-analysis. *J Clin Psychiatry* 74(4):e321–e2341, doi: 10.10488/JCP12r07968

- Grootens KP (2014) Pregnancy and fertility in schizophrenia. *Ned Tijdschr Geneeskd* 158:A7274
- Gutierrez-Galve L, Stein A, Hanington L, Heron J, Ramchandani P (2015) Paternal depression in the postnatal period and child development: mediators and moderators. *Pediatr* 135:E339–E347
- Haug NA, Duffy M, McCaul ME (2014) Substance abuse treatment services for pregnant women: psychosocial and behavioral approaches. *Obstet Gynecol Clin North Am* 41(2):267–296
- Hay DF, Pawlby S, Sharp D, Asten P, Mills A, Kumar R (2001) Intellectual problems shown by 11-year-old children whose mothers had postnatal depression. *J Child Psychol Psychiatry* 42(7):871–889
- Hayes LJ, Goodman SH, Carlson E (2013) Maternal antenatal depression and infant disorganized attachment at 12 months. *Attach Hum Dev* 15(2):133–153, doi: 101080/146167342013743256
- Healy D, Mangin D, Mintzes B (2010) The ethics of a randomized placebo controlled trial of antidepressants with pregnant women. *Int J Risk Saf Med* 22:7–16
- Hippman C, Ringrose A, Inglis A, Cheeka J, Albertb A, Honera WG, Austina JC (2014) The first randomized controlled trial evaluating the impact of genetic counseling for serious mental illnesses. *Bipolar Disord* 16(1):71–132
- Hipwell AE, Goossens FA, Melhuish EC, Kumar R (2000) Severe maternal psychopathology and infant-mother attachment. *Dev Psychopathol* 12(2):157–175
- Hobson RP, Patrick MPH, Hobson JA, Crandell L, Bronfman E, Lyons-Ruth K (2009) How mothers with borderline personality disorder relate to their year-old infants. *Br J Psychiatry* 195(4):325–330
- Horowitz JA, Bell M, Trybulski J, Munro BH, Moser D, Hartz SA, McCordic L, Sokol ES (2001) Promoting responsiveness between mothers with depressive symptoms and their infants. *J Nurs Scholarsh* 33(4):323–329
- Howard LM, Goss C, Leese M, Appleby L, Thornicroft G (2004) The psychosocial outcome of pregnancy in women with psychotic disorders. *Schizophr Res* 71(1):49–60
- Howard LM, Bekele D, Rowe M, Demilew J, Bewley S, Marteau TM (2013a) Smoking cessation in pregnant women with mental disorders: a cohort and nested qualitative study. *Br J Obstet Gynaecol* 120(3):362–370
- Howard L, Oram S, Galley H, Trevillion K, Feder G (2013b) Domestic violence and perinatal mental health: systematic review and meta-analysis. *PLoS Med* 10(5), e1001452
- Howard LM, Kumar C, Leese M, Thornicroft G (2014) The general fertility rate in women with psychotic disorders. *Am J Psychiatry* 159(6):991–996
- Huizink AC, de Medina PGR, Mulder EJH, Visser GHA, Buitelaar JK (2003) Stress during pregnancy is associated with developmental outcome in infancy. *J Child Psychol Psychiatry* 44(6):810–818, doi: 101111/1469-761000166
- Isabella RA (1993) Origins of attachment: maternal interactive behavior across the first year. *Child Dev* 64:605–621
- Jablensky AV, Morgan V, Zubrick SR, Bower C, Yellachich LA (2005) Pregnancy, delivery, and neonatal complications in a population cohort of women with schizophrenia and major affective disorders. *Am J Psychiatry* 162:79–91
- Jaffe J, Beebe B, Feldstein S, Crown CL, Jasnow MD, Rochat P, Stern DN (2001) Rhythms of dialogue in infancy: coordinated timing in development. *Monogr Soc Res Child Dev* 66(2):1–132
- Jaques SC, Kingsbury A, Henshcke P, Chomchai C, Clews S, Falconer J, Oei JL (2014) Cannabis the pregnant woman and her child: weeding out the myths. *J Perinatol* 34(6):417–424
- Johnson K, Balain M (2014) Outcomes for substance misusing women and their infants 2006–2011: changes over a 5 year time period. *Arch Dis Child* 99(2):459
- Jones I, Chandra PS, Dazzan P, Howard LM (2014) Bipolar disorder affective psychosis and schizophrenia in pregnancy and the post-partum period. *Lancet* 384:1789–1799
- Joormann J, Yoon KL, Zetsche U (2007) Cognitive inhibition in depression. *Appl Prev Psychol* 12(3):128–139
- Judd F, Komiti A, Sheehan P, Newman L, Castle D, Everall I (2014) Adverse obstetric and neonatal outcomes in women with severe mental illness: to what extent can they be prevented? *Schizophr Res* 157(1):305–309

- Kapfhammer HP, Lange P (2012) Suicidal and infanticidal risks in puerperal psychosis of an early onset. *Neuropsychiatr* 26(3):129–138
- Kelly JF, Barnard KE (2000) Assessment of parent-child interaction: Implications for early intervention. In: Shonkoff JP, Meisels SJ (eds) *Handbook of early childhood intervention*, 2nd edn. Cambridge University Press, Cambridge, pp 258–289
- Klaus MH, Kennell JH, Ballard RA (1982) *Parent-infant bonding*. Mosby, St. Louis
- Koren-Karie N, Oppenheim D, Dolev S, Sher E, Etzion-Carasso A (2002) Mother's insightfulness regarding their infants' internal experience: relations with maternal sensitivity and infant attachment. *Dev Psychol* 38:534–542
- Kumar R, Marks M, Plate C, Yoshida K (1995) Clinical survey of a psychiatric mother-baby unit: characteristics of 100 consecutive admissions. *J Affect Disord* 33:11–22
- Kuo JR, Khoury JE, Metcalfe R, Fitzpatrick S, Goodwill A (2015) An examination of the relationship between childhood emotional abuse and borderline personality disorder features: the role of difficulties with emotion regulation. *Child Abuse Negl* 39:147–155
- Laplante DP, Barr RG, Brunet A, Du Fort GG, Meaney ML, Saucier JF, King S (2004) Stress during pregnancy affects general intellectual and language functioning in human toddlers. *Pediatr Res* 56(3):400–410, doi: 10.1203/01.pdr00001362813403544
- Laursen TM, Munk-Olsen T (2010) Reproductive patterns in psychotic patients. *Schizophr Res* 121(1–3):234–240
- Lee H-C, Lin H-C (2010) Maternal bipolar disorder increased low birth weight and preterm births: a nationwide population-based study. *J Affect Disord* 121(1–2):100–105
- Leerkes EM (2011) Maternal sensitivity during distressing tasks: a unique predictor of attachment security. *Infant Behav Dev* 34:443–446
- Leight KL, Fitelson EM, Weston CA, Wisner KL (2010) Childbirth and mental disorders. *Int Rev Psychiatry* 22(5):453–471
- Linehan MM (1993) *Cognitive-behavioral treatment of borderline personality disorder*. Guilford Press, New York
- Lundy BL, Jones NA, Field T, Nearing G, Davalos M, Pietro PA, Kuhn C (1999) Prenatal depression effects on neonates. *Infant Behav Dev* 22(1):119–129
- Maccabe JH, Martinsson L, Lichtenstein P, Nilsson E, Cnattingius S, Murray RM, Hultman CM (2007) Adverse pregnancy outcomes in mothers with affective psychosis. *Bipolar Disord* 9(3):305–309
- Machado LC, Passini Júnior R, Rodrigues Machado RI (2014) Late prematurity: a systematic review. *J Pediatr (Rio J)* 90(3):221–231
- Markin RD (2013) Mentalization-based psychotherapy interventions with mothers-to-be. *Psychotherapy (Chic)* 50(3):360–365
- Marques AH, O'Connor TG, Roth C, Susser E, Bjørke-Monsen AL (2013) The influence of maternal prenatal and early childhood nutrition and maternal prenatal stress on offspring immune system development and neurodevelopmental disorders. *Front Neurosci* 31(7):120
- Marroun HEI, White T, Verhulst F, Tiemeier H (2014) Maternal use of antidepressant and anxiolytic medication during pregnancy and childhood neurodevelopmental outcomes: a systematic review. *Eur Child Adolesc Psychiatry* 23(10):973–992
- Martins C, Gaffan EA (2000) Effects of early maternal depression on patterns of infant-mother attachment: a meta-analytic investigation. *J Child Psychol Psychiatry* 41:737–746
- Marvin R, Cooper G, Hoffman K, Powell B (2002) The circle of security project: attachment-based intervention with caregiver-pre-school child dyads. *Attach Hum Dev* 4(1):107–124
- Maslow H (1943) A theory of human motivation. *Psychol Rev* 50(4):370
- Matevosyan NR (2011) Pregnancy and postpartum specifics in women with schizophrenia: a meta-study. *Arch Gynecol Obstet* 283:141–147
- Matijasevich A, Murray J, Cooper PJ, Anselmi L, Barros AJ, Barros FC, Santos IS (2015) Trajectories of maternal depression and offspring psychopathology at 6 years: 2004 Pelotas cohort study. *J Affect Disord* 174:424–431
- Mauri M, Oppo A, Montagnani MS, Borri C, Banti S, Camilleri V, Cortopassi S, Ramacciotti D, Rambelli C, Cassano GB (2010) Beyond “postpartum depressions”: specific anxiety diagnoses

- during pregnancy predict different outcomes: results from PND-ReScU. *J Affect Disord* 127(1):177–184
- McColl H, Dhillon M, Howard LM (2013) A systematic review of the nutritional status of women of a childbearing age with severe mental illness. *Arch Womens Ment Health* 16(1):39–46
- McDonough SC (1993) Understanding and treating early infant-caregiver relationship disturbances. In: Zeanah C (ed) *Handbook of infant mental health*. Guilford, New York
- McElwain NL, Booth-LaForce C (2006) Maternal sensitivity to infant distress and nondistress as predictors of infant-mother attachment security. *J Fam Psychol* 20:247–255
- McGregor M, Coghlan M, Dennis CL (2013) The effect of physician-based cognitive behavioural therapy among pregnant women with depressive symptomatology: a pilot quasi-experimental trial. *Early Interv Psychiatry* 8(4):348–357, doi: 101111/eip12074
- Meager I, Milgrom J (1996) Group treatment for postpartum depression: a pilot study. *Aust N Z J Psychiatry* 30(6):852–860
- Milgrom J, Holt C (2014) Early intervention to protect the mother-infant relationship following postnatal depression: study protocol for a randomised controlled trial. *Trials* 15:385
- Milgrom J, McCloud P (1996) Parenting stress and postnatal depression. *Stress Med* 12(3):177–186, doi: 101002/(sici)1099-1700(199607)12:3 <177::aid-smi699>30co;2-w
- Milgrom J, Martin PR, Negri LM (1999) Treating postnatal depression a psychological approach for health care practitioners. Wiley, Chichester
- Milgrom J, Westley D, Gemmill AW (2004) The mediating role of maternal responsiveness in some longer-term effects of postnatal depression on infant development. *Infant Behav Dev* 27:443–454
- Milgrom J, Ericksen J, Negri L, Gemmill A (2005) Screening for postnatal depression in routine primary care: properties of the Edinburgh postnatal depression scale in an Australian sample. *Aust N Z J Psychiatry* 39:833–839
- Milgrom J, Ericksen J, McCarthy RM, Gemmill AW (2006) Stressful impact of depression on early mother-infant relations. *Stress Health* 22(4):229–238
- Milgrom J, Gemmill AW, Bilszta JL, Hayes B, Barnett B, Brooks J, Buist A (2008) Antenatal risk factors for postnatal depression: a large prospective study. *J Affect Disord* 108:147–157
- Milgrom J, Newnham C, Anderson PJ, Doyle LW, Gemmill AW, Lee K, Inder T (2010) Early sensitivity training for parents of preterm infants: impact on the developing brain. *Pediatr Res* 67(3):330–335
- Milgrom J, Schembri C, Ericksen J, Ross J, Gemmill AW (2011) Towards parenthood: an antenatal intervention to reduce depression anxiety and parenting difficulties. *J Affect Disord* 130(3):385–394
- Milgrom J, Holt C, Holt CJ, Ross J, Ericksen J, Gemmill AW (2015) Feasibility study and pilot randomised trial of an antenatal depression treatment with infant follow-up. *Arch Womens Ment Health*. doi:<http://dx.doi.org/10.1007/s00737-015-0512-5>. Epub ahead of print
- Misra DP, Guyer B, Allston A (2003) Integrated perinatal health framework: a multiple determinants model with a life span approach. *Am J Prev Med* 25:65–75
- Molnar DS, Levitt A, Eiden RD, Schuetz P (2014) Prenatal cocaine exposure and trajectories of externalizing behavior problems in early childhood: examining the role of maternal negative affect. *Dev Psychopathol* 26(2):515–528
- Monk C, Leight KL, Fang Y, Monk C, Leight KL, Fang Y (2008) The relationship between women's attachment style and perinatal mood disturbance: implications for screening and treatment. *Arch Womens Ment Health* 11(2):117–129
- Monk C, Spicer J, Champagne FA (2012) Linking prenatal maternal adversity to developmental outcomes in infants: the role of epigenetic pathways. *Dev Psychopathol* 24(4):1361–1376
- Monk C, Georgieff MK, Osterholm EA (2013) Research review: maternal prenatal distress and poor nutrition – mutually influencing risk factors affecting infant neurocognitive development. *J Child Psychol Psychiatry* 54(2):115–130, doi: 101111/jcpp12000
- Mount KS, Crockenberg SC, Barrig PS, Wager JL (2010) Maternal and child correlates of anxiety in 2 1/2 year old children. *Infant Behav Dev* 33(4):567–578
- Muir E (1992) Watching, waiting and wondering. *Infant Ment Health J* 13:319–328

- Murray L (2014) *The psychology of babies: how relationships support development from birth to two*. Robinson Publishing: London
- Murray L, Cooper P (1997) Effects of postnatal depression on infant development. *Arch Dis Child* 77(2):99–101
- Murray L, Fiori-Cowley A, Hooper R, Cooper P (1996) The impact of postnatal depression and associated adversity on early mother-infant interactions and later infant outcome. *Child Dev* 67(5):2512–2526, doi: 10.1111/j.1467-8624.1996.tb01871.x
- Murray L, Sinclair D, Cooper P, Ducournau P, Turner P, Stein A (1999) The socioemotional development of 5-year-old children of postnatally depressed mothers. *J Child Psychol Psychiatry* 40(8):1259–1271
- Murray L, Woolgar M, Murray J, Cooper P (2003) Self-exclusion from health care in women at high risk for postpartum depression. *J Public Health Med* 25(2):131–137, doi: 10.1093/pubmed/fdg028
- Murray L, Fearon P, Cooper P (2015) Postnatal depression, mother-infant interactions, and child development. In: Milgrom J, Gemmill AW (eds) *Identifying perinatal depression and anxiety: evidence-based practice in screening, psychosocial assessment and management*. Wiley-Blackwell, Chichester
- Mustard F (2008) *Investing in the early years*. Thinker in Residence, Adelaide
- Network NECCR (1999) Chronicity of maternal depressive symptoms maternal sensitivity and child functioning at 36 months. *Dev Psychol* 35(5):1297–1310
- Newman L, Stevenson C (2008) Issues in infant-parent psychotherapy for mothers with borderline personality disorder. *Clin Child Psychol Psychiatry* 13(4):505–551
- Newman LK, Harris M, Allen J (2011) Neurobiological basis of parenting disturbance. *Aust N Z J Psychiatry* 45(2):109–122
- Nguyen TN, Faulkner D, Frayne JS, Allen S, Hauck YL, Rock D, Rampono J (2013) Obstetric and neonatal outcomes of pregnant women with severe mental illness at a specialist antenatal clinic. *Med J Aust* 199(3):S26–S29
- Nguyen N, Gorman M, Kent E III, Caughey A (2014) Pregnancy outcomes in women with bipolar disorder: a retrospective cohort study. *Am J Obstet Gynecol* 210(1):S323
- Noorlander Y, Bergink V, Van Den Berg MP (2008) Perceived and observed mother-child interaction at time of hospitalization and release in postpartum depression and psychosis. *Arch Womens Ment Health* 11(1):49–56
- O'Connor TG, Heron J, Golding J, Beveridge M, Glover V (2002a) Maternal antenatal anxiety and children's behavioural/emotional problems at 4 years – report from the Avon Longitudinal Study of Parents and Children. *Brit J Psychiatry* 180:502–508. doi:10.1192/bjp.180.6.502
- O'Connor TG, Heron J, Glover V (2002b) Antenatal anxiety predicts child behavioral/emotional problems independently of postnatal depression. *J Am Acad Child Adolesc Psychiatry* 41(12):1470–1477. doi:<http://dx.doi.org/10.1097/00004583-200212000-00019>
- O'Connor TG, Bergman K, Sarkar P, Glover V (2013) Prenatal cortisol exposure predicts infant cortisol response to acute stress. *Dev Psychobiol* 55(2):145–155, doi: 10.1002/dev.21007
- O'Connor TG, Monk C, Fitelson EM (2014) Practitioner review: maternal mood in pregnancy and child development – implications for child psychology and psychiatry. *J Child Psychol Psychiatry* 55(2):99–111, doi: 10.1111/jcpp.12153
- O'Donnell KJ, Glover V, Barker ED, O'Connor TG (2014) The persisting effect of maternal mood in pregnancy on childhood psychopathology. *Dev Psychopathol* 26(2):393–403
- O'Hara M, Swain A (1996) Rates and risk of postpartum depression – a meta-analysis. *Int Rev Psychiatry* 8:37–54
- O'Mahen H, Himle JA, Fedock G, Henshaw E, Flynn H (2013) A pilot randomized controlled trial of cognitive behavioral therapy for perinatal depression adapted for women with low incomes. *Depress Anxiety* 30:679–687
- Orr ST, James SA, Blackmore Prince C (2002) Maternal prenatal depressive symptoms and spontaneous preterm births among African-American women in Baltimore, Maryland. *Am J Epidemiol* 156:797–802

- Parfitt Y, Pike A, Ayers S (2014) Infant developmental outcomes: a family systems perspective. *Infant Child Dev* 23(4):353–373
- Paulson JF, Keefe HA, Leiferman JA (2009) Early parental depression and child language development. *J Child Psychol Psychiatry* 50(3):254–262
- Pawlby SJ, Hall F (1980) Early interactions and later language development of children whose mothers came from disrupted families of origin. In: Field TM (ed) *High-risk infants and children: adult and peer interactions*. Academic, New York
- Pawlby S, Sharp D, Hay D, O’Keane V, Pawlby S, Sharp D, O’Keane V (2008) Postnatal depression and child outcome at 11 years: the importance of accurate diagnosis. *J Affect Disord* 107(1–3):241–245
- Pawlby S, Hay DF, Sharp D, Waters CS, O’Keane V (2009) Antenatal depression predicts depression in adolescent offspring: prospective longitudinal community-based study. *J Affect Disord* 113(3):236–243, doi: 101016/j.jad.200805018
- Pawlby S, Fernyhough C, Meins E, Pariante CM, Seneviratne G, Bental RP (2010) Mind-mindedness and maternal responsiveness in infant-mother interactions in mothers with severe mental illness. *Psychol Med* 40(11):1861–1869
- Pears KC, Capaldi DM (2001) Intergenerational transmission of abuse: a two-generational prospective study of an at-risk sample. *Child Abuse Negl* 25(11):1439–1461
- Pearson RM, Evans J, Kounali D, Lewis G, Heron J, Ramchandani PG, Stein A (2013) Maternal depression during pregnancy and the postnatal period risks and possible mechanisms for offspring depression at age 18 years. *JAMA Psychiatry* 70(12):1312–1319, doi: 101001/jamapsychiatry20132163
- Penman R, Meares R, Baker K, Milgrom-Friedman J (1983) Synchrony in mother-infant interaction: a possible neurophysiological case. *Br J Med Psychol* 56:1–7
- Penman R, Meares R, Milgrom-Friedman J (1984) Some origins of the difficult child. In: Chess S, Thomas A (eds) *Recent developments in child development and child psychiatry*. Brunner-Mazel, New York
- Perry BD, Pollard RA, Blakley TL, Baker WL, Vigilante D (1995) Childhood trauma, the neurobiology of adaptation, and “use-dependent” development of the brain: how “states” become “traits”. *Inf Ment Health J* 16(4):271–291
- Pluess M, Bolten M, Pirke KM, Hellhammer D (2010) Maternal trait anxiety emotional distress and salivary cortisol in pregnancy. *Biol Psychol* 83(3):169–175, doi: 101016/j.biopsycho.200912005
- Poobalan AS, Aucott LS, Ross L, Smith WC, Helms PJ, Williams JH, Williams JHG (2007) Effects of treating postnatal depression on mother-infant interaction and child development: systematic review. *Br J Psychiatry* 191:378–386
- Prescott S (2015) *Origins: early-life solutions to the modern health crisis*. UWA Publishing, Perth
- Radke-Yarrow M, Nottelmann E, Martinez P, Fox MB, Belmont B (1992) Young children of affectively ill parents: a longitudinal study of psychosocial development. *J Am Acad Child Adolesc Psychiatry* 31(1):68–77
- Rallis S, Skouteris H, McCabe MP, Milgrom J (2014) A prospective examination of depression, anxiety and stress throughout pregnancy. *Women Birth* 27(1):68–71
- Ramchandani PG, Psychogiou L, Vlachos H, Iles J, Sethna V, Netsi E, Lodder A (2011) Paternal depression: an examination of its links with father, child and family functioning in the postnatal period. *Depress Anxiety* 28(6):471–477
- Ramchandani PG, Domoney J, Sethna V, Psychogiou L, Vlachos H, Murray L (2013) Do early father-infant interactions predict the onset of externalising behaviours in young children? Findings from a longitudinal cohort study. *J Child Psychol Psychiatry* 54(1):56–64
- Raphael-Leff J (1991) *Psychological processes of childbearing*. Chapman & Hall, London
- Raval V, Goldberg S, Atkinson L, Benoit D, Myhala N, Poulton L, Zwiens R (2001) Maternal attachment maternal responsiveness and infant attachment. *Infant Behav Dev* 24:281–304
- Reavley N, Jorm A (2012) Stigmatising attitudes towards people with mental disorders: changes in Australia over 8 years. *Psychiatry Res* 197(3):302–306

- Reck C, Weiss R, Fuchs T, Mohler E, Downing G, Mundt C (2004) Psychotherapy for postpartum depression with a focus on mother-infant interaction [Psychotherapie der postpartalen Depression Mutter-Kind-Interaktion im Blickpunkt]. *Der Nervenarzt* 75(11):1068–1073, doi: 101007/s00115-004-1766-8
- Riordan D, Appleby L, Faragher B (1999) Mother-infant interaction in post-partum women with schizophrenia and affective disorders. *Psychol Med* 29(4):991–995
- Robertson E, Grace S, Wallington T, Stewart DE (2004) Antenatal risk factors for postpartum depression: a synthesis of recent literature. *Gen Hosp Psychiatry* 26(4):289–295, doi: 101016/j.genhosppsyich200402006
- Rodriguez A, Bohlin G (2005) Are maternal smoking and stress during pregnancy related to ADHD symptoms in children? *J Child Psychol Psychiatry* 46(3):246–254, doi: 101111/j1469-7610200400359x
- Ross LE, Dennis CL (2009) The prevalence of postpartum depression among women with substance use, an abuse history, or chronic illness: a systematic review. *J Womens Health* 18(4):475–486
- Saffery R, Novakovic B (2014) Epigenetics as the mediator of fetal programming of adult onset disease: what is the evidence? *Acta Obstet Gynecol Scand* 93(11):1090–1098
- Saurel-Cubizolles MJ, Prunet C, Blondel B (2014) Cannabis use during pregnancy in France in 2010. *BJOG* 121(8):971–977
- Schuermans C, Kurrasch DM (2013) Neurodevelopmental consequences of maternal distress: what do we really know? *Clin Genet* 83(2):108–117
- Seeman MV (2004) Relational ethics: when mothers suffer from psychosis. *Arch Womens Ment Health* 7(3):201–210
- Seeman MV (2013) Clinical interventions for women with schizophrenia: pregnancy. *Acta Psychiatr Scand* 127(1):12–22
- Sherman MP, Zaghouni H, Niklas V (2015) Gut microbiota, the immune system, and diet influence the neonatal gut-brain axis. *Pediatr Res* 77:127–135
- Simeonova DI, Nguyen T, Hsu HC, Juul S, Mast J, Goldsmith T, Craighead E, Ressler K (2014) Opportunities and challenges in establishing the Emory longitudinal cohort of offspring of mothers with bipolar disorder. *Bipolar Disord* 16(1):99–100
- Slade A, Sadler LS, Mayes C (2005) Minding the baby enhancing parental reflective functioning in a nursing mental health home visiting program in Berlin. In: Greenberg MT, Berlin JL, Ziv Y, Amaya-Jackson L (eds) *Enhancing early attachment theory research intervention and policy*. Guilford Press, London
- Slater A (1995) Individual differences in infancy and later IQ. *J Child Psychol Psychiatry* 36:69–112
- Snellen M, Mack K, Trauer T (1999) Schizophrenia, mental state, and mother-infant interaction: examining the relationship. *Aust N Z J Psychiatry* 33(6):902–911
- Sockol LE (2015) A systematic review of the efficacy of cognitive behavioral therapy for treating and preventing perinatal depression. *J Affect Disord* 177:7–12, <http://dx.doi.org/10.1016/j.jad.2015.01.052>
- Spinelli MG, Endicott J, Leon AC, Goetz RR, Kallish RB, Brustman LE, Schulick JL (2013) A controlled clinical treatment trial of interpersonal psychotherapy for depressed pregnant women at 3 New York city sites. *J Clin Psychiatry* 74(4):393–399
- Stams GJJM, Juffer F, Van Ijzendoorn MH (2002) Maternal sensitivity infant attachment and temperament in early childhood predict adjustment in middle childhood: the case of adopted children and their biologically unrelated parents. *Dev Psychol* 38:806–821
- Steele H, Siever L (2010) An attachment perspective on borderline personality disorder: advances in gene-environment considerations. *Curr Psychiatry Rep* 12(1):61–67
- Stein A, Gath DH, Bucher J, Bond A, Day A, Cooper PJ (1991) The relationship between postnatal depression and mother-child interaction. *Br J Psychiatry* 158:46–52
- Stein A, Pearson RM, Goodman SH (2014) Effects of perinatal mental disorders on the fetus and child. *Lancet* 384(9956):1800–1819
- Stern DN (1985) *The interpersonal world of the infant: a view from psychoanalysis and developmental psychology*. Basic Books Inc, New York

- Sved Williams AE (2004) Infants of mothers with mental illness. In: Cowling V (ed) *Children of parents with mental illness*. Acer Books, Melbourne
- Sved Williams AE, Ellershaw S, Mader L, Seyfang M (2008) Working with severely mentally ill mothers and their infants in a mother-baby inpatient unit. In: Sved Williams A, Cowling C (eds) *Infants of parents with mental illness: developmental, clinical cultural and personal perspectives*. Australian Academic Press, Bowen Hills
- Sved Williams AE, Yelland C, Girke T, Tottman C, Ellershaw S (2013) Severe mental illness, borderline personality disorder (BPD) and infants. *Arch Womens Ment Health* 16(1):S102–S103
- Swain JE, Kim P, Spicer J, Ho SS, Dayton CJ, Elmadih A, Abel KM (2014) Approaching the biology of human parental attachment: brain imaging, oxytocin and coordinated assessments of mothers and fathers. *Brain Res* 1580:78–101
- Talge N, Neal C, Glover V (2007) Antenatal maternal stress and long-term effects on child neurodevelopment: how and why? *J Child Psychol Psychiatry* 48:245–261
- Temel S, Van Voorst SF, Jack BW, Denktas S, Steegers EAP (2014) Evidence-based preconceptional lifestyle interventions. *Epidemiol Rev* 36(1):19–30
- Teti DM, Gelfand DM, Pompa J (1990) Depressed mothers' behavioral competence with their infants: demographic and psychosocial correlates. *Dev Psychopathol* 2:259–270
- Tomko RL, Trull TJ, Wood PK, Sher KJ (2014) Characteristics of borderline personality disorder in a community sample: comorbidity, treatment utilization, and general functioning. *J Pers Disord* 28(5):734–750
- Tronick EZ (1989) Emotions and emotional communication in infants. *Am Psychol* 44(2):112
- Tronick EZ, Weinberg MK (1997) Depressed mothers and infants: failure to form dyadic states of consciousness. In: Murray L, Cooper P (eds) *Postpartum depression and child development*. Guilford Press, New York, p 54
- Van Batenburg-Eddes T, Brion MJ, Henrichs J, Jaddoe VWV, Hofman A, Verhulst FC, Tiemeier H (2013) Parental depressive and anxiety symptoms during pregnancy and attention problems in children: a cross-cohort consistency study. *J Child Psychol Psychiatry* 54(5):591–600, doi: 10.1111/jcpp.12023
- Van den Bergh BRH, Marcoen A (2004) High antenatal maternal anxiety is related to ADHD symptoms externalizing problems and anxiety in 8-and 9-year-olds. *Child Dev* 75(4):1085–1097, doi: 10.1111/j.1467-8624.2004.00727.x
- Van den Bergh BRH, Mulder EJH, Mennes M, Glover V (2005) Antenatal maternal anxiety and stress and the neurobehavioural development of the fetus and child: links and possible mechanisms: a review. *Neurosci Biobehav Rev* 29(2):237–258, doi: 10.1016/j.neubiorev.2004.10.007
- Van den Hove DLA, Steinbusch HWM, Scheepens A, Van de Berg WDJ, Kooiman LAM, Boosten BJJ, Blanco CE (2006) Prenatal stress and neonatal rat brain development. *Neuroscience* 137(1):145–155
- Van Ijzendoorn M (1995) Adult attachment representations parental responsiveness and infant attachment: a meta-analysis on predictive validity of the adult attachment interview. *Psychol Bull* 117:387–403
- Velders FP, Dieleman G, Henrichs J, Jaddoe VW, Hofman A, Verhulst FC, Hudziak JJ, Tiemeier H (2011) Prenatal and postnatal psychological symptoms of parents and family functioning: the impact on child emotional and behavioural problems. *Eur Child Adolesc Psychiatry* 20(7):341–350
- Vigod SN, Seeman MV, Ray JG, Anderson GM, Dennis CL, Grigoriadis S, Gruneir A, Kurdyak PA, Rochon PA (2012) Temporal trends in general and age-specific fertility rates among women with schizophrenia (1996–2009): a population-based study in Ontario, Canada. *Schizophr Res* 139(1–3):169–175
- Vigod SN, Kurdyak PA, Dennis CL, Gruneir A, Newman A, Seeman MV, Rochon PA, Anderson GM, Grigoriadis S, Ray JG (2014) Maternal and newborn outcomes among women with schizophrenia: a retrospective population-based cohort study. *BJOG* 121(5):566–574
- Wan MW, Salmon MP, Riordan DM, Appleby L, Webb R, Abel KM (2007) What predicts poor mother-infant interaction in schizophrenia? *Psychol Med* 37(4):537–546
- Wan MW, Warren K, Salmon MP, Abel K (2008) Patterns of maternal responding in postpartum mothers with schizophrenia. *Infant Behav Dev* 31:532–538

- Waters CS, Hay DF, Simmonds JR, van Goozen SHM (2014) Antenatal depression and children's developmental outcomes: potential mechanisms and treatment options. *Arch Womens Ment Health* 23(10):957–971, doi: 101007/s00787-014-0582-3
- Weinberg KM, Olson KL, Beeghly M, Tronick EZ (2006) Making up is hard to do, especially for mothers with high levels of depressive symptoms and their infant sons. *J Child Psychol Psychiatry* 47(7):670–683
- White H, Flanagan TJ, Martin A, Silvermann D (2011) Mother-infant interactions in women with borderline personality disorder, major depressive disorder, their co-occurrence, and healthy controls. *J Reprod Infant Psychol* 29(3):223–235
- Whitton A, Appleby L, Warner R (1996) Maternal thinking and the treatment of postnatal depression. *Int Rev Psychiatry* 8(1):73–78, doi: 103109/09540269609037819
- Winnicott DW (1965) *The maturational processes and the facilitating environment*. International Universities Press Inc, New York
- Wisner K, Sit DY, McShea MC, Rizzo DM, Zoretich RA, Hughes CL, Hanusa BH (2013) Onset timing thoughts of self-harm and diagnoses in postpartum women with screen-positive depression findings. *JAMA Psychiatry* 70:490–498, doi: 101001/jamapsychiatry201387
- Wong LF, Wilkes J, Korgenski K, Varner MW, Manuck TA (2014) Recurrent preterm birth and impact of modifiable risk factors. *Reprod Sci* 21(3 Suppl 1):360A–361A
- Woolhouse J, Mercuri K, Judd F, Brown SJ (2014) Antenatal mindfulness intervention to reduce depression, anxiety and stress: a pilot randomised controlled trial of the Mind Baby Body program in an Australian tertiary maternity hospital. *BMC Pregnancy Childbirth* 14:369
- Yelland C, Girke T, Tottman C, Sved Williams A (2015) Clinical characteristics and mental health outcomes for women admitted to an Australian mother baby unit: a focus on borderline personality disorder and emotional dysregulation? *Australas Psychiatry* doi:10.1177/1039856215590251. [Epub ahead of print]
- Zhu P, Sun M-S, Hao J-H, Chen Y-J, Jiang X-M, Tao R-X, Tao F-B (2014) Does prenatal maternal stress impair cognitive development and alter temperament characteristics in toddlers with healthy birth outcomes? *Dev Med Child Neurol* 56(3):283–289, doi: 101111/dmcn12378
- Zuckerman B, Bauchner H, Parker S, Cabral H (1990) Maternal depressive symptoms during pregnancy and newborn irritability. *J Dev Behav Pediatr* 11:190–194

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Abstract

The prescription of psychotropic drugs during pregnancy is always challenging. Clinicians must weigh the risk of a maternal relapse should treatment be interrupted or modified against the teratogenic or fetotoxic risk of antenatal exposure to psychotropic drugs. Women must be informed of the potential influence on the pregnancy and the course of their disorder and consider whether the benefits outweigh the risk. The mother's ability postpartum to care for and interact with the infant appropriately is an important consideration. The management of these pregnancies must be nested in a multidisciplinary network, to allow antenatal implementation of specific types of care in accordance with local or national perinatal mental health policies.

Introduction

The adaptation to physical, mental, and social changes in the perinatal period requires the ability to reorganize interpersonal and intrapsychic resources. Women with chronic psychiatric disorders are especially challenged in this respect and also more likely to experience unplanned pregnancies than women in the general population (Miller et al. 1992). The relative risk of being hospitalized in a psychiatric

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institution in the 2 years following a birth is estimated to be 1.6, compared to any other period in a woman's life; the predominant diagnoses during this period are mood disorders, notably bipolar disorder (Burt and Rasgon 2004).

The possibility of pregnancy should always be addressed in the gynaecological or psychiatric care of women with a mental disorder and able to bear children. If no pregnancy is planned, methods of contraception should be reviewed with the patient. Certain anticonvulsive mood stabilizers are strong enzyme inducers that reduce the efficacy of oral contraceptives or progestogen-releasing implants (e.g. carbamazepine, oxcarbazepine, and topiramate) (Ernst and Goldberg 2002). Conversely, oral contraceptives combining ethinyl estradiol/levonorgestrel increase, e.g. lamotrigine clearance (Clark et al. 2013; Gaffield et al. 2011). Women should also be informed of the impact of psychotropics on their fertility, particularly with regard to antipsychotic medications, which are likely to induce hyperprolactinemia. Furthermore, women should be educated about the risk of unwanted pregnancy when stopping hyperprolactinemia-inducing antipsychotics.

For planned pregnancies, a woman must be informed of the potential influence of the pregnancy on the course of her disorder. This process should also include, when possible, her partner, as well as the psychiatrist, obstetrician-gynaecologist, neonatal paediatrician, and family doctor. The aim is to weigh the risk of a possible relapse in the case of interruption or modification of treatment, against the teratogenic and fetotoxic risks related to antenatal exposure to psychotropic drugs. Maternal decompensation during pregnancy or postpartum or both may result in risk-taking behaviour and deterioration in the prognosis of the disorder over the long term, due to the additional episode. The risks for the fetus are the effects of prenatal stress, increased smoking, poor nutritional intake, and the use of toxic substances. The mother's ability to care for and interact appropriately with the baby is also an important consideration (Barlow et al. 2015).

If pregnancy occurs, regular follow-up by a specialist team should be offered whenever possible. Management must be nested in a multidisciplinary network to anticipate specific postnatal care such as extension of the maternity stay, home help, community-based intervention, or any other type of specific care provided for by local or national perinatal mental health policies. Given the complexity of management, the psychiatrist must ensure close interdisciplinary care, if possible in the form of a liaison and consultation service; it is especially important that all involved are aware of the effects of medications on the mother, the embryo, and the fetus, including the effects that differ according to gestational age.

The risk of birth defects concerns the first trimester of the pregnancy, the period of organogenesis. However, the development of the central nervous system continues throughout the pregnancy and into infancy, leading to possible effects on child development in the intermediate and long term. The ethical dimension of the benefit/risk management of each pregnancy is thus evident. Faced with a pregnancy involving psychotropic medication, above all, the patient needs reassurance, because the stress caused by worrisome information can in itself lead to decompensation.

Antidepressant Drugs

Embryonic Period: Organogenesis

Animal studies have not shown teratogenic effects of tricyclic antidepressants. The data collated in human beings up to now remain equivocal and uncertain.

For selective serotonin reuptake inhibitor antidepressants (SSRIs) and noradrenergic antidepressants, the meta-analysis by Einarson and Einarson (2005), which collected all studies since 1996, found no association between exposure to citalopram, escitalopram, fluoxetine, fluvoxamine, paroxetine, sertraline, reboxetine, venlafaxine, nefazodone, trazodone, mirtazapine, and bupropion and an increased risk of congenital malformations compared to non-exposed mothers. But other studies (Grigoriadis et al. 2013; Pedersen et al. 2009; Williams and Wooltorton 2005) have reported an increased risk of cardiac malformation (especially ventricular septal defects), notably with paroxetine, fluoxetine, sertraline, and citalopram and particularly when more than one SSRI was prescribed. However, the increased risk is attenuated, and even eliminated, by adjustment for the effects of depression itself (see, e.g. Huybrechts et al. 2014).

Some studies (Casper 2015; Chambers et al. 2006) have reported an increased risk of pulmonary hypertension in infants whose mothers took SSRIs after the 20th week of pregnancy (compared with a control group). Because this complication is potentially fatal, a careful benefit/risk assessment is required when serotonergic antidepressants are taken during pregnancy.

Fetus and Neonate

Babies exposed during pregnancy to tricyclic antidepressants or SSRIs are reported to be at an elevated risk of poor neonatal adaptation (PNA) (neurological, autonomic, respiratory, and/or gastrointestinal abnormalities) (Gentile 2010a; Kieviet et al. 2013). The long-term effects of antidepressants remain unknown (Ross et al. 2013).

The critical review by Moses-Kolko et al. (2005), which compared infants of mothers treated with SSRIs at the start of pregnancy and of mothers not treated to those of mothers treated at the end of pregnancy, found that the relative risk of PNA tripled in cases of late exposure, especially with fluoxetine and paroxetine. The cause of this syndrome is not yet well understood: it may be a withdrawal syndrome or a syndrome linked to the serotonin or atropine burden.

Lastly, recent studies discuss the possible risks of developmental disorders (Hanley et al. 2015) and of autistic spectrum disorders (Gentile 2015), but others have not found longitudinal patterns of poor developmental outcomes after prenatal exposure to antidepressants (Santucci et al. 2014).

Breastfeeding

NICE guideline (2014) recommendations are: “When assessing the risks and benefits of treatment for women who are breastfeeding, take into account the limited data about the safety of these drugs and the risks associated with switching from a previously effective medication”. As for all drug use, a close paediatric follow-up is recommended.

What to Do

The rate of antidepressant use during pregnancy varies from 2 to 7 % according to country (Jimenez-Solem 2014; Sie et al. 2012; Taylor et al. 2015). This relatively high prescription rate is probably related to the widespread use of these drugs in the general population. The necessity of this treatment should always be reassessed in the perinatal period to weigh the risks to the infant of antidepressant exposure against the risk of exposure to maternal mood symptoms. The advice is to monitor the baby closely during pregnancy and the early neonatal period.

Antipsychotic Drugs

First-Generation Antipsychotics

Embryonic Period: Organogenesis

The use of first-generation antipsychotics does not appear to result in a major increase in the risk of congenital malformations. Some early retrospective studies reported cases of malformation, thus far unconfirmed, particularly with phenothiazines. Data remain rare (about 500 cases of exposed pregnancies have been published) (for review, see Galbally et al. 2014). It should be borne in mind that the occasional prescription of these drugs for nonpsychiatric problems during pregnancy (e.g. phenothiazines for pregnancy-related vomiting) (Reis and Kallen 2008) may bias the interpretation of these data.

Fetal and Neonatal Periods

In the last two trimesters of pregnancy, maternal hypotension can cause inadequate placental perfusion (Pinkofsky 2000). Increased hospitalization rates have been described for neonates, and paediatric monitoring is recommended (Sutter-Dallay et al. 2015). No valid long-term data about potential behavioural teratogenesis are currently available.

Maternal Complications

The use of first-generation antipsychotics does not seem to result in any noticeable metabolic disorders, although sporadic results report the appearance or aggravation of gestational diabetes (Reis and Kallen 2008).

Second-Generation Antipsychotics

Embryonic Period: Organogenesis

The effects of second-generation antipsychotics on embryonic and fetal development have not yet been studied sufficiently to enable the development of clear guidelines. Reis and Kallen (2008) and Nulman (2014) examined all pharmacological classes together and found a significant global increase in major congenital malformations. Drug by drug, the data regarding olanzapine (the most frequently studied) and risperidone do not show any significant increase in the risk of congenital malformations (Ennis and Damkier 2015; Galbally et al. 2014; Gentile 2010b). Aripiprazole is not indicated for first-line use because of the risk of malformation found in animal studies and the dearth of human data (Ennis and Damkier 2015; Galbally et al. 2010). Among all antipsychotics, quetiapine has the lowest level of placental passage, and no teratogenic risk has been described, although sample sizes have been small so far (Ennis and Damkier 2015; Galbally et al. 2014). Lastly, limited published data to date concerning amisulpride are available (Gentile 2010b). The CRAT (French Reference Centre on Teratogenic Agents; www.lecrat.org/) *does not recommend discontinuing treatment unless an alternative can be prescribed.*

Fetal and Neonatal Periods

Babies whose mothers were treated with atypical antipsychotics during pregnancy appear to be overweight more frequently, independently of any maternal condition (Newham et al. 2008); this is a risk factor for obesity, cardiovascular disease, and diabetes in adulthood. They are also born preterm more frequently (Nulman 2014). A few sporadic cases of neonatal complications have been reported after antenatal exposure to risperidone, notably withdrawal and extrapyramidal syndromes (Galbally et al. 2010). The literature reports “perinatal complications” in approximately 15 % of cases of antenatal exposure to olanzapine, but no data are available as to their type, severity, or outcome of these complications (Gentile 2010b).

Effects of antenatal exposure to second-generation antipsychotics on later child development remain unknown. To our knowledge, a single retrospective study has reported possible psychiatric and neurological effects in adolescents exposed to antipsychotics in utero (Aagaard and Hansen 2010).

Maternal Complications

A risk of metabolic complications during pregnancy, particularly gestational diabetes, has been described, as well as low birth weight and caesarean delivery (Galbally et al. 2010, 2014).

Antipsychotics and Breastfeeding

In women who wish to breastfeed, the need to be continuously available to the baby leads to maternal sleep deprivation; moreover, breastfeeding can be a stress factor in itself (e.g. implementation of breastfeeding is sometimes difficult, uncertainty about quantities to be given). These factors should be taken into account in the benefit/risk

discussion about treatment with antipsychotics during breastfeeding, above and beyond the direct effects of these drugs on the neonate.

Breastfeeding sometimes exposes babies to the risk of overdose, because of the relatively long elimination half-life of most of these medications, together with the baby's immature liver and kidney functions (Gentile 2004). This is true for amisulpride: passage into the milk results in relative doses to the infant of 10 % of the mother's dose (<http://www.lecrat.org/>). Haloperidol, olanzapine, quetiapine, and risperidone are excreted into breast milk in much smaller quantities, and relative doses to the infant remain under 3 % (Hale and Rowe 2014; Moretti 2009).

Lastly, it is important to remember that the dopaminergic agonists generally prescribed to prevent milk production for women who choose not to breastfeed should not be used in these situations, because they can induce decompensation, especially in psychotic disorders (ANSM 2013; Misdrahi et al. 2006). The alternative is to use non-medicinal measures that do not prevent milk production but keep it to a minimum (moderate water restriction, local anti-inflammatory agents, breast compression).

What to Do

If decompensation requiring antipsychotics occurs during the perinatal period, whether a first episode or a relapse, rapid treatment with medication is always indicated. Previously effective treatment, if there has been one, should be continued or restarted.

Mood Stabilizers

Lithium

Embryonic Period: Organogenesis

Lithium is teratogenic in invertebrates at high doses. After the alarming findings by Schou et al. in the 1970s, its effects on humans are now known to be less severe than previously feared. Exposure to lithium in utero appears to be correlated with an increased frequency of cardiac defects (Bergink and Kushner 2014; Diav-Citrin et al. 2014; Giles and Bannigan 2006), but the difference no longer appears significant once anomalies that resolve spontaneously postpartum are excluded (Diav-Citrin et al. 2014). The latest meta-analysis showed no formal evidence of a link between lithium intake during pregnancy and cardiac malformations (McKnight et al. 2012). Finally, it appears impossible to conclusively assert or refute any specific relation between lithium and Ebstein's anomaly (Diav-Citrin et al. 2014; Giles and Bannigan 2006). It is therefore recommended that all women receiving lithium during pregnancy should undergo fetal echocardiography and a level-2 (anatomic scan) ultrasound examination (Bergink and Kushner 2014).

Fetus and Neonate

Lithium use during the fetal period is likely to lead to a significant increase in birth weight (Diav-Citrin et al. 2014). Paediatricians should carefully monitor babies for CNS and neuromuscular complications (Newport et al. 2005). The recommendation

is therefore to refer these patients to maternity hospitals with neonatal paediatric resources. The mother's lithium blood levels should be maintained as low as possible, based on her history. The 2007 NICE guidelines advise clinicians to monitor lithium levels in maternal blood monthly from the 20th week of gestation and weekly beginning 4 weeks before delivery.

Few studies describe risks of long-term neurological, cognitive, and behavioural teratogenesis. Results at 5 (Schou et al. 1973) and 15 years of age (Van Der Lugt et al. 2012) suggest no distinctive features of these babies as they mature.

Breastfeeding

Data about breastfeeding and lithium use are sparse. The few existing studies report high blood levels in infants, up to 17 % of maternal levels (Bogen et al. 2012). Because of the narrow therapeutic margin and the potential increase in lithium blood levels in the event of sodium depletion (heat, fever, diarrhoea, vomiting, etc.), which can be frequent in babies, breastfeeding is contraindicated.

What to Do

Lithium is no longer really contraindicated during the first trimester of pregnancy and is certainly not in itself an indication for termination of pregnancy today. The risk of birth defects must also be considered in the light of the availability of ultrasound screening and the progress in paediatric cardiac surgery. Here, even more than with other psychotropic drugs, assessing the benefit/risk ratio for each patient is essential. Viguera et al. (2000, 2007) have emphasized the importance of mood stabilization during pregnancy when necessary: women who stop their lithium treatment during pregnancy have a risk of postnatal recurrence twice as high as non-pregnant patients, and this recurrence may occur 4 times more rapidly and last 5 times longer. Discontinuation of lithium treatment must be progressive, even if the embryo is exposed, because the teratogenic risk is currently considered to be less than that of decompensation generated by abrupt cessation (Burt and Rasgon 2004). If treatment is continued throughout the pregnancy, the marked variation in blood volume and the increased rate of renal excretion during pregnancy make regular monitoring of maternal plasma and erythrocyte levels of lithium necessary. Progressive decrease in dose in the days preceding birth is recommended to avoid an overdose in the immediate postpartum period. Proper hydration must be maintained during labour to avoid neonatal overdosing. In the postpartum, daily assays of plasma and erythrocyte lithium should be performed and dosage adjusted until the appropriate balance is obtained.

Carbamazepine

Embryonic Period: Organogenesis

Data about the use of carbamazepine during pregnancy mainly concern women with epilepsy; reports about women with psychiatric disorders are extremely rare, although this antiepileptic drug is indicated for bipolar disorder. It is not contraindicated for use during pregnancy for epileptic patients by either the Food and Drug

Administration (FDA) or the European Medicine Agency (EMA). Nevertheless, studies have reported an increased risk of spina bifida in children exposed during the first trimester (Ernst and Goldberg 2002; Galbally et al. 2010) and a possible dose-effect on global major congenital malformation rates (Campbell et al. 2014). Nonetheless, a recent large population-based study found antenatal exposure to carbamazepine had no effect on this risk (Veiby et al. 2014).

Fetus and Neonate

Increased risks of small head circumference and low birth weight for gestational age have been reported (Galbally et al. 2010; Veiby et al. 2014). The enzyme-inducing effect of carbamazepine must also be considered. Most studies of its effect on child cognitive development report a slight impact, specifically on verbal abilities (Baker et al. 2015; Van Der Pol et al. 1991).

Breastfeeding

There are no data about breastfeeding by women with bipolar disorders treated with carbamazepine. The studies in women with epilepsy emphasize the importance of close paediatric monitoring because of the drug's hepatic toxicity and the immaturity of the infant's liver (Veiby et al. 2015).

What to Do

The risk of congenital malformations necessitates supplementation with folic acid before conception and during pregnancy to prevent neural tube defects (Gedzelman et al. 2012).

Ultrasound monitoring is recommended along with an assay of maternal serum levels of alpha-fetoprotein before the 18th week of gestation (Galbally et al. 2010). Lastly, regular care and monitoring in a neonatal paediatric department are recommended for the child.

Valproates

Embryonic Period: Organogenesis

The prescription of valproates is contraindicated during the first trimester of pregnancy. The teratogenic risk is significant, with a global malformation rate around 10 % (four times higher than with other antiepileptic drugs), mainly of the central nervous system (Ernst and Goldberg 2002; Galbally et al. 2010; Hernández-Díaz et al. 2012). In cases of exposure in early pregnancy, some authors consider that the risk of teratogenesis outweighs that of mood decompensation and advocate rapid cessation. Specific ultrasound to screen for malformations is required as early as possible, and abortion counselling must be offered if they are suspected.

Fetus and Neonate

Valproate may lead to a haemorrhagic syndrome in the newborn, although its cause is still unclear (possibly a combination of impaired platelet aggregation, thrombocytopenia, and decreased fibrinogen). Monitoring of haemostasis is thus required in

the mother before delivery and in the neonate at birth. The baby also appears to be at risk of hepatocellular insufficiency. Some studies have described a risk of neonatal hypoglycaemia (Galbally et al. 2010). Another important concern is the risk of impaired cognitive development in infants of mothers treated with valproates (Eriksson et al. 2005). The EMA recently issued a warning against prescribing these drugs to women and girls of childbearing age (http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/human/referrals/Valproate_and_related_substances/human_referral_prac_000032.jsp&mid=WC0b01ac05805c516f).

Breastfeeding

As valproic acid is not recommended during pregnancy, very few women give birth while taking this medication. There are no data on breastfeeding women with bipolar disorder who have taken valproate. The latest studies of breastfeeding women with epilepsy who take valproic acid or other antiepileptic drugs have found no adverse effects on the IQ at age 6 of children exposed via breast milk, compared to infants of women with epilepsy who were not breastfed (Meador et al. 2014).

What to Do

In view of the clear increase in the risk of congenital malformations caused by the use of valproates during pregnancy, valproate should be avoided completely in pregnancy and in women of childbearing age. If pregnancy has started under the use of valproate, this drug should be stopped in the first weeks if possible. If not possible, supplementation with folic acid is essential to reduce the risk of neural tube defects (Gedzelman et al. 2012; <http://www.lecrat.org/>).

Monitoring by special ultrasonography is also recommended, together with an assay of maternal serum levels of alpha-fetoprotein before the 18th week of gestation. During pregnancy and after childbirth, maternal and child coagulation and hepatic functions and maternal blood concentrations of valproate should all be monitored regularly.

Lamotrigine, Topiramate, and Gabapentin

Lamotrigine is not contraindicated during pregnancy (Arkilo et al. 2015). However, it may cause defective organ development; a dose-effect relation has been suggested, but not yet confirmed (Campbell et al. 2014).

Topiramate, on the other hand, is associated with a significantly increased risk of oral cleft in infants (Alsaad et al. 2015). No consistent data are available regarding gabapentin.

Lamotrigine is considered moderately safe during breastfeeding, but there is a risk of high blood levels and of hepatic and cutaneous side effects in the baby. If these infants are breastfed, they must be carefully monitored (Veiby et al. 2015). No satisfactory or useful data are currently available about breastfeeding while taking topiramate or gabapentin.

Benzodiazepines (BZP)

Embryonic Period: Organogenesis

Studies in the 1970s linked antenatal exposure to BZPs to birth defects, notably facial. These results have been called into question because they did not take major confounding factors (such as concomitant alcohol consumption, other psychotropic treatments, or epilepsy) into account, but the risk of cleft-lip malformations cannot completely be ruled out (Enato et al. 2011).

Fetus and Neonate

BZP intake by the mother during the fetal period can lead to two significant types of risk. On the one hand, floppy infant syndrome (muscle hypotonia, hypothermia, and respiratory distress) is linked to high doses before birth. When treated, this syndrome regresses in a few days. On the other hand, however, withdrawal syndrome (hyperexcitability, trembling, and convulsive seizures) is also possible and requires paediatric monitoring during the first weeks of life. It should be underlined that long-term consumption of BZPs, even at low doses, is likely to generate withdrawal symptoms in the infant (Calderon-Margalit et al. 2009). Recent data also indicate an increased risk of preterm birth, low birth weight, low Apgar score, respiratory disorders, and small-for-gestational-age infants (Calderon-Margalit et al. 2009; Okun et al. 2015). Finally, the few existing studies report no significant effect on child development (Odsbu et al. 2015; Stika et al. 1990). An important problem with BZP intake during pregnancy is that many patients take this type of treatment without informing their obstetrician, who often discovers it only after the diagnosis of the BZP-related disorders in the infant.

Breastfeeding

The antianxiety agent of choice during breastfeeding is oxazepam, because of the low concentrations found in maternal milk (Hale and Rowe 2014). Close monitoring is needed for signs of sedation in the infant (prolonged sleep, decreased suckling, insufficient weight gain) (<http://www.lecrat.org/>). Other antianxiety agents should be avoided; they are either significantly excreted into breast milk or have not been evaluated.

What to Do

If necessary, short-elimination half-life drugs without active metabolites, such as oxazepam, taken selectively, seem to be the best choice.

Electroconvulsive Therapy (ECT)

The use of ECT during pregnancy should be reserved for life-threatening emergencies or situations where the use of medication is risky or ineffective.

Effects of ECT on Embryo and Fetus

A review by Anderson and Reti (2009) reports that, despite the sparseness of the available data, ECT appears to be an effective treatment for severe psychiatric

disorders during pregnancy and that both maternal and fetal risks are low. The main danger of ECT during pregnancy is anoxia in the infant during the seizure, and endotracheal intubation and hyperventilation of the patient in the pre-critical period are sometimes recommended. The fetus should be monitored for any signs of distress. To our knowledge, only a single quite old study explored the effect of ECT on child development and found that at 9 years of age, no significant differences between the children of mothers treated with ECT and the controls indicated any risk of physical or behavioural teratogenesis (Impastato et al. 1964).

Conclusion

One of the most important specificities of the perinatal period is the real possibility of preventive care that protects against harm to both mother and child. Psychiatrists must always bear in mind the importance of discussing pregnancy plans with women of childbearing age, preferably before they become pregnant. They must also focus on the importance of providing adequate treatment for pregnant women with psychiatric disorders. The choice of treatment must be made at the conclusion of a multidisciplinary discussion of risks and benefits between the health professionals involved, the patient, and her partner. The management of perinatal psychiatric disorders thus requires above all the development of multidisciplinary collaboration within networks that include obstetric and neonatal paediatric services.

References

- Aagaard L, Hansen EH (2010) Adverse drug reactions from psychotropic medicines in the paediatric population: analysis of reports to the Danish Medicines Agency over a decade. *BMC Res Notes* 3:176
- Alsaad AM, Chaudhry SA, Koren G (2015) First trimester exposure to topiramate and the risk of oral clefts in the offspring: a systematic review and meta-analysis. *Reprod Toxicol* 20:45–50. doi:10.1016/j.reprotox.2015.03.003
- Anderson EL, Reti IM (2009) ECT in pregnancy: a review of the literature from 1941 to 2007. *Psychosom Med* 71:235–242
- ANSM (2013) National Security Agency of Medicines and Health Products. <http://ansm.sante.fr/S-informer/Points-d-information-Points-d-information/Bromocriptine-Parlodel-R-et-Bromocriptine-Zentiva-R-le-rapport-benefice-risque-n-est-plus-favorable-dans-l-inhibition-de-la-lactation-Point-d-information>
- Arkilo D, Hanna J, Dickens D (2015) Pregnancy and neurodevelopmental outcomes with in-utero antiepileptic agent exposure. A pilot study. *Eur J Paediatr Neurol* 19:37–40. doi:10.1016/j.ejpn.2014.09.006
- Baker GA, Bromley RL, Briggs M et al. (2015) IQ at 6 years after in utero exposure to antiepileptic drugs: a controlled cohort study. *Neurology* 84:382–390 doi:10.1212/WNL.0000000000001182
- Barlow J, Bennett C, Midgley N et al (2015) Parent-infant psychotherapy for improving parental and infant mental health. *Cochrane Database Syst Rev* 1:CD010534
- Bergink V, Kushner SA (2014) Lithium during pregnancy. *Am J Psychiatry* 171:712–715. doi:10.1176/appi.ajp.2014.14030409
- Bogen DL, Sit D, Genovese A et al (2012) Three cases of lithium exposure and exclusive breastfeeding. *Arch Womens Ment Health* 15:69–72

- Burt VK, Rasgon N (2004) Special considerations in treating bipolar disorder in women. *Bipolar Disord* 6:2–13
- Calderon-Margalit R, Qiu C, Ornoy A et al (2009) Risk of preterm delivery and other adverse perinatal outcomes in relation to maternal use of psychotropic medications during pregnancy. *Am J Obstet Gynecol* 201(579):e571–e578
- Campbell E, Kennedy F, Russell A (2014) Malformation risks of antiepileptic drug monotherapies in pregnancy: updated results from the UK and Ireland Epilepsy and Pregnancy Register. *J Neurol Neurosurg Psychiatry* 85:1029–1034. doi:[10.1136/jnnp-2013-306318](https://doi.org/10.1136/jnnp-2013-306318)
- Casper RC (2015) Use of selective serotonin reuptake inhibitor antidepressants in pregnancy does carry risks, but the risks are small. *J Nerv Ment Dis* 203(3):167–169
- Chambers CD, Hernandez-Diaz S, Van Marter LJ (2006) Selective serotonin-reuptake inhibitors and risk of persistent pulmonary hypertension of the newborn. *N Engl J Med* 354(6):579–587
- Clark CT, Klein AM, Perel JM et al (2013) Lamotrigine dosing for pregnant patients with bipolar disorder. *Am J Psychiatry* 170:1240–1247. doi:[10.1176/appi.ajp.2013.13010006](https://doi.org/10.1176/appi.ajp.2013.13010006)
- Diav-Citrin O, Shechtman S, Tahover E (2014) Pregnancy outcome following in utero exposure to lithium: a prospective, comparative, observational study. *Am J Psychiatry* 171:785–794. doi:[10.1176/appi.ajp.2014.12111402](https://doi.org/10.1176/appi.ajp.2014.12111402)
- Einarson TR, Einarson A (2005) Newer antidepressants in pregnancy and rates of major malformations: a meta-analysis of prospective comparative studies. *Pharmacoepidemiol Drug Saf* 14:823–827
- Enato E, Moretti M, Koren G (2011) The fetal safety of benzodiazepines: an updated meta-analysis. *J Obstet Gynaecol Can* 33:46–48
- Ennis ZN, Damkier P (2015) Pregnancy exposure to olanzapine, quetiapine, risperidone, aripiprazole and risk of congenital malformations. A systematic review. *Basic Clin Pharmacol Toxicol* 116(4):315–320. doi:[10.1111/bcpt.12372](https://doi.org/10.1111/bcpt.12372)
- Eriksson K, Viinikainen K, Mönkkönen A et al (2005) Children exposed to valproate in utero – population based evaluation of risks and confounding factors for long-term neurocognitive development. *Epilepsy Res* 65(3):189–200
- Ernst CL, Goldberg JF (2002) The reproductive safety profile of mood stabilizers, atypical antipsychotics, and broad-spectrum psychotropics. *J Clin Psychiatry* 63(Suppl 4):42–55
- Gaffield ME, Culwell KR, Lee CR (2011) The use of hormonal contraception among women taking anticonvulsant therapy. *Contraception* 83:16–29
- Galbally M, Snellen M, Walker S et al (2010) Management of antipsychotic and mood stabilizer medication in pregnancy: recommendations for antenatal care. *Aust N Z J Psychiatry* 44:99–108
- Galbally M, Snellen M, Power J (2014) Antipsychotic drugs in pregnancy: a review of their maternal and fetal effects. *Ther Adv Drug Saf* 5:100–109. doi:[10.1177/2042098614522682](https://doi.org/10.1177/2042098614522682)
- Gentile S (2004) Clinical utilization of atypical antipsychotics in pregnancy and lactation. *Ann Pharmacother* 38:1265–1271
- Gentile S (2010a) On categorizing gestational, birth, and neonatal complications following late pregnancy exposure to antidepressants: the prenatal antidepressant exposure syndrome. *CNS Spectr* 15(3):167–185
- Gentile S (2010b) Antipsychotic therapy during early and late pregnancy. A systematic review. *Schizophr Bull* 36:518–544
- Gentile S (2015) Prenatal antidepressant exposure and the risk of autism spectrum disorders in children. Are we looking at the fall of Gods? *J Affect Disord* 6:132–137
- Giles JJ, Bannigan JG (2006) Teratogenic and developmental effects of lithium. *Curr Pharm Des* 12:1531–1541
- Gedzelman E, Kimford J, Meador MD (2012) Antiepileptic drugs in women with epilepsy during pregnancy. *Ther Adv Drug Saf* 3(2):71–87
- Grigoriadis S, VonderPorten EH, Mamisashvili L et al (2013) Antidepressant exposure during pregnancy and congenital malformations: is there an association? A systematic review and meta-analysis of the best evidence. *J Clin Psychiatry* 74(4):e293–e308. doi:[10.4088/JCP.12r07966](https://doi.org/10.4088/JCP.12r07966)

- Hale TW, Rowe HE (2014) Medication and mother milk. Hale Publishing, Plano, TX, LP. 978-1-9398473-8-6.
- Hanley GE, Brain U, Oberlander T (2015) Prenatal exposure to serotonin reuptake inhibitor antidepressants and childhood behaviour. *Pediatr Res* 21. doi:[10.1038/pr.2015.77](https://doi.org/10.1038/pr.2015.77).
- Hernández-Díaz S, Smith CR, Shen A et al (2012) Comparative safety of antiepileptic drugs during pregnancy; North American AED Pregnancy Registry. *Neurology* 78:1692–1699. doi:[10.1212/WNL.0b013e3182574f39](https://doi.org/10.1212/WNL.0b013e3182574f39)
- Huybrechts KF, Palmsten K, Avorn J, Cohen LS, Holmes LB, Franklin JM, Mogun H, Levin R, Kowal M, Setoguchi S, Hernández-Díaz S (2014) Antidepressant use in pregnancy and the risk of cardiac defects. *N Engl J Med* 370:2397–2407. doi:[10.1056/NEJMoa1312828](https://doi.org/10.1056/NEJMoa1312828).
- Impastato DJ, Gabriel AR, Lardaro HH (1964) Electric and insulin shock therapy during pregnancy. *Dis Nerv Syst* 25:542–546
- Jimenez-Solem E (2014) Exposure to antidepressants during pregnancy—prevalences and outcomes. *Dan Med J* 61(9):B4916
- Kieviet N, Dolman KM, Honig A (2013) The use of psychotropic medication during pregnancy: how about the newborn? *Neuropsychiatr Dis Treat* 9:1257–1266
- Mcknight RF, Adida M, Budge K et al (2012) Lithium toxicity profile: a systematic review and meta-analysis. *Lancet* 379:721–728
- Meador KJ, Baker GA, Browning N et al (2014) Breastfeeding in children of women taking anti-epileptic drugs: cognitive outcomes at age 6 years. *JAMA Pediatr* 168:729–736. doi:[10.1001/jamapediatrics.2014.118](https://doi.org/10.1001/jamapediatrics.2014.118)
- Miller WH Jr, Bloom JD, Resnick MP (1992) Prenatal care for pregnant chronic mentally ill patients. *Hosp Community Psychiatry* 43:942–943
- Misdráhi D, Chalard R, Verdoux H (2006) Postpartum mania induced by Bromocriptine: a case report. *J Gynecol Obstet Biol Reprod* 35:79–81
- Moretti ME (2009) Psychotropic drugs in lactation – Motherisk update 2008. *Can J Clin Pharmacol* 16:e49–e57
- Moses-Kolko EL, Bogen D, Perel J et al (2005) Neonatal signs after late in utero exposure to serotonin reuptake inhibitors: literature review and implications for clinical applications. *JAMA* 293:2372–2383
- Newport DJ, Viguera AC, Beach AJ et al (2005) Lithium placental passage and obstetrical outcome: implications for clinical management during late pregnancy. *Am J Psychiatry* 162:2162–2170
- NICE guidelines (2014) Antenatal and postnatal mental health: clinical management and service guidance [CG192]. <https://www.nice.org.uk/guidance/cg192#>
- Newham JJ, Thomas SH, Macritchie K et al (2008) Birth weight of infants after maternal exposure to typical and atypical antipsychotics: prospective comparison study. *Br J Psychiatry* 192:333–337
- Nulman I (2014) The effects of the new antipsychotic medications on mothers and babies. *J Popul Ther Clin Pharmacol* 21:e542–e547
- Odsbu I, Skurtveit S, Selmer R et al (2015) Prenatal exposure to anxiolytics and hypnotics and language competence at 3 years of age. *Eur J Clin Pharmacol* 71:283–291. doi:[10.1007/s00228-014-1797-4](https://doi.org/10.1007/s00228-014-1797-4)
- Okun ML, Ebert R, Saini B (2015) A review of sleep-promoting medications used in pregnancy. *Am J Obstet Gynecol* 212:428–441. doi:[10.1016/j.ajog.2014.10.1106](https://doi.org/10.1016/j.ajog.2014.10.1106)
- Pedersen LH, Henriksen TB, Vestergaard M et al (2009) Selective serotonin reuptake inhibitors in pregnancy and congenital malformations: population based cohort study. *BMJ* 339:b3569
- Pinkofsky HB (2000) Effects of antipsychotics on the unborn child: what is known and how should this influence prescribing? *Paediatr Drugs* 2:83–90
- Reis M, Kallen B (2008) Maternal use of antipsychotics in early pregnancy and delivery outcome. *J Clin Psychopharmacol* 28:279–288
- Ross LE, Grigoriadis S, Mamisashvili L et al (2013) Selected pregnancy and delivery outcomes after exposure to antidepressant medication: a systematic review and meta-analysis. *JAMA Psychiatry* 70(4):436–443

- Schou M, Goldfield MD, Weinstein MR et al (1973) Lithium and pregnancy. I. Report from the Register of Lithium Babies. *BMJ* 2:135–136
- Sie SD, Wennink JM, Van Driel JJ et al (2012) Maternal use of SSRIs, SNRIs and NaSSAs: practical recommendations during pregnancy and lactation. *Arch Dis Child Fetal Neonatal Ed* 97:F472–F476
- Santucci AK, Singer LT, Wisniewski SR et al (2014) Impact of prenatal exposure to serotonin reuptake inhibitors or maternal major depressive disorder on infant developmental outcomes. *J Clin Psychiatry* 75:1088–1095. doi:[10.4088/JCP.13m08902](https://doi.org/10.4088/JCP.13m08902)
- Stika L, Elisová K, Honzáková L et al (1990) Effects of drug administration in pregnancy on children's school behaviour. *Pharm Weekbl Sci* 12(6):252–255
- Sutter-Dallay AL, Bales M, Pambrun E et al (2015) Impact of prenatal exposure to psychotropic drugs on neonatal outcome in infants of mothers with serious psychiatric illnesses. *J Clin Psychiatry* 76(7):967–73. doi: [10.4088/JCP.14m09070](https://doi.org/10.4088/JCP.14m09070)
- Taylor LG, Thelus Jean R, Gordon G, Fram D, Coster T (2015) Development of a mother-child database for drug exposure and adverse event detection in the Military Health System. *Int J Epidemiol* 14. Pii: dyv030
- Van Der Lugt NM, Van De Maat JS, Van Kamp IL et al (2012) Fetal, neonatal and developmental outcomes of lithium-exposed pregnancies. *Early Hum Dev* 88:375–378
- Van Der Pol MC, Hadders-Algra M, Huisjes HJ et al (1991) Antiepileptic medication in pregnancy: late effects on the children's central nervous system development. *Am J Obstet Gynecol* 164:121–128
- Veiby G, Daltveit AK, Engelsen BA et al (2014) Fetal growth restriction and birth defects with newer and older antiepileptic drugs during pregnancy. *J Neurol* 261:579–588. doi:[10.1007/s00415-013-7239-x](https://doi.org/10.1007/s00415-013-7239-x)
- Veiby G, Bjørk M, Engelsen BA et al (2015) Epilepsy and recommendations for breastfeeding. *Seizure*. pii: S1059-1311(15)00041-2. doi:[10.1016/j.seizure.2015.02.013](https://doi.org/10.1016/j.seizure.2015.02.013)
- Viguera AC, Nonacs R, Cohen LS et al (2000) Risk of recurrence of bipolar disorder in pregnant and nonpregnant women after discontinuing lithium maintenance. *Am J Psychiatry* 157:179–184
- Viguera AC, Whitfield T, Baldessarini RJ et al (2007) Risk of recurrence in women with bipolar disorder during pregnancy: prospective study of mood stabilizer discontinuation. *Am J Psychiatry* 164:1817–1824; quiz 1923
- Williams M, Woollorton E (2005) Paroxetine (Paxil) and congenital malformations. *CMAJ Can Med Assoc J Journal de l'Association Médicale Canadienne* 173:1320–1321

Elisabeth Glatigny Dallay and Antoine Guedeney

Abstract

Interaction difficulties often represent the first and only indication of difficulties and disorders appearing in the infant. It is therefore of main importance to be able to assess these interactions with appropriate tools. In this chapter, we selectively review a number of specific interactive methods that have been used in developmental and clinical research and that we believe have value for use in clinical settings. Eleven tools are presented in chronological order: NCAST-PCI (Nursing Child Assessment Satellite Training – Parent-Child Interaction Teaching and Feeding Task Scales), CARE-Index, PCERA (Parent-Child Early Relational Assessment), Bobigny Grid, CIB (Coding Interactive Behavior), GRS (Global Rating Scale), PIPE (Parent-Infant Pediatric Examination), IPCI (Indicator of Parent-Child Interaction), KIPS (Keys to Interactive Parenting Scale), PIIOS (Parent-Infant Interaction Observation Scale), and PIRAT (Parent-Infant Relational Assessment Tool).

Introduction

Assessment of the quality of parent-child interaction is a priority because of its major impact in the normative emotional and cognitive development of the baby and its importance in psychopathology. It is known that the risks for the development of

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the child can be pre- or postnatal and are above all linked to the parent-child relationship. They can be linked to particular situations (abuse, deprivations, postnatal depression, parental psychopathology, adoption, etc.) or be the first signs of a disorder: autism, mental deficiency, anxiety, or depressive disorders or behavioral disorders. Particular attention therefore needs to be paid to the mechanisms of development in all of its various aspects (emotional, attachment, cognition, motor development, development of language, and communication) and to possible disorders so as to intervene at the earliest sign, or to prevent them. Interaction difficulties often represent the first and only indication of difficulties and disorders appearing in the infant. Although there is no real consensus on the definition of assessment, this term has become a keyword in the field of perinatal psychiatry. The study of interactions and relationships of the child with its parents is at the heart of the process of clinical assessment of the infant. In order to decide on an effective intervention, essential elements need to be taken into account: an assessment of symptoms and parent-child interactions, as well as parenting skills. Assessment thus holds a central place in the clinical examination.

Studying parent-child interactions began with the mother-baby relationship then looked into the father-baby relationship and later the triadic parent-baby relationship, which are also essential to observe (insofar as one can see how the baby interacts effectively with each of the parents and with the two together and thus assess the ability of alliance and co-parenting of parents to the baby).

Even if an assessment time can be more focused on the functioning of the infant and/or its parents, it is how they usually interact that needs to be analyzed: One can observe the partners' involvement, terms of behavior and synchronization, the adjustment quality, the sensitivity to the child's cues, the emotional tone, and the quality of the answers. The parental representations underlying these answers can also be postulated.

We understand that this assessment is quite complex. We need first of all to really assess interactions and not only parental behaviors or just maternal behavior, which is quite limiting but often done. To take into account interactions, we need to observe the mutual effects of the infant on its partner(s) and of the partner(s) on the infant. It is this synchronization that is difficult to grasp and that requires a choice of scales (clinical time, macro- or microanalysis, picture by picture).

This complexity reflects the fact that interactions have been studied in detail much more easily since the advent of video recording in developmental psychology. The video has become easier to use in mental health units and also in the home, thanks to the prices of equipment becoming affordable. Their use has spread in everyone's life making it a common tool, friendly to use. In the research field, video-based assessment scales are essential to quantify or compare interactions. Many tools have been designed for research and then adapted to clinical settings. Video is now a major tool for training, supervision, and education, but also for clinical assessment.

Assessing interactions should be standard practice for clinicians, but we have noted that this is not always the case. The use of video recordings is not as widespread as we might expect. Sometimes grids or scales of standardized interactions

are used, but too many professionals still settle for a quite subjective global assessment, in a more or less standardized situation of observation. There are various reasons for this, for instance, assuming that such tools are for research only (too complicated, time-consuming, etc.), require long and costly training, etc. A large majority of the tools are in English with no translation available, or need local adaptation due to regional, cultural, temporal, or other contributing factors (Higgins et al. 2010). But we must bear in mind that for a reliable and valid assessment, a structured observational tool that specifies the behaviors to observe, with defined scoring criteria, should be used. Professionals who work with babies and dyads would benefit from being trained in and implementing interaction assessments.

Another interest of these tools is that, in clinical practice, using them has a clinical impact in dyadic care and in staff work. Concerning health professionals, an obvious consequence is reported by Gordon and Comfort (2013): “A rarely recognised value of observational parenting assessment is that of improving the practitioner’s own capacity to shift their focus from the child to parent-child interactions.” It helps in defining the components of effective interactions and promotes a common language among co-workers and during supervision. With parents, interaction assessments objectify the observations and their progression and can be useful in establishing and supporting dialogue with them, such as addressing each individual parent’s strengths and needs, and monitor their progress together. When parents and staff discuss specific information from assessments, they can collaborate as a team to focus their efforts, adjust their strategies, and effectively promote the development of the children.

Few handbooks deal specifically with clinical assessment of the baby: Del Carmen-Wiggins and Carter (2004) and the chapters on assessments in the three editions of the Handbook of Infant Mental Health by Charles Zeanah (2005 republished in 2009 and 2012). There is also the recent review of parent-child mutuality coding systems (Funamoto and Rinaldi 2015). In French, the book by Guédéney and Tourrette in 2012 is the first of its kind.

We cannot provide an exhaustive inventory of the tools (scales, questionnaires, tests) useful for the assessment of parent-child interactions. In this chapter, we selectively review a number of specific interactive methods that have been used in developmental and clinical research and that we believe have value for use in clinical settings. Eleven tools are presented in chronological order.

NCAST-PCI (Nursing Child Assessment Satellite Training – Parent-Child Interaction Teaching and Feeding Task Scales)

Barnard (1979); Kelly and Barnard (2000); Sumner and Spietz (1994).
www.ncast.org

The NCAST-PCI scales are used to rate mother and child behaviors. The instruments are useful for assessing children in both low- and high-risk groups and have been used with a variety of racial and ethnic groups. The Feeding and Teaching

Scale program was updated in 1994 and is currently known as the Parent-Child Interaction (PCI) program.

The NCAST-PCI evaluates 149 variables related to the mother and the child and comprises two scales:

- The *Feeding Scale (NCAFS or PCI Feeding Scale)* has 76 variables which are used to rate mother and infant behaviors during regular feeding time (from birth to 12 months).
- The *Teaching Scale (NCATS or PCI Teaching Scale)* has 73 variables, which are used to rate caregiver and infant behavior (from birth to 36 months). Caregivers are asked to review a list of activities appropriate for children, aged between birth and 4 years old, and to select the first activity that their child cannot do. Once they have selected the task, the clinician instructs the caregiver to try to teach it to the child.

In each scale, infants receive scores according to their ability to produce clear cues and ability to respond to their caregiver. Caregivers receive scores according to their ability to respond to their infant's cues alleviate distress, and promote growth-fostering situations by permitting the child to initiate behaviors. The procedure is scored immediately, and feedback is provided to the caregiver. Because the scales are rated just after their administration, filming is useful but not required.

The assessments are time efficient, and the procedures are not highly complex in structure or materials. Formal scoring is recommended even for clinical use of the scales. These scales are intended for use by nurses or other professionals working with families with young children. The NCAST-PCI is widely used mostly in the USA, but also in several foreign countries, to rate observations made at home, both for clinical and research purposes.

Our target audience is home-visit nurses, social workers, researchers, and other service providers working with families with young children (0–3).

CARE-Index

Crittenden date of construct 1981, multiple revisions, last update 2004

www.patcrittenden.com

Patricia Crittenden, student and colleague of Mary Ainsworth, is an attachment theory specialist. She has published numerous works, in particular on attachment and child abuse.

The CARE-Index is a method for assessing the quality of adult-infant interaction (although the adult is most often the mother, the procedure can be used with fathers, other relatives, health visitors, day care providers, and infant intervention personnel). It is based on 3–5 min of videotaped play interaction occurring under non-threatening conditions. Assessments of attachment require the introduction of a stressful condition that will elicit self-protective strategies by individuals. Because this is not done in the CARE-Index, the procedure cannot directly assess pattern of attachment. It does, however, assess dyadic characteristics that are associated with

attachment. The CARE-Index is a dyadic procedure that assesses adult sensitivity in a dyadic context.

Specifically, “adult sensitivity in play is any pattern of behavior that pleases the infant and increases the infant’s comfort and attentiveness and reduces its distress and disengagement” (Crittenden 1979–2004).

Age: The procedure is suitable from birth to 15 months, and there is a toddler form which can be used from 15 to 30 months.

“The coding procedure focuses observers’ attention on seven aspects of adult and infant behavior some of which assess affect (facial expression, vocal expression, position and body contact, expression of affection) with others assessing ‘cognition,’ i.e. temporal order and interpersonal contingency, (pacing of turns, control of the activity, and developmental appropriateness of the activity). Each aspect of behavior is assessed separately, for adult and infant, then the scores are added to generate seven scale scores. For the adult, these are sensitivity, control, and unresponsiveness. For infants (birth–15 months), they are cooperativeness, compulsiveness, difficultness, and passivity. For toddlers (15–30 months of age), these are cooperativeness, compulsiveness, threateningly coercive, and disarmingly coercive.

The scores on these scales range from 0 to 14, with zero sensitivity being dangerously insensitive, 7 being normally sensitive, and 14 being outstandingly sensitive. On the adult sensitivity scale, scores of 5–6 suggest the need for parental education, 3–4 suggests the need for parenting intervention, and 0–2 suggests the need for psychotherapy for the parent.

Although this statement should not be applied rigidly or without additional assessment, it makes the two points that (1) less adequate parent-infant relationships may not be helped – and might be harmed – by parent education and (2) some very troubled relationships will not be helped by parenting interventions at all.” (Using the CARE-Index for Screening, Intervention, and Research, Patricia McKinsey Crittenden, patcrittenden.com website)

The scales

1. Are highly correlated with the infant strange situation assessment patterns of attachment
2. Differentiate abusing from neglecting, abusing and neglecting, marginally maltreating, and adequate dyads
3. Can be used during intervention
4. Can be used to assess the effectiveness of intervention

Advantage: Can be applied by paraprofessionals and carried out in several contexts (home, clinic, office, etc.). Briefly requiring only 3–5 min of videotape, about 15 min to code, but the professionals who code need extensive training. Wide age range: Birth–2 ½. Widely used in many countries and used in various studies. See details of studies using it on P. Crittenden website, main domains:

Risk studies: Adolescent mothers, drug-abusing mothers, drug-exposed infants, maternal psychiatric disorder, handicapping conditions, maltreated infants, normative studies, predictive longitudinal studies, and intervention studies.

PCERA (Parent-Child Early Relational Assessment)

Clark (1985, 2015)

The Parent-Child Early Relational Assessment (PCERA or ERA) is a semi-structured interaction procedure for assessing the quality of the relationship between infants or toddlers aged from 2 to 60 months and their caregiver. The PCERA aims to provide a phenomenological assessment of the affective and behavioral quality of interactions between the parent and child, for both research and clinical purposes, in families at risk of, or evidencing, early relational disturbances. The PCERA can be conducted and videotaped in a clinic or home setting. Caregivers are told that the procedure is a snapshot in time and that their opinion will be asked after the videotaping (i.e., similar or different from usual). After an initial “warm up” period, the caregiver and the child are filmed in four 5-min segments which are scored separately on 5-point scales:

- *The feeding segment:* The child is observed for clarity of cues, affect regulation, social initiative, and responsivity. Observations are made of the dyad with respect to comfort, tension, and regulation.
- *The structured task segment:* The child is assessed for attention, persistence, and interest in complying with caregiver expectations. The dyad is assessed on joint attention, reciprocity in negotiations, and mutuality.
- *The free play segment:* Rating is made on social interaction, mutuality, and reciprocity.
- *The separation-reunion segment:* Child’s capacity for self-regulation and quality of the child’s mood and play while alone are assessed. The dyad is assessed during the reunion episode for the quality of affect and reengagement.

Following the procedure, the clinician selects sections of the video to review with the caregivers. The clinical use of the PCERA has been established both for the assessment of caregiver-child relationships and for guiding intervention or measuring the progress of therapy.

The assessment takes about 20 min to complete; additional time is required to review the video with the caregiver.

“The procedure itself is not highly complex in its structure or materials. The formal scoring system is complex and time consuming, and it is recommended that the videotape be reviewed at least five times. The manual must be supplemented by clinical experience and specific training when it is being used for research” (Miron et al. 2009). The PCERA is one of the most widely used methods in clinical research.

Bobigny Grid: Grille Recherche Action Formation (RAF) d'évaluation des Interactions Précoces de Bobigny

Bur V., Golzan Z. and Lamour (1989)

This grid for assessment of basic mother-infant interactions was designed as part of a research-action-training program (RAF in French) on prevention of psychosocial risk in infants and their families. Staff from mother and child welfare services

filled in this grid following a routine pediatric consultation. But these grids can be used in any setting where observing parent-infant interaction is possible (home, mother-baby units, etc.).

It enables screening for psychological and somatic child development (general physical, neurological, and motor examination), the major functions (feeding, sleep), as well as the interactions. It has been adapted according to the age of the child: 3 months, 12 months, and two to three years.

In the first part, demographics and information concerning the child, as well as a general impression of the mother-child interactions in the waiting room, are collected. The pediatric examination consists of a physical examination and questions relating to feeding and sleep and issues relating to maternal behavior during this examination.

The second part, which can be used on its own, is concerned with the interactions of the baby with both parents and assessed on four dimensions (answers “yes” or “no”):

- Physical attitudes of the baby (e.g., clings) and of the mother (cradles baby, strokes)
- Visual behavior of the baby (e.g., avoidant) and of the mother (follows the baby’s)
- Vocal reactions of the baby (vocalizes to its mother) and of the mother (speaks to the baby, can remain silent)
- Smiles: The baby smiles spontaneously at its mother, and mother responds to baby’s smile.

Each of these four dimensions is assessed qualitatively: Mother-baby interactions seem in this domain either excessive, average, rare, or absent. Four interaction characteristics are then briefly explored: who initiates, reciprocity, continuity, and the emotional tone of these interactions.

Father-infant interactions are briefly assessed, not directly but from the mother’s speech (e.g., the mother speaks spontaneously about the child’s father) and from staff observations.

An overview allows staff to summarize the observations and express any concerns or estimate whether the child is in a situation of risk.

The interaction grids have the advantage of being simple and quick (about 10 min) and do not require a video recording or training; they are similar to a screening. They are available in the book by Lebovici and Mazet (1989) but have not been translated. They have been adapted (additional grid for babies 0 to 1 month old) to be used in the French-speaking mother-baby units (MBU) because they are simple to use (Glangeaud-Freudenthal et al. 2009). Many French-speaking MBU staff assesses each dyad weekly and draws graphs to follow progress during hospitalization.

CIB (Coding Interactive Behavior)

Feldman (1998); Feldman and Keren (2004)

This scale, developed by Ruth Feldman (1998, 2004), rates dyadic interactions in different play or interaction situations. A 10-min video of free play, or of a feeding

episode (which is known to be very sensitive to violation of expectations), and synchronization enables scoring.

This global rating system of parent-child interaction has versions for the newborn, infant (2 months to 3 years), preschoolers, child, adolescents, and adults. The CIB includes 42 codes: 21 for parents, 16 for infants, and 5 for dyads, rated on a 5-point scale ranging from 1=low to 5=high. It includes multiple scales (ranging from 34 to 52 depending on age) organized into several composites that index important aspects of any relationship, such as sensitivity, intrusiveness, engagement, and reciprocity:

- Maternal sensitivity based on ten items: Acknowledgment of the infant's interactive signals, elaboration of the child's vocalizations and movements, warm and positive affect, affectionate tone of voice, fluency of the interaction, consistency of style, resourcefulness in dealing with the infant's negative states, appropriate range of affect, and adaptation to the infant's state and signals.
- Maternal intrusiveness included three items: mother looking away from the infant, interrupting the infant's attention or activity, and mother-led interactions.
- The child's social involvement included five items: child initiation of interactive bids, child's positive affect, child's vocalization, child's alertness, and infant-led interactions.
- Dyadic reciprocity based on three items: reciprocity, adaptation, and regulation.

The CIB has been validated in multiple studies across cultures and has been applied to research on children at biological risk (e.g., prematurity, autism, neurodevelopmental disorders), social-emotional risk (e.g., feeding disorders, psychiatric disorders of infancy), contextual risk (e.g., poverty, war exposure), and risk related to maternal psychiatric conditions (depression, anxiety). Similarly, the CIB has been used to test the effects of interventions (e.g., dyadic psychotherapy, touch-based interventions). The CIB is used internationally in studies of social behaviors across cultures (the USA, the UK, France, Canada, Germany, Italy, Belgium, Holland, Argentina, Japan). Using the CIB requires training (two-day seminar in the USA) and working toward reliability with a training tape.

GRS (Global Ratings Scale) for Mother-Infant Interactions at Two and Four Months

Gunning, Fiory-Cowley and Murray, 1999

The Global Ratings Scales are a video-based assessment of the quality of mother-infant engagement that can be applied from 2 months to 6 months postpartum. With increasing infant age, some scales are sensitively adjusted so that dimensions are comparable across ages. Five-minute video recordings of mother-infant face-to-face interactions are made either in the mother's home or in a laboratory setting. Mothers are instructed simply to play with their infants in any way they choose without the use of

toys. Maternal behavior is rated on four dimensions that describe the degree to which a mother's behavior is appropriately adjusted to her infant: sensitivity, intrusiveness, remoteness, and overt behavior relevant to clinical levels of depression (such as happiness, energy level, self-absorption, and tension). Infant behavior is rated on three dimensions, describing the infant's positive engagement in the interaction and behavior on a lively inert scale and on a fretfully contented scale. A final dimension assesses the quality of the overall interaction between the mother and infant.

These scales have also been used with different clinical groups, such as mothers with schizophrenia (Riordan et al. 1999) and borderline personality disorder (Crandell et al. 2003). Furthermore, researchers in cross-cultural settings have successfully used them: South Africa (Cooper et al. 1999), Venezuela (Sepulveda et al. 2000), and different European countries (Gunning et al. 2004). Even though they were designed for research, the fact that coding is quite rapid (about 20 min) makes it an interesting tool to be used in a clinical setting (i.e., mother-baby units, Glatigny-Dallay et al. 2012), and feedback can be conducted. These scales have also been found to predict infant and child cognitive outcome at 18 months and 5 years of age (Murray et al. 1996a, b). Training is needed.

Advantage: Neither a time-consuming microanalytic scale nor overly global and quick to rate, while maintaining clinical sensitivity. They have been shown to be sensitive to impaired interaction even in low-risk samples and have further been found to discriminate between families who are or are not living in conditions of adversity (Murray et al. 1996b).

PIPE (Parent-Infant Pediatric Examination)

Fiese, Poehlmann, Irwin, Gordon & Curry-Bleggi (2001)

This is a screening instrument developed to detect problematic interactions between infants and parents as part of a pediatric "well-baby" examination. Mothers and infants are observed playing an interactional game during the course of the pediatric examination. This scale codes the ability of parents to initiate, continue, and end a game adapted to the baby, such as peekaboo. It is preferable to use video recording.

It can be used from 0 to 18 months, but American validation has only been done between 6 and 9 months (it has been validated on a population of 117 children of 6 to 9 months, of which half were born preterm).

Classification of PIPE scores:

- In the first group, labeled "highly adaptive," interactions are characterized by easy engagement, reciprocity, and playfulness between mother and infant.
- In the second group, labeled "marginally adaptive," interactions are characterized by occasional signs of maternal disengagement, or intrusiveness, and negative infant affect, even though these signs do not dominate the interaction.
- In the third group, labeled "problematic," interactions are characterized by sustained maternal disengagement, or intrusiveness, combined with negative infant affect.

The authors designed PIPE as “an observational measure that focuses on the reciprocal nature of dyadic interactions between parents and their 6 to 9 month-old infants. The intent was to focus on how the mother and infant related to one another, rather than on the individual characteristics of either. Thus, the PIPE involved systematically observing parent and infant playing an interactional game together. In addition, the PIPE was designed to be a screening instrument that is quick to administer, easy to use in a variety of settings, and unencumbered by testing materials, rather than a comprehensive assessment. These qualities make the PIPE ideal for use in primary care settings. Because paediatricians, family physicians, and nurses typically provide routine health care for infants, they are often in an optimal position to screen for early signs of relationship disturbances and to make referrals to early intervention programs for comprehensive assessments when indicated.” It was recently used in the French cleft palate study (Grollemund et al. 2012).

Indicator of Parent-Child Interaction

Baggett, K.M., Carta J., 2010
www.igdi.ku.edu

The Indicator of Parent Child Interaction (IPCI) for children from 2 to 42 months and their parents or primary caregivers is a sensitive, easy to obtain measure of parent or caregiver progress toward competence in promoting positive child social-emotional behavior. The IPCI is a brief, repeatable, and activity-based observational measure of parent-child interaction during an 8–10-min period in which parents (or other caregivers) interact with children during common daily activities at home or in a center. These activities include free play (4 min), book reading (2 min), dressing (2 min), and a distraction task (2 min). For children under the age of 1, the distraction task is omitted.

The IPCI reflects four domains of interaction, which include parent/caregiver supporting behavior, parent/caregiver interrupting behavior, child engagement, and child reactivity/distress. Each domain includes behavioral items that have been shown to serve as useful predictors of later social-emotional outcomes for children.

Behavioral items within the domain of parent/caregiver supporting behavior include:

- Acceptance/warmth
- Descriptive feedback
- Follows child’s lead
- Introduces/extends child’s engagement
- Responds to distress

Behavioral items within the domain of interrupting parent/caregiver behavior include:

- Harsh/critical comments
- Restrictions/intrusions
- Rejection

Behavioral items within the domain of child engagement include:

- Positive feedback
- Sustained engagement
- Follow-through

Behavioral items within the domain of child reactivity/distress include:

- Rapidly shifting signals
- External distress
- Frozen, watchful, and withdrawn

The summary scores for parent/caregiver supporting behavior and parent/caregiver interrupting behavior are used as the primary IPCI indicators. Child engagement and child reactivity/distress serve as secondary indicators. Summary scores can be calculated after observing either a single designated activity (e.g., free play) or after observing the entire set of activities (i.e., free play, book reading, dressing, and distraction task). When measured repeatedly, primary indicators provide a practical measure of progress toward warm, responsive interactions in which parents and other primary caregivers promote positive child social-emotional behaviors. Growth can be examined by looking at the supporting and interrupting behavior summaries. In addition, specific competence within each domain can be examined to determine exactly which skills a parent or caregiver is using and in what activity context, or contexts.

These indicators are designed to provide information about (1) the extent to which interactions with parents or other caregivers are promoting positive child social-emotional behaviors, (2) when new intervention may be needed, and (3) whether or not corresponding changes in parent and child behavior are occurring with intervention.

Videotaping is not required (but useful for intervention purposes).

Complete user manual, scoring sheets (English and Spanish), bibliography, IPCI overview, and online training available on website.

KIPS Keys to Interactive Parenting Scale

Comfort M. and Gordon P.R. (2006, 2011); Revised 2009

www.comfortconsult.com

KIPS is a structured observational tool to assess parent/caregiver behaviors. It identifies specific parenting strengths and areas for growth. It involves a 20-min observation of free play (15 min of play and 5 min of cleanup if developmentally appropriate) between a parent or caregiver and a child (2–71 months) using the toys or materials available in their home or a familiar community setting.

Scoring takes about 10 min. The 12 research-based parenting behaviors are rated on a 5-point scale assessing the quality of parenting behavior from 1 (low quality) to 5 (optimal quality). KIPS items include:

- Sensitivity of responses
- Supporting emotions
- Physical interaction
- Involvement in child's activities
- Open to child's agenda
- Engagement in language experiences
- Reasonable expectations
- Adapting strategies to child
- Limits and consequences
- Supportive directions
- Encouragement
- Promoting exploration/curiosity

Videotaping is highly recommended for accurate scoring and use in intervention with families. Training and certification is required on an annual basis to ensure reliable scoring. It has been validated with families enrolled in various health, education, and social services. KIPS produces clinically useful information that can be fed back to the caregiver and documents quality of parenting outcomes.

According to the authors, KIPS is a brief, practical tool for paraprofessional and professional staff to assess parenting behavior in order to guide intervention services, monitor family progress, and evaluate program outcomes.

PIIOS (Parent-Infant Interaction Observation Scale)

Svanberg, Barlow and W. Tigbe, (2013)

The PIIOS is a screening tool for parent-infant interactions at 0–6 months. From a 3-min videotape, 13 interactional constructs are rated (the constructs that have been developed from a range of sources, including the dynamic maturational theory of CARE-Index, and research demonstrating the importance of midrange contingency and mind-mindedness). The 13 items include an assessment of the following aspects of parental sensitive responsiveness:

Infant positioning, eye contact, vocalizations, affect engagement and synchrony, warmth and affection, holding and handling, verbal commenting (mind-mindedness), attunement to distress, bodily intrusiveness, expressed expectations, empathic understanding, responsive turn taking, and baby's self-soothing strategies

The PIIOS utilizes a 3-point Likert scale to identify whether families are at a low, medium, or high risk of each of these 13 constructs. Each item is scored as 0 (sensitively responsive and no interactional problems), 2 (some problems), or 4 (extensive problems).

It has been designed to enable health visitors to screen interaction as part of the delivery of the Healthy Child Programme (HCP) (Department of Health (DH), 2009). "Preliminary, research suggests that the PIIOS is both reliable and valid (Svanberg et al. (2013)), and the pre and post-training assessments of accuracy following the first PIIOS training program suggest that training in the use of this tool, increases the accuracy of health-visitor ratings. Although the PIIOS training is

available to be commissioned by health authorities and delivered over 2-days in-group settings, we anticipate that it will also be available as part of an educational website where practitioners can sign up in their own time and learn how to rate parent-infant interaction accurately. Online training will require the health professional to pass a test, where they have to accurately rate 10–12 video clips on interaction.” (Svanberg and Barlow 2013)

The PIIOS comprises a brief and easily administered method of screening parent-infant interaction, which could be used by primary care practitioners to identify parents in need of further support.

PIRAT (Parent-Infant Relational Assessment Tool)

Broughton C., (2014)

www.annafreud.org

The Parent-Infant Relational Assessment Tool (PIRAT) is a clinical assessment tool for the identification of risk in the early parent-infant relationship. The rationale was to design a flexible, reliable measure that would enable professionals working with infants and their caregivers to assess the parent-infant relationship as it appears in the consulting room, clinic, or home environment and to pinpoint areas of concern at the earliest possible opportunity.

The Parent-Infant Project (PIP) at the Anna Freud Centre, London, developed PIRAT. PIRAT Manual – version 1.0 was further refined (Broughton 2010) and led to the development of PIRAT Manual – versions 2.0. and 3.0. Grounded in clinical practice, it has been adapted to be transferred to health-care professionals for the use in their workplace settings. A reliability study was conducted with a panel of health professionals, including midwives, health visitors, child protection social workers, and clinical psychologists, using videotapes of their consultations in the home or clinic with mothers and infants. It is adapted for infants and toddlers from 0 to 24 months, and can be applied to “live” or videotaped observation of 6–10 min free play, with or without toys. It offers a global rating of parent-infant and infant-parent interactions (affects and behaviors), which includes ratings of optimal behavior and ratings of risk behavior. Coding a 6–10-min clip usually takes 30 min when trained.

PIRAT is comprised of two major scales, the infant-parent scale (i-p) and parent-infant scale (p-i):

The PIRAT infant-parent scale (i-p) is comprised of twelve infant to parent subscales:

- Infant’s seeking of contact
- Responsiveness to contact
- Responsiveness to stranger
- Ability to communicate needs
- Ability to be comforted
- Quality of contact: Aggressive/attacking, clinging, frightened/wary, lack of pleasure, sexualized, dissociative, and avoidant

The PIRAT parent-infant scale (p-i) is comprised of eleven parent to infant subscales:

- Parent's initiation of physical contact
- Parent's initiation of emotional contact
- Parent's playfulness in relation to infant
- Pleasure in parenting
- Hostility and blame
- Quality of contact: Intrusive, frightening, sexualized, dissociative, avoidant, and consistency/predictability

Infant-parent and parent-infant behaviors in each subscale are rated on a 3-point Likert Scale: 0, "no concern"; 1, "some concern"; and 2, "significant concern."

The PIRAT can be used as a risk assessment and screening tool in practice. Further research is needed to develop PIRAT as a tool to observe, evaluate, and code parent-infant interactions. A major reliability and validation study is planned using a clinical sample of 70 mother-infant dyads and a matched normative sample of 70 mother-infant pairs.

References

- Barnard KE (1979) Instructor's learning resource manual. University of Washington, Seattle
- Baggett KM, Carta JJ (2010) The indicator of parent child interaction. In: Carta J, Greenwood C, Walker D, Buzhardt J (eds) *Individual growth and developmental indicators: tools for monitoring progress and measuring growth in very young children*. Brookes Publishing Company, Baltimore
- Broughton C (2014) Measuring parent-infant interaction: the Parent-Infant Relational Assessment Tool (PIRAT). *J Child Psychother* 40(3):254–270
- Broughton C (2010) Measuring trauma in the primary relationship. The parent-infant relational assessment tool. In: Baradon T (ed) *Relational trauma in infancy: psychoanalytic, attachment and neuropsychological contributions to parent-infant psychotherapy*. Routledge, London
- Bur V, Golzan Z, Lamour M (1989) Présentation de grilles d'évaluation des interactions précoces à l'intention des consultations pédiatriques. In: Lebovici S, Mazet P (eds) *L'évaluation des interactions précoces entre le bébé et ses partenaires*. Eshel, Médecine et Hygiène, Paris, pp 427–462
- Clark R (1985, 2015) The parent-child early relational assessment. Instrument and manual. Madison VI, Department of Psychiatry, University of Wisconsin Medical School, Madison
- Comfort M, Gordon PR, Naples D (2011) KIPS: an evidence-based tool for assessing parenting strengths and needs in diverse families. *Infants Young Child* 24(1):56–74
- Comfort M, Gordon PR (2006) The Keys to Interactive Parenting Scale (KIPS): a practical observational assessment of parenting behavior. *NHSA Dialog Res Pract J Early Interv Field* 9(1):22–48
- Comfort M, Gordon PR, Unger DG (2006) Keys to interactive parenting scale: a window into many facets of parenting. *Zero Three J* 26(5):37–44
- Cooper PJ, Tomlinson M, Swartz L et al (1999) Post-partum depression and the mother-infant relationship in a south African peri-urban settlement. *Br J Psychiatry* 175:554–558
- Crandell LE, Patrick MPH, Hobson RP (2003) 'Still-face' interactions between mothers with borderline personality disorder and their 2-month-old infants. *Br J Psychiatry* 183:239–247

- Crittenden PM (1979–2004) CARE-Index: Coding Manual. Unpublished manuscript, Miami. Available from the author
- Del Carmen-Wiggins R, Carter A (2004) Handbook of infant toddler and preschool mental health assessment. Oxford University Press, Oxford/New York
- Department of Health (2009) Healthy child programme: pregnancy and the first five years of life. http://dera.ioe.ac.uk/11042/1/dh_107626.pdf
- Feldman R (1998) Coding interactive behavior manual. Unpublished manual, Bar-Ilan University, Israel
- Feldman R, Keren M (2004) Expanding the scope of infant mental health assessment: a community-based approach. In: Del-Carmen-Wiggins R, Carter AS (eds) Handbook of infant mental health assessment. Oxford Press, Cambridge, pp 443–465
- Fiese BH, Poehlmann J, Irwin M, Gordon M, Curry-Bleggi E (2001) A pediatric screening instrument to detect problematic infant–parent interactions: initial reliability and validity in a sample of high- and low-risk infants. *Infant Ment Health J* 22(4):463–478
- Funamoto A, Rinaldi C (2015) Measuring parent-child mutuality: a review of current observational coding systems. *Infant Ment Health J* 36(1):3–11
- Glangeaud-Freudenthal NM.-C, Sutter-Dallay AL, Dagens-Lafont V, Titeca E, Rainelli C, Danion-Grilliat A, Lacoste S, Champion M, Tielemans P, Cazas O, Blazy M, Morisseau L, Durand B, (2009) 9. L'enfant dans les Unités mère-bébé en France et en Belgique: historique et résultats d'une recherche multicentrique. In *Orages à l'aube de la vie*, Toulouse, ERES, La vie de l'enfant, pp 117–129
- Glatigny-Dallay E, Murray L, Verdoux H, Sutter AL (2012) Using videos in mother-baby units, oral communication. International Biennial Congress of Marcé Society, Paris
- Gordon P, Comfort M (2013) How parenting assessment strengthens family services. *J Health Visit* 1(11):626–632
- Grollemund B, Guedeney A, Vazquez MP, Picard A, Soupre V, Pellerin P, Simon E, Velten M, Dissaux C, Kauffmann I, Bruant-Rodier C, Danion-Grilliat A et al (2012) Relational development in children with cleft lip and palate: influence of the waiting period prior to the first surgical intervention and parental psychological perceptions of the abnormality. *BMC Pediatr* 12:65
- Gunning M, Conroy S, Valoriani V, Figueiredo B, Kammerer MH, Muzik M, Glatigny-Dallay E, Murray L, TCS-PND Group (2004) Measurement of mother-infant interactions and the home environment in a European setting: Preliminary results from a cross-cultural study. *Br J Psychiatry Suppl* 46:s38–s44
- Gunning M, Fiori-Cowley A, Murray L (1999) The global ratings of mother-infant interaction scoring manual, 2nd edn. Winnicott Research Unit, University of Reading, Reading
- Higgins LB, Stagman S, Smith S (2010) Improving supports for parents of young children: state-level initiatives. National Center for Children in Poverty, New York
- Kelly JF, Barnard KE (2000) Assessment of parent-child interaction: implications for early intervention. In: Meisels S, Shonkoff JP (eds) The handbook of early intervention, 2nd edn. Syndicate of the Press of the University of Cambridge, Cambridge, MA, pp 278–302
- Lebovici S, Mazet P (1989) L'évaluation des interactions précoces entre le bébé et ses partenaires. Eshel, Médecine et Hygiène, Paris, 462p
- Miron D, Lewis ML, Zeanah CH (2009) Clinical use of observational procedures in early childhood relationship assessment. In: Zeanah CH Jr (ed) Handbook of infant mental health, 3rd edn. Guilford Press, New York, pp 252–265
- Murray L, Hipwell A, Hooper R et al (1996a) The cognitive development of 5-year-old children of postnatally depressed mothers. *J Child Psychol Psychiatry* 37:927–935
- Murray L, Fiori-Cowley A, Hooper R et al (1996b) The impact of postnatal depression and associated adversity on early mother-infant interactions and later infant outcome. *Child Dev* 67:2512–2526
- Riordan D, Appelby L, Faragher B (1999) Mother-infant interaction in post-partum women with schizophrenia and affective disorders. *Psychol Med* 29:991–995
- Sepulveda MA, Lopez G (2000) Application and evaluation of early intervention programme in two sociocultural disadvantaged contexts. Paper presented at the XII Biennial International Conference on Infant Studies, Brighton.

- Sumner G, Spietz A (1994) NCAST caregiver/parent-child interaction teaching manual. NCAST, University of Washington, School of Nursing, Seattle
- Svanberg PO, Barlow J, Tigbe W (2013) The parent-infant interaction observation scale: reliability and validity of a screening tool. *J Reprod Infant Psychol* 31(1):5–14
- Svanberg PO, Barlow J (2013) The effectiveness of training in the Parent- Infant Interaction Observation Scale for health visitors. *J Health Visiting* 1(3):162–166
- Tourrette C, Guedeney A (2012) *L'évaluation en clinique du jeune enfant*. Dunod, Paris
- Zeanah CH (2009) *Handbook of infant mental health*, 3rd edn. Guilford Press, New York

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Abstract

Experiences of domestic violence and child abuse are common among women with perinatal mental disorders. Women's experience of violence and abuse is shown to be associated with adverse obstetric and perinatal mental health outcomes, impaired mother-infant bonding and subsequent behavioural problems in children. In this chapter, we begin by reviewing evidence on the nature, extent and impact of child abuse and domestic violence among perinatal women with mental disorders and their children before discussing how perinatal mental health services can appropriately address and support women and children affected by violence and abuse.

Experiences of domestic violence and child abuse are common among women with perinatal mental disorders. Women's experience of violence and abuse is shown to be associated with adverse obstetric and perinatal mental health outcomes, impaired mother-infant bonding and subsequent behavioural problems in children. In this chapter, we begin by reviewing evidence on the nature, extent and impact of child abuse and domestic violence among perinatal women with mental disorders and their children before discussing how perinatal mental health services can appropriately address and support women and children affected by violence and abuse.

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As highlighted in earlier chapters, perinatal mental disorders are common and are influenced by a number of risk factors, including domestic violence and child abuse (Lancaster et al. 2010; Fisher et al. 2012a, b; Gavin et al. 2005; Seng et al. 2013). Domestic violence is the use of threatening behaviour, violence or abuse towards an adult who is a relative, partner or ex-partner. Child abuse is the physical and emotional ill treatment, sexual abuse, neglect and exploitation of children.

The Nature, Extent and Impact of Child Abuse in Relation to Perinatal Mental Disorders

There is a significant body of research to show that experiences of physical and sexual abuse in childhood are common among adults with mental disorders, with prevalence estimates ranging from 25 to 57 % (Subica 2013; Álvarez et al. 2011; Bebbington et al. 2011; Mueser et al. 2004). Experiences of both sexual and non-sexual childhood abuse are found to increase an individual's risk of developing adult mental disorders (Hillberg et al. 2011; McLaughlin et al. 2010; Norman et al. 2012). For example, childhood emotional abuse and neglect are shown to be associated with increased anxiety, depression and PTSD in adulthood (Spertus et al. 2003), and childhood maltreatment is associated with elevated odds of adult mood, anxiety and drug misuse disorders (odds ratios=2.1–4.1) (Scott et al. 2012). Experiences of childhood abuse are also prevalent among female mental health service users, with recent estimates indicating a prevalence of between 25 % and 60 % (Meade et al. 2009; Cusack et al. 2006; Gearon et al. 2003; Goodman et al. 1997, 2001).

Data on the association between child abuse and perinatal mental disorders is limited (Leeners et al. 2006). However, there is some evidence to suggest that women's experience of childhood physical and sexual abuse is associated with an increased risk of perinatal common mental disorders (Records and Rice 2009; Roberts et al. 2004; Ansara et al. 2005; Ferri et al. 2007; Buist and Janson 2001). A US study of 357 primiparous women found that those with experiences of childhood sexual abuse reported significantly higher depressive symptoms (Benedict et al. 1999). These women were also found to report higher levels of abuse before and during pregnancy, compared to women without experiences of child abuse (Benedict et al. 1999). A study of 44 pregnant women found that sexual abuse and emotional neglect in childhood were associated with symptoms of depression and anxiety in pregnancy, and emotional neglect and physical abuse predicted poorer maternal outcomes at one year post-partum (Lang et al. 2006).

Recent research indicates that the trauma associated with child abuse may be associated with adverse birth outcomes among pregnant adult women. For example, a prospective study of 839 nulliparous women in the USA found that current PTSD subsequent to child abuse was strongly associated with lower birth weight and shorter gestation (Seng et al. 2011). Women with experiences of childhood abuse are more likely to engage in risky health behaviours during pregnancy, such as smoking and substance misuse, which can also lead to adverse birth outcomes (Chung et al. 2010). A growing body of evidence indicates that child abuse is

associated with disruptions in hypothalamic-pituitary-adrenal (HPA) axis functioning in adulthood (Heim et al. 2003), and these disruptions may result in vulnerabilities for the development of adult mental disorders (Heim et al. 2000). Recent findings indicate that changes in HPA axis functioning subsequent to child abuse may have trans-generational effects, with children of abused mothers displaying similar neuroendocrine profiles (Brand et al. 2010). A recent study of 126 mothers with a history of major mood disorder examined the effects of maternal childhood sexual and physical abuse on maternal and infant salivary cortisol levels following a laboratory stressor paradigm. The study found that maternal child abuse was associated with steeper declines in cortisol levels in mothers and lower baseline cortisol levels in infants (Brand et al. 2010). The study found that current life stress and comorbid PTSD were important moderators of the child abuse-HPA axis relationship. The impact of abuse is also seen to extend to child-rearing practices, and women with histories of abuse are found to report poorer parent-child relationship quality compared to women without a history of abuse (Roberts et al. 2004).

Childhood abuse has also been shown to increase a woman's risk of subsequent re-victimisation (Read et al. 2005), including domestic violence victimisation as an adult (Chen and White 2004; Miller et al. 2011). Indeed, analysis of data from a New Zealand birth cohort of over 1,000 young adults found that exposure to inter-parental violence in childhood, including witnessing and experiencing abuse, increases a woman's risk of experiencing partner violence in adulthood (Fergusson et al. 2008). These findings are pertinent as evidence suggests that multiple victimisation experiences increase a woman's risk of developing mental disorders (Rees et al. 2011).

The Nature, Extent and Impact of Domestic Violence in Relation to Perinatal Mental Disorders

A significant amount of research has been conducted on the association between women's experience of domestic violence and mental disorders. Evidence shows that experiences of domestic violence are closely associated with mental disorders, and a recent systematic review found that, across all diagnostic categories, women with mental disorders experience a high prevalence and increased likelihood of domestic violence compared to women without mental disorders (Trevillion et al. 2012). Median prevalence estimates for past-year partner violence among women with depressive and anxiety disorders were 35 % and 28 %, respectively. The review also identified a higher risk of domestic violence among women with depressive disorders (odds ratio (OR) 2.77), anxiety disorders (OR 4.08) and post-traumatic stress disorder (OR 7.34) (Trevillion et al. 2012). Experiences of domestic violence are also prevalent among female mental health service users, with evidence to suggest that around 30 % of female psychiatric inpatients and 33 % of female psychiatric outpatients have experienced domestic violence (Oram et al. 2013).

Domestic violence has also been found to be a strong risk factor for antenatal and postnatal depression (Howard et al. 2014). Women with perinatal mental disorders are found to report a high prevalence and increased likelihood of domestic violence

over their lifetime and during pregnancy. For example, a recent systematic review reported median prevalence estimates for partner violence during pregnancy of 14 % among women with antenatal depressive disorders (Howard et al. 2013). The review found that women reporting domestic violence in pregnancy were at increased risk of experiencing antenatal (pooled OR, 3.0) and postnatal (pooled OR, 2.9) depressive symptoms (Howard et al. 2013). Experiences of domestic violence in pregnancy were also found to be associated with increased odds of anxiety and PTSD symptoms in both the antenatal and postnatal periods (Howard et al. 2013). With regard to the type of violence, a recent prospective nulliparous pregnancy cohort study of 1305 women identified increased odds for postnatal depressive symptoms among women experiencing emotional abuse alone (AOR 2.72) or physical violence (AOR 3.94) in pregnancy, after controlling for depression in pregnancy and socio-demographic characteristics (Woolhouse et al. 2012).

Domestic violence experienced in the perinatal period can result in serious adverse pregnancy outcomes and even maternal death (Huth-Bocks et al. 2002). There is some evidence to show that antenatal domestic violence is associated with low birth weight and preterm births (Shah and Shah 2010; Feder et al. 2009a). Moreover, recent findings from the 2006–2008 UK Confidential Enquiry into Maternal and Child Health found that among 261 mothers who died from any cause, 39 (12 %) had features of domestic violence and eight of these women were murdered by an intimate partner or spouse (Draycott et al. 2011).

The impact of domestic violence experienced in the perinatal period and beyond can also have adverse impacts on the physical and mental health well-being of children. A child living in a household with familial violence may also directly experience abuse. Evidence suggests that children growing up in a domestically violent situation report higher rates of psychological disturbance (McWilliams and McKiernan 1993) and are 30–60 % more likely to experience child abuse (Eddleson 1999; Hester et al. 2007; Humphreys and Thiara 2002). Several literature reviews have sought to examine the health impacts of children's exposure to domestic violence, defined as witnessing (i.e. seeing or hearing violent exchanges between parents) and experiencing (i.e. children that are directly abused) domestic violence (Kitzmann et al. 2003; Osofsky 2003; Wolfe et al. 2003; Yount et al. 2011). For example, Wolfe et al. (2003) conducted a meta-analysis of 41 studies and found that children exposed to domestic violence experience more behavioural and psychological problems than non-exposed children (Wolfe et al. 2003; Kitzmann et al. 2003) conducted a meta-analysis of 118 studies and found that children witnessing domestic violence experienced an increased risk of psychological, emotional and behavioural problems compared to children not witnessing violence. Furthermore, they found comparable levels of psychological, emotional and behavioural disturbances among children witnessing domestic violence and physically abused children (Kitzmann et al. 2003). A more recent meta-analysis identified an association between childhood exposure to domestic violence and trauma symptoms in children (Evans et al. 2008).

Prospective data from a US representative sample of 821 parent-child dyads found that parents' experience of domestic violence independently increased

children's risk of externalising behavioural problems (e.g. noncompliance, aggression, antisocial behaviour), after controlling for parental history of antisocial behaviour and family violence (Ehrensaft and Cohen 2012). Evidence from the UK Avon Longitudinal Study of Parents and Children (ALSPAC) birth cohort of 13,617 children and mother dyads found that antenatal domestic violence predicted future behavioural problems in children aged 42 months (OR 1.87), although this was partly mediated by maternal depression (Flach et al. 2011).

The presence of perinatal mental disorders and violence and abuse may further compound developmental problems in children. Prospective data on antenatal depression, child maltreatment (at age 11) and child psychopathology (at age 11 and 16) from 120 mother-child dyads in a UK community-based study found that children exposed only to antenatal depression or childhood maltreatment were no more at risk of developing psychopathology. However, children exposed to both antenatal depression and childhood maltreatment were at almost 12 times more likely to develop psychopathology than those not exposed (Pawlby et al. 2011).

Clinical Responses to Domestic Violence and Child Abuse

Literature reviews on the effectiveness of interventions in preventing direct abuse, neglect and exposure to parental domestic violence among children find evidence that early home visitation programmes (i.e. Nurse-Family Partnerships and Early Start programmes) are effective in preventing direct abuse and neglect of children within low-income and high-risk families (MacMillan et al. 2009; Mikton and Butchart 2009). These programmes comprise intensive home visitation by nurses/social workers who focus on assisting women in improving their prenatal health-related behaviours: teaching parents sensitive and empathetic care of their children and improving parents' economic self-sufficiency. In contrast, a paucity of interventions was found to exist on the prevention of children's exposure to parental domestic violence (MacMillan et al. 2009).

There is increasing evidence within primary care settings on interventions for women experiencing domestic violence (Feder et al. 2009b). Good evidence now exists on the effectiveness of domestic violence advocacy programmes in reducing abuse, increasing safety behaviours and enhancing access to community resources among abused women in primary care settings (Feder et al. 2009b). Limited evidence exists, however, within secondary care settings. A small randomised controlled trial of trauma-focused cognitive behavioural therapy for mental health service users found significant improvements in psychiatric symptoms and trauma-related cognitions at the end of treatment (Mueser et al. 2008). This intervention comprised a 21-week group therapy programme for men and women, including components such as breathing retraining, education about post-traumatic stress disorder, cognitive restructuring, coping skills and recovery plans. Although these findings are promising, the intervention did not specifically focus on trauma as a function of domestic violence or on the risk of future victimisation which is a key risk factor in domestic violence. There has been a pilot study of domestic violence

advocacy with community mental health services in the UK, and the initial findings are promising for clinical practice (Trevillion et al. 2014). This pilot study found that reciprocal training by mental healthcare professionals and domestic violence advocates and a direct referral pathway to domestic violence advocacy for abused service users resulted in significant improvements in clinical practice and service user outcomes (Trevillion et al. 2014). Mental health professionals reported significant improvements in their knowledge, attitudes and behaviours towards domestic violence, and service users reported significant reductions in their experiences of abuse as well as significant improvements in their quality of life and social inclusion (Trevillion et al. 2014). These findings suggest joint working practices between mental health and domestic violence services can effectively support both the mental health and trauma needs of psychiatric service users experiencing victim. Clinical examples of joint-agency collaborations in the UK include representatives from both sectors participating in Multi-Agency Risk Assessment Conferences (MARACs), whereby numerous statutory and voluntary services collaborate to plan individually tailored support to protect victims at high risk of harm.

It has been argued that the dominance of the medical model of mental health can have negative consequences regarding child contact and child protection proceedings for abused women labelled with mental health problems (Humphreys and Thiara 2003a). Research suggests that a significant number of women with severe mental illness – particularly schizophrenic disorders – have children removed from their custody (Hollingsworth 2004; Howard et al. 2004; White et al. 1995). In addition, many mothers experiencing domestic violence may lose sole custody of their children, when judges do not believe their children are in danger of harm by abusive fathers. This view contrasts with the evidence that 30–60 % of men who abuse their partners also abuse their children (Eddleson 1999; Hester et al. 2007; Humphreys and Thiara 2002) and shows how the justice system makes little connection between male violence and male parenting (Thiara 2010). In response to joint custody agreements, mothers are forced to continue a relationship with their abuser, and this may result in women's relationships with their children being undermined as part of a wider strategy of abuse (Humphreys 2006; Thiara et al. 2006). Child contact arrangements can allow abusers to maintain their damaging presence on the lives of women and children and permit them to continue to abuse and stalk their partners (Burman and Chantler 2005; Thiara 2010; Walker 2009). Alarming, the continuing issues faced by women and children in these situations have frequently been shown to be couched in terms of 'mother-blaming' (Jaffe et al. 2003; Radford and Hester 2001; Thiara et al. 2006; Thiara 2010). Legal processes may also be used by abusers to continue post-separation violence, with regard to contesting women's evidence of domestic violence, making counter-allegations of child abuse and undermining women's mothering capabilities (Hardesty 2002; Humphreys and Thiara 2003b; Thiara 2010).

The UK NICE guidelines on 'Domestic Violence and Abuse' (PH50 2014) write that 'even marginally effective interventions are cost effective' because of the cost in human and economic terms. However, NICE concludes that to date there is not enough evidence to make recommendations on primary prevention. Their

recommendations are thus limited to working with individuals rather than families. Professionals offering interventions for domestic violence should be alert to the interrelationships between domestic violence, mental health and substance misuse, called the 'toxic triad'.

Best practice guidance encourages professionals working within child protection systems to receive training on domestic violence and for child protection and domestic violence services to establish information sharing practices (Department of Health 2010; World Health Organization 2010). While there has been a desire to focus on prevention, current practice has largely been limited to convicting perpetrators of violent offences and to supporting families who separate following domestic abuse. Given the growing body of research on the intergenerational transmission of domestic abuse, it is hoped that future policy and clinical interventions will focus on a family approach strengthening familial relationships with the aim of preventing future violence and child maltreatment, thus breaking the cycle of transmission of violence.

References

- Álvarez MJ, Roura P, Osés A et al (2011) Prevalence and clinical impact of childhood trauma in patients with severe mental disorders. *J Nerv Ment Dis* 199(3):156–161
- Ansara D, Cohen MM, Gallop R et al (2005) Predictors of women's physical health problems after childbirth. *J Psychosom Obstet Gynecol* 26(2):115–125
- Bebbington P, Jonas S, Kuipers E et al (2011) Childhood sexual abuse and psychosis: data from a cross-sectional national psychiatric survey in England. *Br J Psychiatry* 199(1):29–37
- Benedict MI, Paine LL, Paine LA (1999) The association of childhood sexual abuse with depressive symptoms during pregnancy, and selected pregnancy outcomes. *Child Abuse Negl* 23(7):659–670
- Brand SR, Brennan PA, Newport DJ (2010) The impact of maternal childhood abuse on maternal and infant HPA axis function in the postpartum period. *Psychoneuroendocrinology* 35(5):686–693
- Buist A, Janson H (2001) Childhood sexual abuse, parenting and postpartum depression—a 3-year follow-up study. *Child Abuse Negl* 25(7):909–921
- Burman E, Chantler K (2005) Domestic violence and minoritisation: legal and policy barriers facing minoritized women leaving violent relationships. *Int J Law Psychiatry* 28:59–74
- Chen PH, White HR (2004) Gender differences in adolescent and young adult predictors of later intimate partner violence. A prospective study. *Violence Against Women* 10(11):1283–1301
- Chung EK, Nurmohamed L, Mathew L (2010) Risky health behaviors among mothers-to-be: the impact of adverse childhood experiences. *Acad Pediatr* 10(4):245–251
- Cusack KJ, Grubaugh AL, Knapp RG et al (2006) Unrecognized trauma and PTSD among public mental health consumers with chronic and severe mental illness. *Community Ment Health J* 42:487–500
- Department of Health (2010) Responding to violence against women and children – the role of the NHS. In: Taskforce on the Health Aspects of Violence against Women and Children (ed) Report from the domestic violence sub-group. Department of Health, London, pp 1–66
- Draycott T, Lewis G, Stephens I (2011) Executive Summary. Centre for maternal and child enquiries (CMACE), *BJOG* 118(Suppl. 1):e12–e21
- Eddleson JE (1999) Children's witnessing of adult domestic violence. *J Interpers Violence* 14:839–870
- Ehrensaft MK, Cohen P (2012) Contribution of family violence to the intergenerational transmission of externalizing behavior. *Prev Sci* 13(4):370–383

- Evans SE, Davies C, DiLillo D (2008) Exposure to domestic violence: a meta-analysis of child and adolescent outcomes. *Aggress Violent Behav* 13(2):131–140
- Feder G, Ramsay J, Dunne D et al (2009a) How far does screening women for domestic (partner) violence in different health-care settings meet criteria for a screening programme? Systematic reviews of nine UK National Screening Committee criteria. *Health Technol Assess (Winchester, England)* 13(16):1–4
- Feder G, Ramsay J, Dunne D, Rose M, Arsene C, Norman R, Kuntze S, Spencer A, Bacchus L, Hague G, Warburton A, Taket A (2009b) How far does screening women for domestic (partner) violence in different health-care settings meet criteria for a screening programme? Systematic reviews of nine UK, National Screening Committee criteria. *Health Technol Assess* 13:iii, 113
- Fergusson DM, Boden JM, Horwood LJ (2008) Developmental antecedents of interpartner violence in a New Zealand birth cohort. *J Fam Violence* 23(8):737–753
- Ferri CP, Mitsuhiro SS, Barros MC (2007) The impact of maternal experience of violence and common mental disorders on neonatal outcomes: a survey of adolescent mothers in Sao Paulo, Brazil. *BMC Public Health* 7(1):209
- Fisher J, Cabral de Mello M, Patel V et al (2012) Prevalence and determinants of common perinatal mental disorders in women in low-and lower-middle-income countries: a systematic review. *Bull World Health Organ* 90(2):139–149
- Flach C, Leese M, Heron J (2011) Antenatal domestic violence, maternal mental health and subsequent child behaviour: a cohort study. *BJOG Int J Obstet Gynaecol* 118(11):1383–1391
- Gavin NI, Gaynes BN, Lohr KN (2005) Perinatal depression: a systematic review of prevalence and incidence. *Obstet Gynecol* 106:1071–1083
- Gearon JS, Kaltman SI, Brown C et al (2003) Traumatic life events and PTSD among women with substance use disorders and schizophrenia. *Psychiatr Serv* 54:523–528
- Goodman LA, Rosenberg SD, Mueser KT et al (1997) Physical and sexual assault history in women with serious mental illness: prevalence, correlates, treatment, and future research directions. *Schizophr Bull* 23:685–696
- Goodman LA, Salyers MP, Mueser KT et al (2001) Recent victimization in women and men with severe mental illness: prevalence and correlates. *J Trauma Stress* 14:615–632
- Hardesty JL (2002) Separation assault in the context of postdivorce parenting: an integrative review of the literature. *Violence Against Women* 8:597–625
- Heim C, Newport DJ, Heit S (2000) Pituitary-adrenal and autonomic responses to stress in women after sexual and physical abuse in childhood. *JAMA* 284(5):592–597
- Heim CD, Newport J, Bonsall R (2003) Altered pituitary-adrenal axis responses to provocative challenge tests in adult survivors of childhood abuse. *FOCUS J Lifelong Learning Psychiatry* 1(3):282–289
- Hester M, Pearson C, Harwin N et al (2007) Making an impact. Children and domestic violence: a reader. Jessica Kingsley Publishers, London
- Hillberg T, Hamilton-Giachritsis C, Dixon L (2011) Review of meta-analyses on the association between child sexual abuse and adult mental health difficulties: a systematic approach. *Trauma Violence Abuse* 12(1):38–49
- Hollingsworth L (2004) Child custody loss among women with persistent severe mental illness. *Soc Work Res* 28:199–209
- Howard LM, Thornicroft G, Salmon M, Appleby L (2004) Predictors of parenting outcome in women with psychotic disorders discharged from mother and baby units. *Acta Psychiatr Scand* 110(5):347–355
- Howard LM, Oram S, Galley H, Trevillion K, Feder G (2013) Domestic violence and perinatal mental disorders: a systematic review and meta-analysis. *Plos Med* 10:e1001452
- Howard LM, Molyneux E, Dennis CL, Rochat T, Stein A, Milgrom J (2014) Non-psychotic mental disorders in the perinatal period. *Lancet* 384(9956):1775–1788
- Humphreys C (2006) Relevant evidence for practice. In: Humphreys C, Stanley N (eds) *Domestic violence and child protection: directions for good practice*. Jessica Kingsley Publishers, London, pp 19–35
- Humphreys C, Thiara R (2002) Routes to safety: protection issues facing abused women and children and the role of outreach services. Women's Aid Federation of England, Bristol

- Humphreys C, Thiara R (2003a) Mental health and domestic violence: "I call it symptoms of abuse". *Br J Soc Work* 33:209–226
- Humphreys C, Thiara R (2003b) Neither justice nor protection: women's experiences of post-separation violence. *J Soc Welfare Fam Law* 25:195–214
- Huth-Bocks AC, Levendosky AA, Bogat GA (2002) The effects of domestic violence during pregnancy on maternal and infant health. *Violence Vict* 17(2):169–185
- Jaffe PG, Lemon NKD, Poisson SE (2003) *Child custody and domestic violence: a call for safety and accountability*. Sage Publications, Thousand Oaks
- Kitzmann KM, Gaylord NK, Holt AR et al (2003) Child witnesses to domestic violence: a meta-analytic review. *J Consult Clin Psychol* 71:339–352
- Lancaster CA, Gold KJ, Flynn HA et al (2010) Risk factors for depressive symptoms during pregnancy: a systematic review. *Am J Obstet Gynecol* 202(1):5–14
- Lang AJ, Rodgers CS, Lebeck MM (2006) Associations between maternal childhood maltreatment and psychopathology and aggression during pregnancy and postpartum. *Child Abuse Negl* 30(1):17–25
- Leeners B, Richter-Appelt H, Imthurn B et al (2006) Influence of childhood sexual abuse on pregnancy, delivery, and the early postpartum period in adult women. *J Psychosom Res* 61(2):139–151
- MacMillan HL, Wathen CN, Barlow J, Fergusson DM, Leventhal JM, Taussig HN (2009) Interventions to prevent child maltreatment and associated impairment. *Lancet* 373(9659):250–266
- McLaughlin KA, Green JG, Gruber MJ (2010) Childhood adversities and adult psychiatric disorders in the national comorbidity survey replication II: associations with persistence of DSM-IV disorders. *Arch Gen Psychiatry* 67(2):124–132
- McWilliams M, McKiernan J (1993) *Bringing it out into the open: domestic violence in Northern Ireland*. HMSO, London
- Meade CS, Kershaw TS, Hansen NB et al (2009) Long-term correlates of childhood abuse among adults with severe mental illness: adult victimization, substance abuse, and HIV sexual risk behavior. *AIDS Behav* 13(2):207–216
- Mikton C, Butchart A (2009) Child maltreatment prevention: a systematic review of reviews. *Bull World Health Organ* 87(5):353–361
- Miller E, Breslau J, Chung WJ, Green JG, McLaughlin KA, Kessler RC (2011). Adverse childhood experiences and risk of physical violence in adolescent dating relationships. *Journal of epidemiology and community health* 1–8, jech-2009
- Mueser KT, Salyers MP, Stanley D et al (2004) Interpersonal trauma and posttraumatic stress disorder in patients with severe mental illness: demographic, clinical, and health correlates. *Schizophr Bull* 30(1):45
- Mueser KT, Rosenberg SD, Xie H et al (2008) A randomized controlled trial of cognitive-behavioral treatment for posttraumatic stress disorder in severe mental illness. *J Consult Clin Psychol* 26:259–271
- NICE (National Institute for Clinical Excellence) UK (2014) Guidelines on 'Domestic Violence and Abuse' (PH50) <https://www.nice.org.uk/guidance/ph50>
- Norman RE, Byambaa M, De R et al (2012) The long-term health consequences of child physical abuse, emotional abuse, and neglect: a systematic review and meta-analysis. *PLoS Med* 9(11):e1001349
- Oram S, Trevillion K, Feder G, Howard LM (2013) Prevalence of experiences of domestic violence among psychiatric patients: systematic review. *Br J Psychiatry* 202(2):94–99
- Osofsky JD (2003) Prevalence of children's exposure to domestic violence and child maltreatment: implications for prevention and intervention. *Clin Child Fam Psychol Rev* 6:161–170
- Pawlby S, Hay D, Sharp D et al (2011) Waters, and Carmine M. Pariante. Antenatal depression and offspring psychopathology: the influence of childhood maltreatment. *Br J Psychiatry* 199(2):106–112
- Radford L, Hester M (2001) Overcoming mother blaming? Future directions for research on mothering and domestic violence. In: Graham-Bermann SA, Edleson JL (eds) *Future directions for research on mothering and domestic violence*. American Psychological Association, Washington, DC, pp 135–155

- Read J, Van Os J, Morrison AP (2005) Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatr Scand* 112(5):330–350. doi: <http://dx.doi.org/10.1111/j.1600-0447.2005.00634.x>
- Records K, Rice MJ (2009) Lifetime physical and sexual abuse and the risk for depression symptoms in the first 8 months after birth. *J Psychosom Obstet Gynaecol* 30:181–190
- Rees S, Silove D, Chey T, Ivancic L, Steel Z, Creamer M, Teesson M, Bryant R, McFarlane AC, Mills KL, Slade T, Carragher N, O'Donnell M, Forbes D (2011) Lifetime prevalence of gender-based violence in women and the relationship with mental disorders and psychosocial function. *JAMA* 306(5):513–521
- Roberts R, O'Connor T, Dunn J, Golding J, ALSPAC Study Team (2004) The effects of child sexual abuse in later family life; mental health, parenting and adjustment of offspring. *Child Abuse Negl* 28(5):525–545
- Scott KM, McLaughlin KA, Smith DAR (2012) Childhood maltreatment and DSM-IV adult mental disorders: comparison of prospective and retrospective findings. *Br J Psychiatry* 200(6):469–475
- Seng JS, Low LK, Sperlich M, Ronis DL, Liberzon I (2011) Post-traumatic stress disorder, child abuse history, birthweight and gestational age: a prospective cohort study. *BJOG* 118(11):1329–1339
- Seng JS, Sperlich M, Kane LL (2013) Childhood abuse history, posttraumatic stress disorder, postpartum mental health, and bonding: a prospective cohort study. *J Midwifery Womens Health* 58(1):57–68
- Shah PS, Shah J (2010) Maternal exposure to domestic violence and pregnancy and birth outcomes: a systematic review and meta-analyses. *J Womens Health* 19(11):2017–2031
- Spertus IL, Yehuda R, Wong CM et al (2003) Childhood emotional abuse and neglect as predictors of psychological and physical symptoms in women presenting to a primary care practice. *Child Abuse Negl* 27(11):1247–1258
- Subica AM (2013) Psychiatric and physical sequelae of childhood physical and sexual abuse and forced sexual trauma among individuals with serious mental illness. *J Trauma Stress* 26:588–596. doi: [10.1002/jts.21845](https://doi.org/10.1002/jts.21845)
- Thiara R, Humphreys C, Skamballis A et al (2006) Talking to My Mum: Developing communication between mothers and children in the aftermath of domestic violence. pp. 1–3. Warwick: University of Warwick
- Thiara RK (2010) Continuing control: child contact and post separation violence. In: Thiara RK, Gill AK (eds) *Violence against women in South Asian communities: issues for policy and practice*. Jessica Kingsley Publishers, London, pp 156–181
- Trevillion K, Oram S, Feder G, Howard LM (2012) Experiences of domestic violence and mental disorders: a systematic review and meta-analysis. *PLoS One* 7(12):e51740
- Trevillion K, Byford S, Cary M, Rose D, Oram S, Feder G, Agnew-Davies R, Howard LM (2014) Linking abuse and recovery through advocacy: an observational study. *Epidemiol Psychiatr Sci* 23(1):99–113
- Walker LEA (ed) (2009) *The battered woman syndrome*, 3rd edn. Springer Publishing Company, New York
- White C, Nicholson J, Fisher W (1995) Mothers with severe mental illness caring for children. *J Nerv Ment Dis* 183:398–403
- Wolfe DA, Crooks CV, Lee V et al (2003) The effects of children's exposure to domestic violence: a meta-analysis and critique. *Clin Child Fam Psychol Rev* 6:171–187
- Woolhouse H, Gartland D, Hegarty K et al (2012) Depressive symptoms and intimate partner violence in the 12 months after childbirth: a prospective pregnancy cohort study. *BJOG Int J Obstet Gynaecol* 119:315–323. doi: [10.1111/j.1471-0528.2011.03219.x](https://doi.org/10.1111/j.1471-0528.2011.03219.x)
- World Health Organization (2010) Expert meeting on health-sector responses to violence against women. World Health Organization, Geneva, pp 1–40
- Yount KM, DiGirolamo AM, Ramakrishnan U (2011) Impacts of domestic violence on child growth and nutrition: a conceptual review of the pathways of influence. *Soc Sci Med* 72:1534–1554

Part III

Types of Care

Ambulatories Cares: Parent–Infant Psychotherapy in Perinatal Mental Health

8

Jaqueline Wendland

Abstract

The peripartum is a time of huge and sometimes overwhelming biological, psychological, and social upheaval for the parents and, in particular, for the future mother. Perinatal disorders affect not only the mother but also the developing child, the infants' father and, to some extent, the whole family. Prevention and intervention strategies need therefore an integrated and shared work involving both adult and child perinatal health practitioners. Several types of preventive and therapeutic perinatal and parent–infant interventions have been developed over the past 40 years. Some of them aim at improving the quality of parenting and of the mother/parent–infant relationship, others at preventing or treating maternal perinatal distress/mental disorders (in particular depression) and its effects on the child, and others at dealing with infant early behavioral, somatic, and developmental symptoms or delays. In this chapter, we focus on general principles and different models of parent–infant psychotherapy, including psychodynamic and psychoanalytic, attachment-based, cognitive–behavioral, interaction-oriented, and infant-centered approaches, as well as manualized treatments and parent–infant co-therapy.

Introduction

The peripartum is a time of huge and sometimes overwhelming biological, psychological, and social upheaval for the parents and, in particular, for the future mother. Parenting may be seen as a major developmental task for adults and, consequently,

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as a potential source of self-realization, improvement, and well-being if parents feel they succeed in this task or, conversely, as a stressful and even painful and traumatic experience. In both cases, having a child is a powerful drive for change and adaptation. Depressive, anxious, and stress-related disorders are frequent complications among pregnant women and new mothers. Women in childbearing years are particularly subject to depression, which is one of the leading causes of disease worldwide (World Health Association 2012). Nevertheless, only a few antenatal interventions have focused specifically on preparing for parenthood and on prevention of maternal perinatal emotional distress. Continuity between pre- and postnatal intervention is likely to produce better outcomes and should be promoted.

Perinatal disorders affect not only the mother but also the developing child, the infants' father, and, to some extent, the whole family. Thus, prevention and intervention strategies need an integrated and shared work involving both adult and child perinatal health practitioners. Providing the parents and the (future) infant with preventive and therapeutic mental health interventions, when necessary, is essential. Persistent maternal distress or mental health disorders may have harmful and enduring effects on the mother's mood and behavior. Early exposure to maternal stress, depression, and anxiety may affect the biobehavioral development of the fetus and the newborn and may predispose the child to long-term physiological and neurological alterations that might play a role in shaping emotional and behavioral development (Brennan et al. 2008; Laurent et al. 2011; Soussignan et al. 2006) and lead to impaired developmental outcomes. A series of studies carried out by Field and her colleagues has demonstrated the positive effect of relatively simple and low-cost multimodal interventions (such as massage therapy, music, yoga, peer support groups) in reducing maternal prenatal depression symptoms and its consequences for mother, newborn, and pregnancy outcomes (Field et al. 2009, 2013; Mitchell et al. 2012). Besides, the impact of maternal perinatal depression may be heightened when this condition is comorbid with other preexisting mental disorders, such as psychotic or severe personality disorders (Wendland et al. 2014a).

Several types of preventive and therapeutic perinatal and parent–infant interventions have been developed over the past 40 years. Some of them aim at improving the quality of parenting and of the mother/parent–infant relationship, others at preventing or treating maternal perinatal distress/mental disorders (in particular depression) and its effects on the child, or at dealing with infant early behavioral, somatic, and developmental symptoms or delays. In this chapter, we will focus on general principles and different models of parent–infant psychotherapy, including psychodynamic or psychoanalytic, attachment-based, cognitive–behavioral, interaction-oriented, and infant-centered models, as well as manualized treatments and parent–infant co-therapy.

Principles of Parent–Infant Psychotherapy

Parent–infant psychotherapy occupies a central place in perinatal and infant psychiatry and is probably the hallmark of infant mental clinical practice (Guédény, Guédény, Wendland & Burtchen, 2014). This particular setting implies the

presence of both the parent(s) and the infant(s). It assumes that (1) most infant behavioral or emotional symptoms may be seen as relational, whether stemming from the early disturbances in parent–infant interaction or having an impact on the relationship and, (2) in the same way, parental perinatal disorders and difficulties with parenting are greatly linked to the parent–infant relationship. Thus, addressing the quality of parent–infant relationship becomes quite imperative.

There is extensive evidence that the perinatal period is a favorable window for mental health intervention. The therapeutic work appears to be facilitated at the same time by the flexible and demanding state of mind of parents that need to change and to adapt rapidly to welcome the baby and by the fast and dynamic unfolding of infant development. In the case of maternal postnatal depression, although the mother may need individual psychiatric treatment, mother–infant psychotherapy offers a unique opportunity to repair disruptions in the mother–infant relationship and to prevent impaired child outcomes. As stated by Cicchetti et al. (1998), both the mother as depressed and the depressed mother interacting with her child need to be considered. Treating mothers' depression only might not be sufficient to protect the child from the negative effects of having a depressed parent (Forman et al. 2007).

Nylen et al. (2006) contend that a treatment that targets the mother–infant relationship may have greater potential in providing a buffer effect against the potentially damaging effects of postpartum depression on the child's early emotional and cognitive development. Guédény et al. (2014) underlined also the “après-coup” effect of maternal postnatal depression and the need for a relational approach. As described by Cicchetti, Toth, and Rogosh (2004, p.235), “inattention to relational issues in depressed mothers, in turn, may serve to perpetuate maternal depression, as the caregiver may be confronted with current and future child behaviors problems and the associated guilt resulting from the fear that her depression has interfered with effective parenting.” Thus, parent–infant psychotherapy is now considered as a part of the treatment of perinatally depressed mothers, as important as the treatment of the depressive episode itself (Cramer 1993; Guédény et al. 2014; Milgrom et al. 1999; Salomonsson and Sandell 2011). Clark et al. (2008) also stressed that clinicians working with postnatally depressed mothers need to address the mother's relationships (including her infant, her husband or companion, and significant others) and not just the mother's depression. In other cases, painful or disturbed early childhood experiences coming from the mother's past may intrude the present mother–infant relationship and they need to be addressed in a joint mother–infant setting. These past elements were brilliantly described as “ghosts in the nursery” by Selma Fraiberg in her pioneer work (Fraiberg 1980).

Parent–infant psychotherapy has the particularity of being at the frontier between adult and infant psychiatry. Clinical practice in this domain requires a solid training in both fields, as well as some knowledge of infant pediatric and nursing issues. At a more personal level, the therapist must feel at ease with the world of infancy. Given that the infant has poor or no language skills, the therapist must be able to bring himself to the level of the baby with empathy and to speak to him as a subject, in a work of subjectivation and differentiation from the adult. In the same way, being able to identify himself to the parent is also essential.

It's important to underscore that this setting is not designed to treat the parent's prior, sometimes chronic, mental disorder (such as psychotic, personality, or affective disorders). That would neglect the new and specific parental and infant needs. The scope of parent–infant psychotherapy encompasses only the parent–infant relationship, as well as infant development and parenting issues. However, since the transition to parenthood is known as a period of greater psychological vulnerability, parents with prior mental disorders are likely to seek psychological support in perinatal mental health services. Having a child may in fact lead some of these parents to have their first contact with mental health services. Practitioners have to put their efforts into welcoming these patients during this short-lived intervention period. The fragile and unstable features of their personality are liable to expose them to serious difficulties in the transition to parenthood, in infant caregiving, and in the establishment of healthy early interactions.

The psychological tasks of parenting, which involve consistent and empathic care, attachment security promotion, physical proximity, tolerance of dependency, and frustration of their own needs may be particularly demanding and overwhelming for these adults. The therapeutic management of these families is often arduous and challenging, as this population may show high rates of dropout, noncompliance, and erratic psychotherapy attendance. Mental health services need to be prepared to manage these families. Likewise, mothers with postnatal depression are hard to reach as most of them do not recognize and accept themselves as being depressed, and those who decline intervention or dropout might be those who are probably at greater risk to be severely depressed (Nylen et al. 2006). The feeling of being a “bad” mother is not rare. Therefore, all interventions are nonjudgmental and aim to promote the parent's capacity to engage in empathetically and emotionally responsive interaction with the infant, thereby reinforcing parental self-confidence.

As in all psychotherapeutic settings, establishing and maintaining a work alliance with the patients is the first target of the treatment. The therapeutic alliance will serve as a secure base that ensures the exploration of parenting issues and relational difficulties with the baby, by reducing feelings of guilt, reject, or mistrust and by favoring back and forth movements between past and present relationships. The relationship with the therapist is believed to serve as a “corrective emotional experience” (Alexander and French 1956), capable to remodel the interpersonal relational schemes (Brisch 2011). Besides, keeping the baby at the center of the treatment can help the establishment of the therapeutic alliance with those parents who fear their culpability or the intimate experience of expressing their thoughts and emotions to the therapist. As noted by Fraiberg (1980), the baby is the “catalyst” of the problems but also of all the hopes of the parents, and they can be ready to make for him more efforts than they would not have made for themselves.

Moreover, no mother–infant psychotherapy will be efficient without a close collaboration and a strong and continuous involvement of the partner (Guédeney et al., 2014). In fact, the impact of marital conflict on the infant, or the parents' disagreement about parenting issues, may be sometimes the reason for the first consultation. In any case, it's essential to consider as the start point what is regarded as problematic by the family and not by the professionals. Any therapeutic relation starts with

a “need” and somebody who “meets this need.” The parents’ need for help is then acknowledged and the mutual commitment between parents and the therapist opens the access to the infant. In the first encounter, some parents may actually come without the child, searching for some counseling, which they would apply with the baby. They do not realize the need of bringing a baby to a therapist. Other parents may be convinced that the patient is only the baby and they behave as not directly involved. However, it’s clear that the therapeutic intervention is directed to both parents and infant. The most effective interventions are probably those which relate to the relationship, the attachment bond, without pointing the behavior of the parents or the child’s. Likewise, their effectiveness rely probably more on their context, “the relational climate” of the moment, rather than on their explicit content.

Since the original models of Fraiberg, Adelson, and Shapiro (1975), Cramer and Palacio-Espasa (1993), and Lieberman and Pawl (1993), parent–infant psychotherapy techniques have been improved and adjusted to more varied and complex clinical situations which do not fit the classical joint and brief mother–infant setting. Perinatal and infant psychologists and psychiatrists have been brought to develop new ways of intervention. Progressively, mother–baby therapies became “parent(s)–infant(s)” treatments because fathers and sometimes two (or more) infants take part in it. Parent–infant psychotherapy embraces nowadays a broad range of families. These therapies may be offered to overburdened multi-risk families, sometimes with no explicit demand of treatment (Berg 2007); may be adapted to migrant families (Taïeb et al. 2010); take place in a co-therapy involving two therapists (see further Wendland et al. 2015) or in the home setting (Stoleru and Morales-Huet 1989); may be designed to infants or parents with disabilities or special needs (Hollins, Woodward, and Hollins 2010; Akram and Hollins 2010) or to parents diagnosed with psychotic, personality, or other mental disorders (Aidane et al. 2009; Wendland et al. 2014a); or may be offered to the whole family (Fivaz-Depeursinge and Corboz-Warnery 1999). Besides, parent–infant psychotherapy takes place mostly in an individual setting, but they can also be done within a group setting, in particular when they are designed to treat perinatally depressed mothers and their infant (see the mother–infant therapy group, M-ITG, model of Clark et al. 2008 and the Keys To Caregiving, KTC, of Spietz et al. 1990, used by Jung et al. 2007). Group settings are believed to reduce social isolation, to facilitate mutual emotional support, and to provide interpersonal learning and validation among women who share the same experience.

Whatever the approach, the trans-generational perspective is at the core of parent–infant psychotherapy. Exploring parent–child relationships in the family through two or more generations is a powerful tool for understanding present parent–infant relations and parenting behavior. The therapist may use the genogram (McGoldrick and Gerson 1990) and ask the parent(s) to draw on a sheet the family tree of life and then explore with them the family history, the child’s place, as well as family configurations, filiation, secrets, and repetitions issues.

Parent–infant psychotherapy can have different focus or “points of entry.” Bruschweiler-Stern and Stern (1989) have pointed the three essential axes: parental representations, the quality of parent–infant interactions, and the infant’s behaviors.

They have also underscored the deep interdependence of these elements and the fact that any change in one level will have an impact on the others (Puura and Kaukonen 2010). One can deduce that parent–infant psychotherapy does not really lend itself to a unique, mono-theoretical, or preestablished framework. Most therapists use in fact different kind of techniques and seek to find with each family its “point of entry.” Some approaches are indeed described as integrative, such as the Clark’s M-ITG model (2000), which gathers techniques from by psychodynamic, attachment, self psychology, social learning, as well as cognitive–linguistic and other developmental theories.

Treatment modalities are best co-built with the family and adapted to respond to the family situation and demand. When their duration is not predetermined, parent–infant therapy can last from a few weeks to 2 or 3 years. The rhythm of the sessions will be fixed and adjusted in agreement with the family, according to their needs and the evolution of the situation, taking into account both the parent(s) and the infant. Besides, a special attention has to be paid to the physical setting of the treatment when working with parents and infants. It’s essential to have a stable setting, with a sufficiently large, comfortable, and secure room, allowing continuity, place, and mobility to each one: the infant(s), the parent(s), and the therapist(s). Furniture and toys need to be safe and adapted to the child’s developmental level.

Except in case of rupture on the part of the parent(s), the end of treatment is usually jointly discussed and decided by the therapist and the parent(s), on the basis of the parent’s appraisal, feelings, and expectations about the treatment and of the therapist assessments and clinical observations. Both parts take into account the evolution of the parent, of the infant, and of their relationship. Besides, according to the family situation, it’s also important to work in near collaboration with the partners from health and social services, in order to ensure a stable and protective social network for the parents and the child (maternity, well-baby clinics, adult psychiatrists, pediatricians, day care centers, social workers, children’s judge). These services help parents dealing with day care, health, economic, and family issues (including the mother’s medication if needed) and may introduce child protection measures if necessary.

Psychodynamic and Psychoanalytic Approaches

Psychodynamic and psychoanalytic approaches target mostly on parental representations of self and of the infant and on intergenerational relational experiences. Classically, free association, transfer and counter-transfer issues, and interpretation are the main psychotherapeutic techniques. However, treatment in the perinatal period, whether involving only the mother or both parent and infant, does not follow the strict psychoanalytic setting but rather a brief psychotherapy model. Some authors argue that the presence of the baby is not required and could even constitute a barrier to the therapeutic process (difficulty to bring to mind conflictive issues or intimate past memories), notably, in case of postnatal maternal depression with no complaints concerning the infant (Dayan 2008). Nevertheless, in most cases, treatment involves the mother (or both parents) and the infant.

The parent's internal world is thought to influence the way in which he/she perceives and behaves with the baby. These influences were described in terms of representations of the imaginary and fantasmatic baby, of parental projections on the infant, and of "ghosts of the past" (Lebovici 1993; Fraiberg 1980). These parental representations and behaviors are liable to disturb parent–infant interactions and to affect infant development and health (e.g., sleep or feeding disorders, developmental delays; Knauer and Palacio-Espasa 2010). Non-elaborated conflicts of the parent's past could be brought up to the present in some typical and repetitive interactive patterns with the infant (symptomatic interactive sequences, Cramer and Palacio-Espasa 1993).

Intergenerational issues occupy a central place in psychodynamic psychotherapy. The baby is considered as a new member in the family tree of life (Lebovici 1993). He/she pushes the family to reorganization and is liable to reactivate past conflicts. The parents are brought to remind the history of their childhood and their relations with their parents. The therapist acts as a reliable figure, providing support, suggesting links between past and present relationships, and making sense of both the parent's and the infant's experiences. This may include chasing out the "ghosts in the nursery" that may hamper infant development and the transition to parenthood through relationship distortions (Fraiberg et al. 1975). When working with parents diagnosed with severe mental disorders, the therapist may be faced with the patients' deficits of association, reflective functioning, and mentalization that he/she could help to compensate (Fonagy et al. 1991). These deficits include difficulties to recall their past history, to build a coherent narrative of their actual experience, and to elaborate possible links between them (Wendland et al. 2014a).

Lack of memories and of elaboration of links between affects and representations, and between past and present, can lead to repetition of past trauma in the parent–infant relationship (Fraiberg et al. 1975). Relying on the therapeutic alliance, the therapist could serve as a support for the parent's projections of his/her own parents representations, which sometimes are split between the "good parent," often idealized and associated to a narcissistic disorder in the patient, and the "bad parent," when memories of a deprived or traumatic past are associated with current feelings of incompetence, rejection, mistrust, or culpability of the parent. More than working on interpretation, the therapist helps the parent making links. Cramer and Palacio-Espasa (1993) underline the projective character of the parental representations of the baby. The therapeutic work would partly consist in "decontaminating" the parent–infant relationship of the deformed and deforming projections coming from parents' past. To some extent, the current relation with the baby would reveal the "parents' prehistory."

The therapist may choose to use video feedback with the parent, thereby creating a triangular space in which the parent is invited to observe him-/herself in interaction with the infant (Beebe 2003; Jones 2006). This technique may help the parent being able to recognize that the baby has a point of view that is different from the parent's. Video feedback can also facilitate remembering childhood memories and thinking upon past influences that may "contaminate" the relationship with the child in the present. The images may serve as a solid support for mental representations.

This technique also enables to reinforce parental self-confidence, as the therapist sheds light in particular to positive aspects of the parent's behavior. During and after the viewing of the video, the therapist asks the parent to say how he feels and say whatever comes into mind. In order for such spontaneity to occur, there needs to be a forming trust between the therapist and the parent. The therapist pays attention to the parent's verbal and nonverbal language, to the associative process, while watching the video and what it leads to thereafter in the therapy session (Wendland et al. 2014a).

Two recent case-control studies have demonstrated the relevance of using psychodynamic approaches in perinatal interventions. In a randomized controlled trial, Salomonsson and Sandell (2011) have showed the efficacy of parent-infant psychotherapy in reducing maternal depression symptoms and in enhancing the quality of mother-infant relationship. In a pre- and postnatal intervention study, Nanzer et al. (2012) have showed the usefulness of a four-session model of parenthood-centered psychotherapy in reducing maternal postnatal depression and its effects on parent-infant relationship in a group of prenatally depressed mothers compared to a group of nondepressed mothers. It consists in two antenatal and two postnatal sessions and is focused on changing problematic representations of parenthood, according to Cramer and Palacio-Espasa (1993) model. To put it briefly, psychodynamic parent-infant psychotherapy is expected to relieve parent's emotional distress and parenting difficulties, to improve parent-infant interaction, and to eliminate infant emotional and developmental symptoms believed to be related to parent-child relationship and to the parent's own childhood history.

Attachment-Oriented Treatments

In attachment-oriented models, emphasis is put on parental representations of attachment relationships (internal working models; Steele and Baradon 2004). These representations are built on the basis of the parents' relationship to their attachment figures, in particular in terms of what they can expect from them in case of distress and need of protection (availability, emotional regulation, comfort, protection or dismissing, intrusive, controlling, abdicating, or disorganized behaviors). The therapist tries to understand how these representations are enacted in the interactions between parent and infant and shape infant's own attachment pattern. In particular, the therapist aims to promote parent behaviors that foster attachment security and reduce attachment insecurity and disorganization (sensitivity and responsiveness toward the infant signals, acknowledge and appropriate response to attachment needs; drawing the parent's attention to the infant's positive attachment behaviors).

The main goal is helping the mother gaining insight into her working models of self and others, especially in intimate and emotionally charged contexts, and how internal working models may be enacted in parent-child relationship. Taking into account the parent's internal working models is essential in attachment-based therapies (Steele and Baradon 2004; Toth et al. 2006). Addressing the parent's

unresolved attachment conflicts is believed to facilitate the development of a more adaptive parenting and a more secure and less disorganized attachment in the infant. As suggested by Crandell et al. (1997), insofar as the mother has a defensive or entangled state of mind regarding attachment, she may either intrude upon or dismiss affective experiences that arise in the context of mother–infant interaction and thereby affect the infant’s ability to integrate and regulate emotions, which predisposes the infant to later psychopathology. Hence, when early traumatic attachment experiences remain unresolved, the adult who becomes a parent is at risk of reenacting these severe distortions of interaction with his/her own children and of hampering the infant’s affective development, in particular through the expression of frightening–frightened and dissociated behaviors (Cicchetti et al. 1999; Lyons-Ruth and Spielman 2004; Wendland et al. 2014a). Actually, the attachment model illustrates one of the pathways for the potential intergenerational transmission of psychopathology (Solomon and George 2006), which is a key point for preventive and therapeutic approach.

These therapies are all the more effective since the therapist can serve as a stable and reliable attachment figure for the parent (Dozier et al. 1994), offering the possibility to change insecure internal working models into secure ones, and breaking thereby the transmission of attachment insecurity and attachment disorders (Brisch 2011). Bowlby (1988) suggested that the therapist’s role is to provide a secure base for the patient, while disconfirming the patient’s problematic working models of relationships. This is similar to the caregiver’s role with the child, e.g., serving as a secure base by being available and appropriately responsive and providing a holding environment (Winnicott 1971). Besides, by improving parent–child communication and interaction attunement and by expanding the parent understanding of his/her and the child’s inner world, parent–child relationship distortions are expected to be reduced or prevented. These therapies also aim at promoting the caregiver’s feelings of competence in his/her parental role and positive parenting. In turn, positive parenting and secure attachment are consistently associated to better child developmental outcomes (Boldt et al. 2014; Rispoli et al. 2013).

Interaction-Oriented Approaches

In interaction-oriented approaches, the attention is focused on the way in which the two partners interact and their reciprocal effects. Interactions are considered as both the origin of the disorders and the principal target of intervention and change. Improvement of parent–infant interaction is expected to have positive impact on parenting behavior and on infant development.

Most interaction-oriented approaches fall within the cognitive behavioral field. Cognitive behavioral approaches put emphasis on “here and now” observed behaviors and on adult cognitions that may be distorted and lead to maladjusted behaviors. In this approach, videotaped interactions of parent and infant are largely used by the therapist to help the parent recognize his/her own positive responses and interactions with the infant, to reflect on cognitions related to parental behavior and

parent–child relationship, and to elaborate appropriate responsiveness. Mutual enjoyment is emphasized and pleasurable interactions between parent and infant are encouraged, as they are presumed to reinforce parental confidence in the parenting role.

Interactional guidance developed by McDonough (1993) is the best known model in this field. Starting from filmed sequences of parent–infant play that are viewed together, the therapist tries to increase the parent sensitivity toward the infant’s cues, to reinforce the parent’s awareness of the interactive language of the baby, and to guide the parent in the comprehension of reciprocal behaviors. Emphasis is given on the behaviors and sequences that the therapist aims to promote, on the competences of both partners, rather than on difficulties or maladjusted behaviors (Rusconi-Serpa, Sancho-Rossignol and Mc Donough 2009).

Besides the treatment of maternal perinatal depression, mother–infant interaction guidance has also been successfully used to address a variety of infant problems, comorbid or not with mother’s symptoms, such as behavior, developmental, or psycho-functional symptoms (Robert-Tissot et al. 1996), and attachment disturbances (Lieberman et al. 1991). As stated before, interaction-oriented approaches have often been integrated into a variety of other models, such as the M-ITG (Clark 2000), the KTC (Spietz et al. 1990), or the Lieberman and Pawl (1993) model which combines interactional guidance with psychodynamic interpretative techniques.

Infant-Focused Approaches

Infant-focused therapies stem mainly from the pioneer work of Brazelton on early infant competences and the importance of sensitizing the parents to the individuality of their baby. Parents are invited to understand and to adapt to their infant’s behaviors, rhythms, and needs (Brazelton 1997; Brazelton and Nugent 2001). The emphasis is put on the infant’s competences and individuality. That is expected to reinforce the parents’ sense of competence and self-efficacy and to promote the quality of parent–infant interactions. These approaches rely on child development and cognitive behavioral theories and may be integrated into other models such as interactional guidance and attachment-oriented therapies. The WWW and the KTC programs (see further) are examples of infant-led psychotherapies.

In order to support the understanding of infant’s behaviors, needs, and “language”, the parents may be provided with information about infant developmental milestones and on how to behave to help the infant during transition periods (Brazelton’s “touch points”, 1997). However, this doesn’t mean to educate parents how to be parents. The therapist has to be careful not to adopt a rigid and normative attitude that could wound the parental self-esteem. It is crucial transmitting flexibility and sensitivity toward the baby and supporting the parents’ feeling of competence.

The parent is usually invited to get down on the floor, to follow their child’s lead, and to engage in mutual and attuned interactions with the infant. Depressed or mentally ill parents may misinterpret or avoid the infant’s bids for interaction and find it

difficult to establish any kind of communication insofar as the infant is unable to speak. The parents often carefully observe the way the therapist interacts with their infant. Whatever the approach, the therapist often verbalizes what he/she perceives of experience the baby (behaviors, intentions, feelings), acting as his/her spokesman, and then asks the parents to engage themselves in this “exercise of empathy” (Wendland 2014). The therapist may show the parents the way the infant participates to the course of the session by looking, vocalizing, crying, moving toward the parent, soothing, etc. One can also ask the parents to remember a nursery rhyme of their childhood or to sing a song in their mother tongue as a facilitator. In other cases, one can attend moments of regression on the side of the parents that try to understand their baby or to position themselves in a sort of rivalry with him, being unable to behave as an adult who takes charge of the baby.

Manualized Models of Parent–Infant Psychotherapy or Intervention

Some parent–infant psychotherapy or intervention models have been described as a manualized method in order to be applied and tested in prevention and intervention programs. These programs generally integrate different kind of techniques such as video feedback, parental guidance, and other strategies whose aim is the enhancement of positive parenting, of secure attachment representations, and of the parent’s sensitiveness and responsiveness toward the infant signals and in particular to attachment behaviors. The framework and number of sessions are generally preestablished. Parents may be provided with brochures about sensitive parenting, infant development and needs, and attachment behavior. These approaches usually do not require a highly experienced infant–mother psychotherapist.

The most known and well-tested programs are STEEP (Steps Toward Effective, Enjoyable Parenting; Erickson and Egeland 2004), WWW (Watch, Wait and Wonder; Cohen et al. 1999), COS (Circle of Security; Marvin et al. 2002), VIPP (Video-Feedback Intervention to Promote Positive Parenting; Velderman et al. 2006), HUGS (Milgrom 1994), and the Keys To Caregiving (Spietz et al. 1990).

The STEEP program (Erickson and Egeland 2004) is designed to promote healthy parent–child relationships and to prevent social and emotional problems among children born to first-time parents who are challenged by multi-risk factors. This relationship-based program includes bi-weekly home visits, tailored to the unique needs, strengths, and interests of each family, beginning during pregnancy and continuing at least until the child’s second birthday. After delivery, mothers and babies attend to bi-weekly group sessions with others dyads whose babies are about the same age. Group sessions are structured and begin with a parent–child interaction time, including planned activities around the developmental issues, and a separation time, when mothers move to another room while their babies remain in the interaction room with caregivers. This separation provides mothers with an opportunity for informal support and semi-structured activities that address the parents’ own issues, including relationship skills, balancing adult needs and child needs, and

examining the influence of their own relationship history on present parent–child relationship.

The WWW program (Cohen et al. 1999) is an infant-led intervention centered on the parent–infant relationship but is guided by the infant activity rather than the initiatives of the mother or the therapist. This approach follows a psychodynamic model but works at both the behavioral and the representational levels. For half the session, the mother is instructed to get down on the floor with her infant, to observe her infant’s self-initiated activity, and to interact only at her infant’s initiative, thus accepting her infant’s spontaneous and undirected behavior and being physically accessible to him. This fosters an observational reflective attitude in the mother, potentially gaining insight into the infant’s inner world and relational needs. In the second half of the session, the mother is asked to discuss her observations and experiences of the infant-led play. The therapist does not give any guidance or interpretation but provides a supportive environment, allowing the mother to express her own observations, thoughts, feelings, and interpretations of her infant’s activity and their relationship. Play and mother–therapist discussion are presumed to enhance the quality of mother–child interaction, but the main objective is to enable the mother to follow her infant’s lead.

The COS (Marvin et al. 2002) is an attachment-based intervention program. The protocol includes group sessions of one hour and a quarter each week during a 20-week period. The intervention involves parent education and psychotherapy designed to shift patterns of attachment–caregiving interactions in high-risk caregiver–child dyads into more secure and organized relationships. Using video clips of their interactions with their children, caregivers are encouraged to increase their sensitivity and responsiveness to their child’s signals in both exploration and proximity-seeking movements, to enhance their reflexive capacity regarding their own and their child’s behavior and thoughts, and to reflect upon links between past and current child–caregiver relationship and caregiving patterns. Parents are shown a graphic that represents in a circle both sides of child attachment needs: (a) exploration and the need of having the parent’s availability, monitoring, and support and (b) proximity seeking, emotion regulation, and protection needs.

The VIPP program has two versions. The first one is related to the behavioral level. It focuses on enhancing mothers’ sensitive responsiveness by providing them with video feedback (VIPP). The second program has a representational focus (VIPP-R) and aims at affecting the mother’s representation of attachment (Bakermans-Kranenburg et al. 1998). Every intervention session has its own specific theme. For example, the VIPP session may focus on children’s contact seeking and exploration while the VIPP-R discussion on separations in early childhood experienced by the mother in her own childhood and experienced with her own child. VIPP implemented during the infant’s first year has been found to be effective in reducing CBCL total problem and externalizing problem scores in preschool years (Velderman et al. 2006). The VIPP approach has also resulted in positive effects on maternal sensitivity and in reducing attachment insecurity or disorganization in different at risk populations, such as adoptive and premature children (Juffer et al. 2005; Cassibba et al. 2008).

The Keys to Caregiving (KTC, Spietz et al. 1990) is a group intervention program that helps parents to understand and to respond to infant behaviors, with a main goal of increasing positive affective expressions in infants. The program includes five teaching sessions, each of them focusing on a different topic: infant states, infant behaviors, infant cues, state modulation, and feeding issues. The program is designed to enhance the parents' perceptions and understanding of infants' repertoires of behaviors, while they are given opportunity to practice new skills during training sessions and at home. A different aspect of infants' behaviors is worked on each week on a basis of what to do when infants show those behaviors and how to enjoy interactions. The program is expected to promote more frequent mutually enjoyable episodes and makes it easier to "repair" mismatches that can arise during interactions. This program was used by Jung et al. (2007) with postnatally depressed mothers. Although mothers' depression ratings did not change after the intervention, their infants showed increased interest and joy when interacting with their mothers.

The HUGS program (Happiness, Understanding, Giving, Sharing, Milgrom 1994) is designed for depressed mothers who experience relational difficulties with their infant. It may be a complement to the mother's cognitive behavioral group therapy designed to treat postnatal depression. Group sessions are structured and aimed at allowing mothers to observe and to understand their infant's behavior, to explore their reactions and perceptions in response to their infant signals, to reevaluate their cognitions, to play and to have physical contact with the infant with pleasure, and to express negative feelings in a nonjudgmental context. The mother may be given some exercises to be practiced at home in order to increase the time spent in face-to-face play with her infant, to reinforce mother–infant communication and positive and pleasurable interactions.

Parent–Infant Co-therapy

High-risk situations involving parental psychopathology, severe distortions of parent–infant relationship, or deprived, isolated, abusive, multi-risk families are not suitable to be managed by a single professional and may not be eligible for a standard parent–infant psychotherapy. These situations may require a more reinforced and institutional setting called co-therapy (Wendland et al. 2014a, 2015).

Co-therapy is a particular therapeutic setting where two practitioners are brought in to combine their interventions into one setting in order to treat one or more patients. This setting is largely employed in couple or family therapy but remains poorly described in the field of perinatal and infant mental health. In this context, patients may be a parent and his/her infant/toddler, a couple of parents and their children, or even the future parent(s) and their unborn infant. Two professionals bring together their therapeutic resources to help a parent–infant/fetus dyad or triad. The professionals are in general a psychologist–psychotherapist (therapist) and a pediatric nurse or infant/young child educator (co-therapist).

On the one hand, the therapist focuses his/her attention on maternal past and present representations and their links with the current parent–infant relationship (Cramer and Palacio-Espasa 1993). This work may include a large range of techniques described above, such as interactional guidance, psychodynamic and attachment-oriented interventions, as well as video feedback. On the other hand, the co-therapist focuses his/her attention on the infant and reinforces the recognition by the parent of the infant's feelings, needs, and behaviors. He/she provides the parents with nursing and parental guidance on infant needs and daily care, including feeding, hygiene, sleep, clothing, play, and health issues.

Co-therapy may take place in the home setting when the parent is unable to move (pregnancy complications, multi-fetal gestation, parents' health problems, severe postnatal depression) or when contact with other infants and adults is not recommended for the baby due to his fragile health (prematurity or other postnatal complications). This setting may also apply to parents having two or more children aged less than 3 years, in which a single professional would be probably overwhelmed. Antenatal co-therapy, involving a midwife or a pediatric nurse and a psychologist, is designed to support the future parents' transition to parenthood and preparation to welcome the baby in its psychological, social, and concrete aspects. Co-therapy can also be a first stage of care, a preparatory step for a standard parent–infant psychotherapy.

Creating the therapeutic alliance and ensuring compliance to treatment with these families are likely to be arduous and are best achieved by a shared therapeutic approach including the two practitioners and a broad institutional team. Parents may split professionals between good and bad intervenors and feelings of reject, mistrust, or usefulness on the parents' part may hamper the therapeutic work. Besides, distortions in parent–infant relationship and attachment disorders are often at the core of these situations. Parents may not be able to meet the infant's attachment needs until their own infantile (and present) affective needs are not satisfied. In the case of past emotional lack and trauma, the parents' own narcissistic needs may be put to the fore, and any attention paid to the baby can engender intense rivalry and envy. These patients may take the therapist out of the parent–infant relationship and submerge him/her with their traumatic past history and their present attention needs. Thus, in these cases, to save the baby from being “excluded” and to preserve the therapist's work capacity, a co-therapy setting becomes necessary.

This setting is expected to ensure a subtle balance between the needs of both the parent and the infant. Having one of the co-therapists' support warrants the mother does not feel dismissed, while the co-therapist acts as a spokesman for the infant. The co-therapy setting has demonstrated to be suitable in case of conflictive parent–child relationship. Naturally, co-therapy does not merely mean juxtaposition of two professionals. This setting implies that the two co-therapists have to be fit to work with each other and to regularly adjust the treatment focus. Attunement between the two co-therapists is essential and warrants that each co-therapist has his own therapeutic space and is enriched by the presence of the other. In brief, this setting is believed to offer more stability, solidity, effectiveness, and availability in the treatment of high-risk parent–infant dyads.

Conclusion

Whatever the model, parent–infant psychotherapy aims at treating parental difficulties related to the transition to parenthood (including perinatal transitory mental disorders), at improving the quality of parent–infant attachment and interactions, at preventing or treating infant symptomatology, and, in high-risk situations, at breaking the circle of dysfunctional parent–children relationships and decreasing the psychopathological risk for the child. Clearly, more outcome research is needed in order to examine the efficacy of different psychotherapy models for different populations, taking into account both risk and buffering factors (Guédeney et al., 2014; Van IJzendoorn et al. 2005). This would help to establish the best practices for preventive and intervention policy, even though the complexity of each family will always need to be individually and carefully addressed, in a near collaboration of infant and adult mental health professionals.

References

- Aidane E, Wendland J, Rabain D et al (2009) Un suivi thérapeutique atypique: Co-constructions thérapeutiques de la relation précoce d'une mère borderline et son bébé. *Psychiatrie de l'enfant* 52:131–166
- Akram A, Hollins S (2010) Being a parent with a disability. In: Tyano S, Keren M, Herrman H, Cox J (eds) *Parenthood and mental health. A bridge between infant and adult psychiatry*. Wiley-Blackwell, Oxford, pp 311–323
- Alexander F, French TM (1956) *L'expérience émotionnelle corrective*. PUF, Paris
- Bakermans-Kranenburg MJ, Juffer F, Van IJzendoorn MH (1998) Intervention with video feedback and attachment discussions: does type of insecurity make a difference? *Infant Ment Health J* 19:202–219
- Beebe B (2003) Thérapie brève mère-nourrisson et utilisation psychanalytique d'enregistrements vidéo. In: Anzieu-Premmereur C, Pollak-Cornillot M (eds) *Les pratiques psychanalytiques auprès des bébés*. Dunod, Paris, pp 237–271
- Berg A (2007) Ten years of parent-infant psychotherapy in a township in South Africa. What have we learnt? In: Pozzi-Monzo ME, Tydemann B (eds) *Innovations in parent-infant psychotherapy*. Karnac Books, London, pp 215–230
- Boldt LJ, Kochanska G, Yoon JE et al (2014) Children's attachment to both parents from toddler age to middle childhood: links to adaptive and maladaptive outcomes. *Attach Hum Dev* 16:211–229
- Bowlby J (1988) *A secure base*. Basic Books, New York
- Brazelton TB (1997) De la NBAS aux touch points. In: Dugnat M (ed) *Le monde relationnel du bébé*. Érès, Ramonville Saint-Agne, pp 87–93
- Brazelton TB, Nugent JK (2001) Utilisations cliniques de l'échelle de Brazelton. In: Brazelton TB, Nugent JK (eds) *Echelle de Brazelton*. Médecine et Hygiène, Genève, pp 101–110
- Brennan PA, Pargas R, Walker EF et al (2008) Maternal depression and infant cortisol: influences of timing, comorbidity and treatment. *J Child Psychol Psychiatry* 49:1099–1107
- Bruschweiler-Stern N, Stern DN (1989) A model for conceptualizing the role of the mother's representational world in various mother-infant therapies. *Infant Ment Health J* 10:16–25
- Brisch KH (2011) *Treating attachment disorders: from theory to therapy*, 2nd edn. Guildford Press, New York
- Cassibba R, Van IJzendoorn MH, Coppola G et al (2008) Supporting families with at risk, sick children: an Italian study. In: Juffer F, Bakermans-Kranenburg MJ, van IJzendoorn MH (eds)

- Promoting positive parenting: an attachment-based intervention. Lawrence Erlbaum Associates, Hillsdale, pp 91–110
- Cicchetti D, Rogosch FA, Toth SL (1998) Maternal depressive disorder and contextual risk: contributions to the development of attachment insecurity and behaviour problems in toddlerhood. *Dev Psychopathol* 10:283–300
- Cicchetti D, Toth SL, Rogosch FA (2004) Toddler-parent psychotherapy for depressed mothers and their offspring. In: Atkinson L, Goldberg S (eds) *Implications for attachment theory*. Lawrence Erlbaum Associates Publishers, Mahwah, pp 229–275
- Cicchetti D, Toth SL, Rogosch FA (1999) The efficacy of toddler-parent psychotherapy in increasing attachment security in offspring of depressed mothers. *Attach Human Develop* 1:34–66
- Clark R (2000) *Mother-infant therapy group treatment manual*. University of Wisconsin, Department of Psychiatry, Madison
- Clark R, Tluczek A, Brown R (2008) Mother-infant therapy group model for post-partum depression. *Infant Ment Health J* 29:514–536
- Cohen NJ, Muir E, Lojkasek M, Muir R, Parker CJ, Barwick M et al (1999) Watch, wait, and wonder: testing the effectiveness of a new approach to mother–infant psychotherapy. *Infant Ment Health J* 20:429–451
- Cramer B (1993) Are post-partum depressions a mother-infant relationship disorder? *Infant Ment Health J* 14:283–297
- Cramer B, Palacio-Espasa F (1993) *La pratique des psychothérapies mères-bébés: Etudes cliniques et techniques*. PUF, Paris
- Crandell LE, Fitzgerald HE, Whipple EE (1997) Dyadic synchrony in parent–child interactions: a link with maternal representations of attachment relationships. *Infant Ment Health J* 18:247–264
- Dayan J (2008) *Thérapies brèves d’inspiration psychanalytique en période périnatale*. In: Dayan J (ed) *Les dépressions périnatales*. Elsevier Masson, Paris, pp 69–85
- Dozier M, Cue KL, Barnett L (1994) Clinicians as caregivers: role of attachment organization in treatment. *J Consult Clin Psychol* 62:793–800
- Erickson MF, Egeland B (2004) Linking theory and research to practice: the Minnesota longitudinal study of parents and children and the STEEP program. *Clin Psychol* 8:5–9
- Field T, Diego M, Delgado J et al (2013) Peer support and interpersonal psychotherapy groups experienced decreased prenatal depression, anxiety and cortisol. *Early Hum Dev* 89:621–624
- Field T, Diego M, Hernandez-Reif M et al (2009) Pregnancy massage reduces prematurity, low birthweight and postpartum depression. *Infant Behav Dev* 32:454–460
- Fivaz-Depeursinge E, Corboz-Warnery A (1999) *A primary triangle: a developmental systems view of mothers, fathers and infants*. Basic Books, New York
- Fonagy P, Steele M, Steele H et al (1991) The capacity for understanding mental states: the reflective self in parent and child and its significance for security of attachment. *Infant Ment Health J* 12:201–218
- Forman DR, O’Hara MW, Stuart S et al (2007) Effective treatment for postpartum depression is not sufficient to improve the developing mother child relationship. *Dev Psychopathol* 19:585–602
- Fraiberg S (1980) *Clinical studies in infant mental health. The first year of life*. Tavistock publications, London
- Fraiberg S, Adelson E, Shapiro V (1975) Ghosts in the nursery: a psychoanalytic approach to the problems of impaired infant-mother relationships. *J Am Acad Child Psychiatry* 14:387–421
- Guedeney A, Guedeney N, Wendland J, Burtchen N (2014) Treatment of perinatal depression with mother-infant relationship psychotherapy. *Best Pract Res Clin Obstet Gynecol* 28:135–145
- Hollins S, Woodward S, Hollins K (2010) Parenting an infant with a disability. In: Tyano S, Keren M, Herrman H, Cox J (eds) *Parenthood and mental health. A bridge between infant and adult psychiatry*. Wiley-Blackwell, Oxford, pp 301–310
- Jones A (2006) How video can bring to view pathological defensive processes and facilitate the creation of triangular space in perinatal parent-infant psychotherapy. *Infant Observation* 9:109–123

- Juffer F, Bakermans-Kranenburg MJ, Van IJzendoorn MH (2005) The importance of parenting in the development of disorganized attachment: evidence from a preventive intervention study in adoptive families. *J Child Psychol Psychiatry* 46:263–274
- Jung V, Short R, Letourneau N et al (2007) Interventions with depressed mothers and their infants: modifying interactive behaviours. *J Affect Disord* 98:199–205
- Knauer D, Palacio-Espasa F (2010) *La destinée des bébés peut-elle changer? Etudes cliniques longitudinales du bébé à l'adulte*. PUF, Paris
- Laurent HK, Ablow JC, Measelle J (2011) Risky shifts: how the timing and course of mothers' depressive symptoms across the perinatal period shape their own and infant's stress response profiles. *Dev Psychopathol* 23:521–538
- Lebovici S (1993) On intergenerational transmission: from filiation to affiliation. *Infant Ment Health J* 14:260–272
- Lieberman AF, Pawl JH (1993) Infant–parent psychotherapy. In: Zeanah CH Jr (ed) *Handbook of infant mental health*. Guilford Press, New York, pp 427–442
- Lieberman AF, Weston DR, Pawl JH (1991) Preventive intervention and outcome with anxiously attached dyads. *Child Dev* 62:205–208
- Lyons-Ruth K, Spielman E (2004) Disorganized infant attachment strategies and helpless-fearful profiles of parenting: integrating attachment research with clinical intervention. *Infant Ment Health J* 25:318–335
- Marvin R, Cooper G, Hoffman K et al (2002) The circle of security project: attachment-based intervention with caregiver-preschool child dyads. *Attach Human Dev* 4:107–124
- McDonough SC (1993) Interaction guidance: understanding and treating early infant caregiver relationship disturbances. In: Zeanah CH Jr (ed) *Handbook of infant mental health*. Guilford Press, New York, pp 414–426
- McGoldrick M, Gerson R (1990) *Génogrammes et entretien familial*. ESF, Paris
- Milgrom J (1994) Mother–infant interactions in postpartum depression: an early intervention program. *Austr J Adv Nurs* 11:29–38
- Milgrom J, Martin PR, Negri LM (1999) Treating postnatal depression. A psychological approach for health care practitioners. Wiley, Chichester
- Mitchell J, Field T, Diego M et al (2012) Yoga reduces prenatal depression symptoms. *Psychology* 3(9A):782–786
- Nanzer N, Sancho Rossignol A, Righetti Veltrema M (2012) Effects of a brief psychoanalytic intervention for perinatal depression. *Arch Womens Ment Health* 15:259–268
- Nylen KJ, Moran TE, Franklin CL et al (2006) Maternal depression: a review of relevant treatment approaches for mothers and infants. *Infant Ment Health J* 27:327–343
- Puura K, Kaukonen P (2010) Parent infant psychotherapies and indications for inpatient versus outpatient treatments. In: Tyano S, Keren M, Herrman H, Cox J (eds) *Parenthood and mental health. A bridge between infant and adult psychiatry*. Wiley-Blackwell, Oxford, pp 401–414
- Rispoli KM, McGoey KE, Koziol NA et al (2013) The relation of parenting, child temperament, and attachment security in early childhood to social competence at school entry. *J Sch Psychol* 51:643–658
- Robert-Tissot C, Cramer B, Stern DN et al (1996) Outcome evaluation in brief mother–infant psychotherapies. Report on 75 cases. *Infant Ment Health J* 17:97–114
- Rusconi-Serpa S, Sancho-Rossignol A, Mc Donough S (2009) Video feedback in parent infant treatments. *Child Adolesc Psychiatry Clin Am* 18:735–751
- Salomonsson B, Sandell R (2011) A randomized controlled trial of mother–infant psychoanalytic treatment: I. Outcomes on self-report questionnaires and external ratings. *Infant Ment Health J* 32:207–231
- Solomon J, George C (2006) Intergenerational transmission of dysregulated maternal caregiving: mothers describe their upbringing and childrearing. In: Mayseless O (ed) *Parenting representations: theory, research, and clinical implications*. Cambridge University Press, New York, pp 265–295
- Soussignan R, Wendland J, Schaal B (2006) Epigenetic approach to the perinatal development of affective processes in normal and at-risk newborns. *Adv Psychol Res* 40:187–215

- Spietz A, Johnson-Crowley N, Summer G (1990) *The keys to caregiving manual*. NCAST Publications, Seattle
- Steele M, Baradon T (2004) The clinical use of the adult attachment interview in parent–infant psychotherapy. *Infant Ment Health J* 25:284–299
- Stoleru S, Morales-Huet M (1989) *Psychothérapies mère-nourrisson dans les familles à problèmes multiples*. PUF, Paris
- Taïeb O, Baubet T, Rezzoug D et al (2010) Parenthood: the impact of immigration. In: Tyano S, Keren M, Herrman H, Cox J (eds) *Parenthood and mental health. A bridge between infant and adult psychiatry*. Wiley-Blackwell, Oxford, pp 325–336
- Toth SL, Rogosch FA, Manly JT (2006) The efficacy of toddler–parent psychotherapy to reorganize attachment in the young offspring of mothers with major depressive disorder: a randomized preventive trial. *J Consult Clin Psychol* 74:1006–1016
- Van IJzendoorn MH, Bakermans-Kranenburg MJ, Juffer F (2005) Why less is more. From the Dodo bird verdict to evidence-based interventions on sensitivity and early attachments. In: Berlin LJ, Ziv Y, Amaya-Jackson L (eds) *Enhancing early attachment theory, research, intervention and policy*. The Guilford Press, New York, pp 297–312
- Velderman MK, Bakermans-Kranenburg MJ, Juffer F et al (2006) Preventing preschool externalizing behavior problems through video-feedback intervention in infancy. *Infant Ment Health J* 27:466–493
- Wendland J (2014) Les psychothérapies parent(s)-bébé/jeune enfant. In: Guédeney A, Le Foll J, Vannier L, Viaux-Savelon S, Wendland J (eds) *Petite enfance et Psychopathologie*. Masson Elsevier, Paris
- Wendland J, Brisson J, Medeiros M et al (2014a) Mothers with borderline personality disorder: Transition to parenthood, parent-infant interaction and preventive/therapeutic approach. *Clin Psychol Sci Pract* 21:141–155
- Wendland J, Couëtoux-Jungman F, Khun-Franck L et al (2015) La cothérapie: Un setting privilégié pour le suivi thérapeutique parents-bébé/jeune enfant. *La Psychiatrie de l'enfant*, 58:53–84.
- Winnicott DW (1971) *Playing and reality*. Basic Books, New York
- World Health Association (2012) *Depression FactSheet*, 369

Ambulatory Care: Home-Based Perinatal Interventions

9

Julie Le Foll and Antoine Guedeney

Abstract

Home-based support has been shown to be a powerful and efficient tool for early evaluation and intervention, particularly in vulnerable families. These families often accumulate many psychosocial difficulties. They seldom rely on available medical and social institutions and find themselves at greater risk of developing disorders in early parent-child relationships and subsequent psychopathologies. The aim of this chapter is to further understanding of this prevention and intervention strategy. Therefore, the main issues here are to determine the benefits of such a practice, the conditions under which home visits can really be effective, and also the limitations of this time-consuming process.

Attention to the baby, the parent, and the early-developing parent-infant relationship requires a comprehensive and intensive approach (Weatherston 2000). Early intervention thus has a central role in preventing mother-infant relationship disturbances and child development disorders. Accordingly, home-visiting support can be a powerful and efficient tool for early evaluation and intervention, particularly in vulnerable families.

Such families may accumulate many psychosocial difficulties (precarious situation, lack of social support, neglect or emotional deprivation during childhood, unresolved trauma, etc.). They are often isolated and do not use available medical and social structures (Fraiberg et al. 1975; Greenspan et al. 1987). Moreover, many authors have demonstrated that these vulnerability factors, especially when they accumulate, expose the unborn child to a higher risk of somatic pathology (sudden

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139

infant death syndrome, chronic diseases, or malnutrition). They also increase the risk of delayed development, learning difficulties, and child abuse (Armstrong et al. 1999). Vulnerable mothers are also known to be more frequently depressed. This may have an impact on parent-child bonding and attachment and subsequently influence the child's development.

For these vulnerable families, one of the aims of early intervention is therefore to reduce the impact of psychosocial risk factors on the mental health of mothers and infants. Early identification and treatment can be used to reduce the likelihood of serious developmental failure and relationship disturbance (Weatherston 2000).

Home Visits and Trusting Relationships

For most authors, it is clear that the early childhood worker needs to build a strong and trusting relationship with the family and use it as a tool for change by modifying negative relationship models or by increasing the family's trust in care (Korfmacher et al. 2007). Unfortunately, it is often difficult to build a solid working alliance with vulnerable families. Indeed, these "high-risk" families, also known in the literature as "hard-to-reach families," have frequently suffered painful and sometimes traumatic early experiences, that can result in a difficulty to trust others and maintain stable relationships (Guedeney et al. 1995). Caught up in their relational insecurity, these parents find it more difficult to accept help and support (Dozier et al. 2001). They are often unable to apply for help and are thus rather reluctant to meet a professional. The first contact generally takes place in an atmosphere of deep distrust and fear, in which attachment issues are raised (Guedeney and Guedeney 2007). This challenge is made harder by the fact that some of these families have already faced problems with some institutions, e.g., interchangeable professionals who break their word and are not completely involved ("the bureaucratic Transference" as Seligman wrote, 1984).

For this reason, the practitioner must be fully committed and patient and propose a more flexible approach such as home-based interventions, which represent an interesting health-care strategy.

Clinical Relevance of Home-Based Interventions

With regard to families, home visits make evaluation and intervention possible in their own environment, which means a more comfortable situation for both parents and infants. Therefore, evaluation is probably more precise, relying on various natural situations and enabling a better assessment of the family's situation in terms of its dysfunction, but also its resources. At home, professionals can pay attention to everyday acts and interpersonal relationships. They can better assess the abilities of the child and his family, the risks they are facing, and the ways in which they might be helpful to them.

Home visits allow professionals to have a global approach to families, particularly by assessing the multiplicity of risks present. For example, professionals have to deal with the social difficulties of families, sometimes before giving any other kind of support. Indeed, such social difficulties are often a crucial factor in their psychological and affective distress. Professionals need to take this into account and think about what kind of help they might provide for it. According to D. Weatherston (2000): “parents cannot adequately meet their infant’s basic needs until their own basic needs are met.”

In France, there is a free community-based mother-child support and prevention service known as *Prévention Maternelle et Infantile* (Mother and Child Protection Services or PMI). One of the aims of the PMI health-care system, which targets the whole population, is to promote the physical and mental health of the child (aged 0–6) and his family.

PMI home visits are performed by nurses, who have been increasingly concerned by the rising number of children being referred for mental health problems. Exposed to the major difficulties and psychological distress of these families, for which they usually have not been trained, these professionals frequently find themselves isolated. Psychological support is one of the missions of the PMI centers, but it remains a difficult and potentially destabilizing practice for nurses. These kinds of situations therefore require the support of all health-care professionals, particularly the PMI psychologists, but also the psychiatric care services.

In other countries where there is no preventive system similar to the PMI, many home visit research programs have been developed. They mostly focus on the identification of risk factors (or vulnerability factors) and are based on well-defined protocols. One of the major early home visit research programs has been conducted by David Olds and collaborators since the 1970s. It is based on early (during the pregnancy), extended (for months or even years after birth), and ongoing home visits. They focus on vulnerable women and target factors amenable to change (parenting skills, health education, professional training, social assistance, integration into health-care, education, and social systems). Home visits are performed by trained and supervised nurses (Olds and Korfmacher 1998; Olds et al. 2004; Olds 2006).

Many other programs have been developed over the past 20 years (McDonough 1993; Weatherston 2003; Guedeney et al. 2013) with variable methods and results. However, existing programs have shown they can have a considerable positive impact on the child’s developmental trajectory. The pioneering study of Olds at Elmira (2004, 2006) showed that such visits may reduce the risk of maternal and infant morbidity and improve the quality of parent-child relationships, with a clear impact on the child’s development (better cognitive and socio-emotional outcomes, fewer externalized behavioral symptoms in infants under the age of 2 years, in particular). Applebaum’s meta-analysis (2004) also highlighted positive results on outcome measures such as better use of contraception, longer intervals between pregnancies, and less attendance in emergency rooms for infants and toddlers. However, few prevention programs have demonstrated convincing results with regard to preventing postnatal depression (Dugravier et al. 2013). In addition, it appears that maternal depression and insecure attachment may moderate the impact

of preventive home visits (Duggan et al. 2009). Indeed, researchers have emphasized that the mental representation of mothers about their early attachment relationships is correlated with their emotional engagement in intervention (Korfmacher 2002). There is also evidence that effects may be less visible in the highest-risk families where too many risk factors accumulate.

In France, the CAPEDP prevention study (*Compétences parentales et attachement dans la petite enfance: diminution des risques liés aux troubles de santé mentale et promotion de la résilience*; Parental skills and attachment in early childhood: reduction of risks linked to mental health problems and promotion of resilience) evaluated the impact of multifocal perinatal home-visiting interventions by trained clinical psychologists in a sample of women living in vulnerable contexts. The aim of the program was to promote infant mental health and reduce the incidence of infant mental health problems at the age of 2. This action research also emphasized that home visits could be efficient despite their limitations (Dugravier et al. 2013; Tubach et al. 2012; Guedeney et al. 2011, 2013).

At present, it is still difficult to know what conditions are necessary and sufficient to perform effective home visits. For this reason, there has recently been a focus on the qualitative analysis of these visits to better understand their outcomes (McNaughton 2000; Saïas et al. 2012).

Theoretical Background

In home-based work, many intervention strategies are often used in combined ways: emotional support, concrete assistance, developmental guidance, early relationship assessment and support, parent-infant therapy, etc. Some skills are clearly more specific to infant mental health specialists, but relationship-building, observation of a young child's development, guided interaction, and parental support are skills that all infant/family practitioners can use.

Developmental guidance, initially proposed by Selma Fraiberg et al. (1975), promotes parent-child attachment and helps parents understand their child's "language" by offering information that is specific to the baby's development and needs for care. The aim of this guidance is mainly for the practitioner to help parents understand better the different stages of their child's development. A home practitioner has to build a trusting relationship and use it as a tool for change. He/she also has to identify and enhance parental capacities to provide care to the child and encourage positive interactions and playful exchanges (McDonough 1999).

Furthermore, it is essential to help vulnerable families spend time out of their home to break free from their isolation and improve their integration in the community. This point is absolutely crucial for the family, who will gradually learn how to use the resources of the environment and then develop their own.

This is why home practitioners must have beliefs, skills, training experience, and clinical strategies that entail a comprehensive, intensive, and relationship-based approach to working with young children and families. The main characteristics of home practitioners are communication and interpersonal skills, as well as maturity, warmth, and acceptance of others (Wasik and Roberts 1994). It is also very important

that they should be nonjudgmental, objective, and reflective. By calling on such abilities, they are able to establish a productive working relationship with families.

Home Visits: A Potentially Unsettling Form of Work

Apart from the difficulty of assessing precisely the effectiveness of home-based interventions, another limitation of this practice involves the professionals themselves. Indeed, home-based practice is more flexible and requires considerable adaptability, which may be complicated and confusing for practitioners. In such a context, different kinds of feelings may occur more frequently than in an office: discomfort, uneasiness, anger, loneliness, etc., but sometimes also feelings of sympathy and tenderness. Home visits comprise a large emotional space.

In home-based interventions, the concept of “co-creation” of the framework (between the practitioner and the family) is essential. The practitioner is responsible for maintaining it by ensuring the continuity of the relationship and the bond. However, many professionals are reluctant to conduct home visits owing to fear of being overrun and isolated (Lamour 1999). It is obvious that home practitioners are more exposed to relational dysfunction within balance: being close to the parents (sometimes physically close) without falling into the trap of familiarity. Finding themselves in unconventional situations (“everyday situations”), sometimes with many environmental distractions, can be really unsettling for professionals.

Home-based interventions require total commitment from the practitioner, with a high level of availability and a degree of indefatigability (just like a mother with her child). Massively “exposed” to the family’s difficulties, a practitioner can experience violent emotions that can trigger his own attachment system. Home-based interventions therefore require the practitioner to have a good sense of inner security. He/she must be continually prudent and refrain from acting. What is important is to think and give meaning to both acts and periods of silence.

For this reason, practitioners must have a well-defined and well-interiorized working framework. Support from their institution and specific training are crucial points of home-based interventions, as well as regular analysis of practices and supervision, which represent an absolute necessity for all practitioners, whatever their level of seniority or experience.

Supervision

Supervision is a relationship with an experienced service provider who gives feedback, advice, and support to professionals. It is not only very productive for home practitioners, but it can also help in reducing stress. Supervision is also essential for families because it helps maintain objectivity and professional competence. It should help professionals not only to better understand and deal with arduous situations but also to overcome stressful periods.

Practitioners have to use the supervisory relationship to reflect on the complex emotional realities of overburdened families and infants at risk. They must also think

about their work with families and reflect on whether their own emotional responses are appropriate. According to Pawl (1995): “supervision exists to provide a respectful, understanding and thoughtful atmosphere where exchanges of information, thoughts and feelings about things that arise in one’s work can occur. The focus is on the experiences of the supervisee. It is the place to understand the meaning of your work with a family and the meaning and impact of your relationship with the family.”

Supervision can take place individually or in a group. However, to be efficient, it has to occur frequently and consistently. The framework for supervision sessions has to be strong and stable over time. Finally, the duration of sessions (1 h/1 ½h) should be adequate to nurture the emergence of a sense of trust.

Moreover, findings from the French CAPEDP early prevention study underline the importance of providing a wide range of supervision levels for mental health home visitors, including both clinical and reflective supervision.

Conclusion

Early-developing attachment relationships may be distorted or disturbed by parental histories of unresolved losses and traumatic life events (“ghosts in the nursery”). Other psychosocial risk factors may influence early relationships but also child development. In terms of perinatal prevention and early interventions, it is essential for vulnerable families to be detected and above all supported. Nevertheless, vulnerable parents rarely request help and babies at psychosocial risk remain difficult to access. Moreover, vulnerable parents caught up in their relational insecurity find it more difficult to accept help and support. Therefore, more appropriate flexible approaches are required, which is why home visits represent a very valuable intervention strategy for prevention or therapeutic interventions. To be efficient, it seems crucial to carry out early (prenatal), continuous (same practitioner before and after the birth), and prolonged home visits.

This work in multiple risk families is built on the partnership between all medico-social workers: maternity wards, mother and child welfare services, pediatricians and general practitioners, mother and child centers, social service facilities, and mental health-care services. The creation and use of Perinatal Networks are therefore crucial because they help in making support continuous by participating in the creation of a stable and reliable environment.

Lastly, skilled home visitors are essential for effective home visiting. Their credentials, characteristics, specific professional training, and supervision consequently require serious consideration.

References

- Armstrong K, Fraser J, Dadds M (1999) A randomized, controlled trial of nurse home visiting to vulnerable families with newborns. *J Paediatr Child Health* 35:237–244
- Dozier M, Lomax L, Tyrrell C et al (2001) The challenge of treatment for clients with dismissing states of mind. *Attach Hum Dev* 3:62–76

- Duggan AK, Berlin L, Cassidy J et al (2009) Examining maternal depression and attachment insecurity as moderators of the impacts of home visiting for at-risk mothers and infants. *J Consult Clin Psychol* 77(4):788–799
- Dugravier R, Tubach F, Saias T et al (2013) Impact of a manualized multifocal perinatal home-visiting program using psychologists on postnatal depression: the CAPEDP randomized controlled trial. *PLoS One* 8(8):e72216
- Fraiberg S, Adelson E, Shapiro V (1975) Ghosts in the nursery: a psychoanalytic approach to the problems of impaired infant-mother relationships. *J Am Acad Child Psychiatry* 14(3):387–421
- Greenspan S, Wieder S, Lieberman A et al (1987) Infants in multirisk families: case studies in preventive intervention, Clinical infant reports. International Universities Press, New-York
- Guedeney N, Guedeney A (2007) Twelve years later: from “Fraiberg in Paris” to attachment theory applied to community health care centers for family and toddlers. *The Signal, WAIMH* 15(3):1–8
- Guedeney A, Guedeney N, Morales-Huet M (1995) Selma Fraiberg in Paris. *The Signal, WAIMH* 3(1):1–5
- Guedeney A, Tubach F, Greacen T et al (2011). Clinical research and development department of the APHP. Paris and the French national institute of prevention and health education (INPES). CAPEDP research report, Paris
- Guedeney A, Wendland J, Dugravier R et al (2013) Impact of a randomized home-visiting trial on infant social withdrawal in the CAPDEP study. *Infant Ment Health J* 34(6):594–601
- Korfmacher J, Green G, Spellman L et al (2007) The helping relationship and program participation in early childhood home visiting. *Infant Ment Health J* 28(5):459–480
- Korfmacher J (2002) Le sens caché des programmes de prévention précoce. *Devenir* 14(4):363–375
- Lamour M and Barraco M (1999) Souffrances autour du berceau: des émotions aux soins. Gaëtan Morin, Paris
- McDonough S (1993) Interaction guidance: understanding and treating early infant-caregiver relationship disturbances. In: Zeanah C (ed) *Handbook of infant mental health*. Guilford Press, New-York, pp 414–426
- McDonough S (1999) Interaction guidance: understanding and treating early infant-caregiver relationship disturbances. In: Zeanah C Jr (ed) *Handbook of infant mental health*. Guilford Press, New York, pp 414–426
- McNaughton DB (2000) A synthesis of qualitative home visiting research. *Public Health Nurs* 17(6):405–414
- Olds D (2006) The nurse-family partnership: an evidence-based preventive intervention. *Infant Ment Health J* 27:5–25
- Olds D, Korfmacher J (1998) Maternal psychological characteristics as influences on home visitation contact. *J Community Psychol* 26:23–36
- Olds D, Kitzman H, Cole R et al (2004) Effects of nurse home-visiting on maternal life course and child development: age 6 follow-up results of a randomized trial. *Pediatrics* 114:1550–1559
- Pawl J (1995) The therapeutic relationship as human connectedness: being held in another’s mind. *Zero Three* 15(4):3–5
- Saias T, Lerner E, Greacen T et al (2012) Evaluating fidelity in home-visiting programs: a qualitative analysis of 1058 home visit case notes from 105 families. *PLoS One* 7(5):e36915
- Seligman S, Pawl J (1984) Impediments in the formation of the working alliance in infant-parent psychotherapy. Basic Books, New-York
- Sweet M, Applebaum M (2004) Is home visiting an effective strategy? A meta-analytic review of home visiting programs for families with young children. *Child Dev* 75:1435–1456
- Tubach F, Greacen T, Saias T et al (2012) A home-visiting intervention targeting determinants of infant mental health: the study protocol for the CAPEDP randomized controlled trial in France. *BMC Public Health* 12(1):648
- Wasik BH, Roberts RN (1994) Home visitor characteristics, training and supervision: results of a national survey. *Fam Relat* 43:336–341
- Weatherston D (2000) The infant mental health specialist. *Bull Zero Three* 21(2):3–10
- Weatherston D (2003) La santé mentale du nourrisson: une revue de la littérature. *Devenir* 15(1): 49–83

Inpatient Mother and Baby Psychiatric Units (MBUs) and Day Cares

10

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Abstract

MBUs can assess and deal with difficult perinatal disorders that may compromise both the mother's physical and mental health and the baby's safety and development, in the short or long term. Suffering associated with separation, sometimes necessary for child's safety, requires a complete assessment of risks and resources.

- In multidisciplinary MBUs, well-trained teams provide comprehensive care including drug therapy, psychotherapy for the mother, and constant care and protection for the child. They also care for the parent–infant relationship.
- MBUs have gradually learned to work with and help babies' fathers (despite their frequent personal difficulties) and the family as the natural environment so important for the future of these children (and these families).
- The cost of this inpatient intensive care is high, but it must be considered in the light of the later disastrous consequences (and costs) that will follow in the absence of appropriate early postpartum care. The MBU, with all its expertise, is part of a perinatal network involving many partners.

Introduction

In an 'International Position Paper on Parent-Infant Psychiatry and Perinatal Mental Health, with Guidelines for Clinical Practice', Brockington et al.¹ described the origins of the discipline of mother–infant (perinatal) psychiatry. 'This branch of psychiatry can trace its roots to the work of three French pioneers: Etienne-Dominique Esquirol (1818) published the first detailed asylum survey, among women admitted to the Salpêtrière hospital, after childbirth. Louis-Victor Marcé (1858) published the first monograph covering the whole field, as it was then known 'Psychoses of pregnant women, and newly delivered and nursing mothers'. Ambroise Tardieu (1860) drew attention to child maltreatment, reporting a large series of cases and describing the effects on the children. In England a pioneering initiative was taken in 1948 by Tom Main (1958), who negotiated the introduction of a toddler into the Cassel Hospital in Middlesex in UK. As a psychoanalyst, he emphasised the great opportunity offered to study the mother-child relationship. Independently Douglas (1956) reported the admission of six mothers and infants to the West Middlesex Hospital; her first patient also had a severe mother-infant relationship disorder. About the same time Racamier et al. (1961) in France, and Grunebaum et al. (Grunebaum and Weiss 1963; Van der Walde et al. 1968) in Massachusetts, opened conjoint inpatient care, they were, at most, occasional and these initiatives were the first step in the development of mother & baby units'.

¹Brockington IF et al. International Position Paper on Mother-Infant (Perinatal) Mental Health, with Guidelines for Clinical Practice. In preparation, personal communication May 2015

This new specialty, developed with its own body of knowledge, concerned not only with the psychiatry of childbirth and childbearing but also with infant development, care and protection, parent–child interaction and attachment, and parenting skills. In 1980, Channi Kumar became the first professor of Perinatal Psychiatry in the UK and, with James Hamilton (USA) and Ian Brockington (UK), founded the Marcé Society, a multidisciplinary perinatal mental health society named after Louis-Victor Marcé (Glangeaud-Freudenthal 2002, 2003).

Development of Conjoint Mother–Child Perinatal Psychiatric Admissions

The development of care for severe postpartum disorders, from initial treatment of only the woman’s disorders to ‘conjoint care of mother and infant’ in psychiatric units, has been supported by research on the effects of affective deprivation due to separation, on newborn competencies and development (Spitz 1946; Winnicott 1956; Bowlby 1958; Brazelton 1973; Lebovici 1983; Howard 2000; Cazas and Glangeaud-Freudenthal 2004), and on theories of attachment (Bowlby 1958; Ainsworth et al. 1978).

At the same period, Main (1958) in UK and Racamier et al. (1961) in France mention the twin dangers of separating mother and child: (1) How can a woman become a mother if her baby is not physically present? (2) How can a baby become attached to her mother if it is not the mother who is providing her daily care? Racamier et al. (1961) also suggested that psychiatric inpatient mother–baby units (MBUs) should be opened in collaboration with obstetricians. Racamier’s understanding of motherhood led him to study maternal psychic processes acting during the pregnancy.

More regular conjoint mother–child perinatal psychiatric care first developed in Britain, France, Australia, Belgium, the Netherlands, New Zealand, India, Switzerland, the USA, and Israel (and possibly other countries). In some countries, they have mainly been linked to child psychiatry (i.e. France, Belgium) and in others to adult psychiatry (i.e. Britain, Australia, India, and Germany). Today in France, these services are often associated with both adult and child psychiatry or at least have a designated psychiatrist from each of these psychiatric disciplines (Glangeaud-Freudenthal et al. 2014). They may include day-care admissions and inpatient full-time admissions. Care in both day and full-time (day-and-night) units follows similar aims in providing psychological care for the mother and her child as well as in supporting the parent–child relationship. Both are based on the same theoretical background, which is described in this chapter, and they may be used to complement each other, according to the course of the mother’s illness and the family context.

Day-care units are often opened before full-time units, frequently for economic reasons. Beyond their similarities, however, their practices differ: day-care units are always closed on weekends and mothers with their child may come 1–5 days a week. When the mother and child are not in the day-care unit (i.e. in the evenings

and weekends), it is essential that they both be in sufficiently secure conditions. When the mother's mental health doesn't allow part-time care at a day unit but requires admission to an adult-only unit, then the child's father may become the main caregiver and is invited to come with the child to the day unit for the follow-up care of the child and support of father-child relationship. Admission in day-care units may be longer than that in full-time units, for a period of several months, and children and parents may be followed together until the children enter full-time preschool (around 30 months in France).

Full-time inpatient care is more specifically focused on treating maternal disorders and its effects on the infant's day care. Day-care admissions may be less disruptive and much less costly than inpatient admission, but they cannot deal with the most severe disorders, which are those that might be most dangerous for the child. Both settings provide mothers with an opportunity to meet other women with similar problems, with whom they can share. The proximity of full-time and day units allows smoother transitions at discharge from full-time units, before return home, and thus shortens the full-time admission. The complementary nature of these structures is clear and obviously best for making it possible to offer every family and every child the care most suited to their needs. Nonetheless, it remains difficult to convince national policymakers and funders to discuss real planning for the creation and distribution of these facilities and their linkage with home care, foster families, and community care.

We will now focus on the development of *full-time inpatient MBUs* and the care they offer. The specificity of conjoint care and team structures described in this chapter for full-time units also applies to day-care units.

Research and articles on the issues related to these conjoint inpatient admissions date back to the 1960s (Fowler and Brandon 1965; Bardon et al. 1968; Baker et al. 1960), and more were published in the 1980s (Sharp et al. 1986; Buist et al. 1990). As late as 2007, however, Joy and Saylan (2007) reported in a Cochrane review that only a few articles describe joint mother and baby inpatient admissions to psychiatric MBUs (Main 1958; Howard et al. 2003; Buist et al. 2004; Glangeaud-Freudenthal 2004; Salmon et al. 2003, 2004; Abel et al. 2005; Neil et al. 2006). Since then, more single-centre studies from different countries have appeared, as well as epidemiological studies of the English and French national MBU databases. Topics of research on those national MBU database have included, for instance, the risk factors associated with a lack of improvement in women's mental health and mothering competence (Howard et al. 2003, 2004; Abel et al. 2005; Elkin et al. 2009; Glangeaud-Freudenthal et al. 2011, 2013), the risk of mother-child separation at discharge (Glangeaud-Freudenthal et al. 2014), and the impact of drug treatment during pregnancy on the baby's health (Sutter-Dallay and Riecher-Rössler 2015).

National Guidelines, Geographical Distribution, and Needs

As early as 1992, the Royal College of Psychiatrists in the UK recommended as good practice that mothers be admitted together with their infant to special designated

mother-and-baby facilities whenever possible, when home-based or day hospital management is not possible (Oates 1996). In 2007, the National Institute for Health and Clinical Excellence policy guideline for England and Wales² recommended that ‘women who need inpatient care for mental disorders within 12 months of childbirth should normally be admitted to a specialised MBU, unless there are specific reasons for not doing so’ (Elkin et al. 2009). On the basis of calculations by Margaret Oates (1996), ‘it is reasonable to plan to provide one bed per every 2000 women delivered (1.5 beds per 2000 if there is no community nurse involved in care)’. It has been suggested that the optimal MBU size is five to six beds, and certainly fewer than 12. This size would permit the best staff organisation and would not be too large and stressful for mothers and infants. Similar recommendations have also been issued in Australia³ and France.⁴ Despite these precise recommendations from official national agencies, the number of MBUs in the UK, Australia, and France is still quite far from what is needed. In their national UK survey, Elkin et al. (2009) found that in regions that have MBUs, there are from 4601 to 11,376 live births per MBU bed. Brockington et al. (2015)⁵ noted that more needs to be done: ‘No nation has come near to meeting the needs of mothers and their infants’. In Britain, where generous funding has been provided by the National Health Service, less than half the number of required beds has been achieved (Howard and Hunt 2008). Moreover, the geographical distribution of MBUs in those countries is highly disparate. In Australia, there are inpatient units in all major cities; however, many of these are private and therefore not financially accessible to all. Large and wealthy nations, such as the USA (Howard et al. 2006), the Nordic nations, and Germany have good conjoint mother–baby day-care or part-time inpatient units but have not yet been able to find enough support from their institutions and funding to run full-time inpatient mother–baby units.

When the recommendations cannot be met, other ways of creating MBU settings may be found: some postpartum inpatient departments may share facilities with treatment for other female disorders. Facilities shared with acute psychiatric wards may be a compromise for isolated towns having very few annual admissions, although there may be concerns about the safety of the infants and competence of staff for the child’s care. Some MBUs are operated with weekends off mainly for cost reasons (Poinso et al. 2002) or with only the child spending the night elsewhere, for practical reasons (Meltzer-Brody et al. 2014).

However, the need for full-time MBUs may be less important in regions where there is effective mother–child day-care units, as described above, as well as liaison psychiatry, pre- and postnatal home visits by well trained nurses (Oates 1996; Le

²NICE Clinical Guideline 45: antenatal and postnatal mental health clinical management and service guidance. London: National Institute for Health and Clinical Excellence; 2007

³Austin M-P, Hight N and the Guidelines Expert Advisory Committee (2011) Clinical practice guidelines for depression and related disorders – anxiety, bipolar disorder and puerperal psychosis – in the perinatal period. A guideline for primary care health professionals. Melbourne: Beyondblue: the national depression initiative. www.beyondblue.org.au

⁴French National Perinatal Guidelines 2005–2007

⁵See footnote 1.

Foll 2015), and good collaboration with the maternity units, with mother–child protection centres, and with community services (Dugnat et al. 2015).

Glangeaud-Freudenthal et al. (2014) discuss the challenges that cost–benefit analyses present from both financial and methodological perspectives, but note they remain necessary for assessment of MBU outcomes in the short and long term (Joy and Saylan 2007; Howard et al. 2010). Research led by Louise Howard and funded by the National Institute for Health Research is underway, and we can hope that it will produce results on the overall cost-effectiveness of admissions of mothers to MBUs in England, compared with admissions to general wards or care under intensive home treatment teams. Studies are also needed in other countries, with other mental health policies, to assess the specific impact of MBUs compared to other postpartum mental health care in preventing relapses, improving children’s psycho-affective development, and promoting good mother–child relationships.

Activities and Care

Preconception Visits and Pregnancy

Although parents are in contact with many health professionals during pregnancy, referrals to mental health professionals for distressed women are low. A recent French cohort study of 15,143 women in the community pointed out that only 25 % of those reporting psychological distress during pregnancy had had a prenatal consultation with a mental health professional (Bales et al. 2015).

Brockington et al. (2015)⁶ suggest the following best practices: ‘If a mother with severe mental disorder becomes pregnant, a multidisciplinary planning meeting should be convened as soon as possible, to share information and coordinate management. The reason for urgency is that the interval between diagnoses of pregnancy (which may be delayed) and birth (which may be premature) can be short. The meeting should include all those involved in treatment, (in some countries) the general practitioner, a representative of the obstetric and mental health teams, (if appropriate) a social worker, and the expectant mother and family members. There are many issues to be addressed – pharmaceutical treatment, antenatal care, early signs of a recurrence, the management of the puerperium, the care of the infant and sometimes action to protect the child’.

For women with a known chronic mental disorder who want to have a child, the pregnancy may provide time to prepare the birth and the postpartum period with all those—family, friends, and professionals—in her support system and to try to prevent postpartum relapse. During pregnancy, MBUs can play an active role for professionals by providing coordination and advice for perinatal care of women with mental health disorders, as well as on the possible impact of the mother’s illness and/or drug treatment on the foetus or neonate (Sutter-Dallay and Riecher-Rössler 2015). For the mothers, the MBU setting allows them to put the place of the real

⁶See footnote 1.

baby into concrete form, which allows a representation of otherness. Moreover, fathers should also receive support and information during pregnancy (Buist et al. 2003). Thinking about conjoint care in MBU can be therapeutic in itself (Nezelof and Vulliez-Coady 2009). Women may even be admitted in some MBUs for care and follow-up of pharmaceutical treatment during pregnancy and postpartum MBU admission may be planned for women at high risk. Care during pregnancy and appropriate postpartum planning sometimes suffice to prevent postpartum relapse in these high-risk cases (Sutter-Dallay et al. 2012).

Postpartum Referral, Preadmission Visits, Interview at Admission

Sources of referral for MBU admissions may differ between countries according to national perinatal pathways of care and health policies for parents and for children, as well as the local organisation of mental health services. Referrals may come from outpatient psychiatry departments, general practitioners, social workers, midwives, obstetric wards, health visitors, inpatient psychiatry departments, family caregivers, mental health workers outside the NHS, police and criminal justice agencies, and, more rarely, the women themselves or their families (Glangeaud-Freudenthal et al. 2014).

Referral depends on the mother's pathology and characteristics (Munk-Olsen et al. 2006; Cantwell 2015). Most women with postpartum depression do not need inpatient psychiatric care unless there are other risk factors (psychosocial vulnerability or disorders) or other psychiatric comorbidities, such as anxiety disorders or phobia related to the child (Sved-Williams 1992). However, admission is required for women who present a first episode, or a relapse, of a severe psychiatric disorder, such as acute postpartum psychosis, a manic disorder, major depressive episode, or both. Admission can be planned for mothers with chronic psychosis, such as schizophrenia, borderline personality disorders, or addictions, at a time when they may have the capacity to take part in the care programme and to invest themselves in their relation with the child (Nezelof et al. 2005). MBU preadmission visits should assess whether there are good reasons for this admission; these include not only the mother's diagnosis and prognosis but also her potential investment in the programme. If investment by the father and the family is not already present at admission, the MBU staff will do its best to enhance it. Several questions need to be answered before admission: Is the mother able to see the needs of the infant even if she can't meet them yet? Is she able to take advantage of the support and care the MBU team can give to improve her own childcare competencies? What is the risk-benefit balance of MBU admission for the child?

Another important question concerns the specific aim of the admission, for this can vary: care, screening, testing of the mother's parenting competence, assessment of the risk for the child, or prevention. Some referrals are inappropriate or at least need to be refined or delayed. MBU admission should never be chosen because no other possibility appears to be available because of social or economic problems or when the mother clearly does not wish, or has no objective potential, to establish a

relationship with her child. When the aim is not clear, it is better to delay admission and take time to clarify it with the mother, the family, and the referrer.

Several instruments⁷ may help to conduct the admission interview and/or to collect MBU research data. The main domains of the Brockington et al. Stafford Interview are as follows:⁸

‘Once a mother has been referred to the service, the first essential step is the thorough exploration, by interview, of the current pregnancy and past history.

During pregnancy the interview should cover:

- Its social, cultural, psychological, psychiatric and obstetric background
- The circumstances under which conception occurred
- The mother’s reaction and adjustment to the pregnancy and her expectations of maternity
- The reaction of others, especially the father of the baby
- Changes in life style including the mother’s sacrifices to complete this pregnancy
- Her burgeoning relationship with the unborn child
- Her health (mental and physical) during pregnancy
- Her worries and preoccupations

Next comes parturition and its effect on mother and neonate.

In the puerperium, the interview should cover:

- The mother’s reaction to the newborn and to infant feeding and care
- The father’s participation in infant care
- The effect of birth on the family’s social circle
- The support available to the young family
- Sleep deprivation and medical complications
- Psychiatric disorders including anxiety, morbid preoccupations, irritability, depression, and psychotic symptoms.

Finally there is the parent-infant relationship:

- As background, the baby’s health, temperament, development and any specific difficulties
- The timing and quality of the mother’s emotional response
- Evidence of pathological anger and rejection,
- The safety of the infant with this mother’.

⁷The main instruments used for interviews in MBUs are (1) the Marcé Checklist (Salmon and Appleby 2000) or its French adaptation (covering additional domains) named the ‘Dossier Marcé-mère’ (Cazas and Glangeaud-Freudenthal 2004) used for research and clinical practice and (2) the Stafford Interview (the 6th edition of the Birmingham Interview), developed over the course of 22 years and translated into several languages. It is useful for training as well as for clinical practice and research.

⁸See footnote 1.

‘Wider Investigations: Where there is a possibility of an organic psychosis, physical examination, laboratory tests, EEGs and brain scans may be diagnostic. The hormonal status, monitoring the menstrual cycle, may be important’.

Specificity of Care and Theoretical Background

The aim of MBUs is not to keep mother and child together regardless of the risks associated with the mother’s symptoms but rather to provide time in a safe environment to support the mother and the child and to enable them to find or recover a harmonious relationship in an ‘everyday’ context (Nezelof et al. 2005). Even when separation is ultimately necessary for the child’s safety, a conjoint MBU admission provides the time to arrange the best placement and to prepare the mother and the child for this separation (Poinso et al. 2002).

The specific care provided by MBUs consists in helping the parents to develop an identity as a parent, through real everyday experiences within a coherent and continuous care setting. This care should help mothers to accept their problems more realistically and to search for appropriate solutions with the team while their mental health is improving (Poinso et al. 2002). Women are discharged, either symptom-free or greatly improved, in 69 % of the admissions (Glangeaud-Freudenthal et al. 2011).

Most women admitted with their babies are pleased that they need not be separated from their child while receiving MBU care (Neil et al. 2006), confirming the importance that women with severe mental illness are assigned to motherhood (Dolman et al. 2013). MBU care may lessen the effect of maternal problems on the child’s development. Remaining together during the mother’s psychiatric treatment should prevent the potential detrimental effects on the baby of separation from the mother, as well as the effects this separation could have on the mother’s self-confidence (Glangeaud-Freudenthal et al. 2014).

Women’s Mental Health Care and Support for Maternal Competence

Maternal pathologies and treatment have some specific characteristics during the perinatal period (Cantwell 2015). The specificity of women’s care in MBUs occurs at different levels (Nezelof et al. 2005), in addition to the mother’s mental health treatment (Sutter-Dallay and Riecher-Rössler 2015) when needed. The first level is intended to support the woman’s mothering of her baby and to help restore ‘good enough and safe’ maternal competencies (Winnicott 1956), the second level to establish parent–infant interactions (Viaux-Savelon 2015), and the third to provide psychotherapeutic care for the mother (Wendland 2015).

Poinso et al. (2002) have described the everyday life and first level of care in an MBU in Marseille, France. The first principle is that a nurse or other staff person is continuously present: the baby is never alone, and the mother rarely, only if she

wishes to be. This preserves the parents' roles and simultaneously provides a safe setting for the child's daily life and care. The mother, or sometimes the father, prepares and gives bottles and body care (bath and changes); holds, rocks, and plays with the baby; and puts him or her to sleep. The staff keep a reserved attitude but stay available and nearby, especially at times when anxiety may be high, such as bath time or meals. They must nonetheless accept mother's request that she care for child alone, for short times at first and then more and more regularly. The limits of non-intervention depend mainly on two factors: (a) the protection of the child, if the mother appears inadequate, violent, or insufficiently reassuring, and (b) the mother's request for intervention.

The staff's aim is to provide support for the mother in her development of a maternal identity, exemplifying and serving as a role model the mother can learn from. For example, a mother may use the same tone as the staff while speaking to the baby or hold the baby for its bath in a similar manner. The relationship between the mother and the staff assumes that parental images are projected. Consequently, the staff's feedback must be expressed carefully, to avoid disqualification and enable the mother to identify positively with the staff member in her maternal function.

The choice of a psychotherapeutic approach may be offered according to women's characteristics and wishes. Conjoint mother-baby psychotherapy, in the strict sense of the term (Cramer 1989; Lebovici and Weil-Halpern 1989), is rarely possible in MBUs, at least at the beginning. Most of the time, the therapist will avoid psychoanalytic interpretations and will base the therapy upon daily experience, maternal behaviours, and mother-child interactions. The woman, supported and observed by staff, should tend to develop a self-representation of herself as a parent, to recognise the child's current needs, and to anticipate the child's development. The therapist may also speak to the child to translate the maternal affect, sometimes marked by confusion between the mother's needs and those of her child or by fluctuations in her investment in the child, alternately approaching and withdrawing.

Mothering the mother, for example, with body therapies (such as massage and therapeutic baths), may promote the regressive processes necessary for developing 'good enough' mothering. Some MBUs also run focus groups for mothers, to promote the recognition of their difficulties within social relationships. In some cases, the mother may want therapy for herself alone ('I'm the one who has problems, not my child') to help her to identify internal conflicts. This therapy will be continued after discharge when needed. 'Fundamentally, the specific therapeutic approach in MBUs, even in the child's absence, focuses on parenthood and bonding with the child' (Brockington 1996).

Nursing Care and Observation of Interactions and the Child's Development

Research has shown that maternal mental health disorders interfere with optimal mothering and that many mentally ill mothers have difficulty responding to their infants' cues during the postpartum period. This can cause severe bonding

difficulties that may negatively affect the child's psychoaffective development (Sutter-Dallay et al. 2011; Glatigny and Guedeney 2015; Milgrom 2015). Nezelof et al. (2005) insist that the child's care should be closely linked to the mother's, to ensure somatic and psychic protection and continuity for the baby. A referral paediatrician is strongly recommended in MBUs, as well as relations with both the adult and paediatric psychiatry departments.

MBU staff is expert at observing early mother–child interactions. Development scales or other tools apprehending child's development or suffering are used to assess the benefit of the support and care provided and may allow it to be readjusted according to the child's age and development. Several instruments⁹ may be used in the observation of parent–child interactions and the child's¹⁰ difficulties, recording them daily or weekly, at the right distance from the emotions and anxious tension between mother and baby. Weekly meetings are necessary for debriefing about staff interventions and observations.

Brockington et al.¹¹ emphasise the need for day-to-day nursing observation in day patient and full-time units and add, 'There are rating scales, but most important is narrative description: recording the mother's statements about the infant; noting her competence, skill and attunement; observing her affectionate response at times of separation and meeting, when the baby cries and makes demands, at feeding and bathing and at crises; observing the baby's social behaviour independently of the parents and comparing it with norms for that age and with the mother's perception of infant behaviour; observing the baby's physical and psychological safety'.

Involvement of the Child's Father and Grandparents in MBU Care

Specific attention is given to the father and grandparents in MBUs. Although only a few units (in France and in Australia) choose to allow fathers to reside with their families, all MBUs seek to include the father in the treatment programme and help him to find his place, with both the baby and the mother. If the father has recognised the child, he is asked to consent to the child's admission. Involuntary admissions to MBUs are relatively rare in France (8 %) (Glangeaud-Freudenthal et al. 2011) but more frequent in the UK (18 %) (Elkin et al. 2009). Each MBU has its own way of

⁹Instrument for nurses' observation in MBUs: the Bethlem Mother–Infant Interaction Scale (Kumar et al. 1995; Seneviratne et al. 2003); the French Marcé Checklist for behaviour and development of infant and very young children (Glangeaud-Freudenthal et al. 2009) will help the staff to systematically observe the child's development and difficulties and the mother–child interactions (physical, vocal, visual, and behavioural) from both the mother's and the child's points of view. Other instruments appropriate for infants, such as the Brazelton Scale (Brazelton 1973) and other child developmental scales, may improve practice. Professional observation, according to Bick's method or Emmi Pikler's guiding principles (<http://thepiklercollection.weebly.com/pikler-principles.html>), will improve clinical training.

¹⁰The ADBB is a screening instrument to detect babies' withdrawal from interaction with others (Guedeney and Fermanian 2001; website for more references and support: <http://www.adbb.net/>).

¹¹ See footnote 1.

building a framework that gives a place to the father in the everyday life of the MBU; these include allowing very extended hours of visit, requesting his active contribution in baby care, and, when consistent with the child's safety, allowing him to take the child home for the weekend while the mother still needs to stay at the MBU.

The father himself may have personal mental health difficulties that require care, usually as an outpatient. Analysis of the MBU-SMF database of more than 1000 MBU admissions (Glangeaud-Freudenthal 2004, 2011, 2013, 2014) has shown that only 27 % of the fathers of children admitted with their mothers to MBUs in France and Belgium are known not to have their own psychological difficulties. The rate of the mother's mental health improvement during her MBU admission slows when the father is depressed, even after adjustment for maternal pathology and other risk factors (adjusted OR=0.33, 95 % CI: 0.14–0.79) (Glangeaud-Freudenthal et al. 2011). The risk that the child will be placed on discharge also increases when the father has a non-affective psychotic disorder or behavioural disorder, even after these adjustments (respective adjusted ORs=4.5; 95 % CI: 1.7–12.4; 3.8, 95 % CI 1.8–8.1) (Glangeaud-Freudenthal et al. 2013).

Fathers usually do not personally request psychological care, but they usually agree to accept it at the request of the mother or the professionals. Psychotherapeutic interviews can also be offered to him to help him deal not only with his own mental health difficulties but also with his emotional upheavals facing the difficult situation of having his severely ill partner admitted to a psychiatric unit and his separation from his child. The mental health of fathers may also influence the quality of the family relationships and can contribute later on to depression or behaviour disorders in offspring, independently of maternal mental health (Marmorstein et al. 2004; Ramchandani et al. 2005).

MBU staff also work with grandparents to highlight the generational distinctions in the respective positions and to identify reactivation of their possible conflicts over parenthood. Grandparents' adequate investment in the child may be very important in the decisions at discharge. MBU staff use the period of hospitalisation to enhance or restore (if the relationship was disrupted before admission) grandparents' investment in the child and their relationship with the mother.

Management

The structure of MBUs must be appropriate for the provision of mental health care to the mother and of care and safety to the developing child.

Women and Children Admitted to France and Belgium MBUs

Most units admit infants from childbirth and up to 1 year; the mean age of children at admission in France and Belgium (Glangeaud-Freudenthal et al. 2013) is about 9.6 (SD: 10.3) weeks, with a range of 0–50 weeks. Some units keep the child for up to 3 years and admit toddlers. Admissions were voluntary for 90 % of the women.

The most frequent diagnoses are mood disorders, adult personality or behaviour disorders, cognitive or mental organic disorders, and, less frequently, schizophrenia and other non-affective delusional disorders. More than half of all admissions are for a relapse of an acute episode or a chronic disorder, and one-quarter for a first acute episode; 18 % of admissions are for problems of interaction between mother and child. The average length of stay is 75 days (range: 5 days to 19 months).

The mean length of stay in the UK is quite a bit shorter: 56 days (Elkin et al. 2009). Moreover, some admissions begin during pregnancy, for prevention and care.

Multidisciplinary Team

Brockington et al.¹² suggest that ‘Mother-infant (perinatal) psychiatry can best be practiced by a dedicated multi-disciplinary team, with the following members: Psychiatrists with appropriate training; Clinical psychologists, who can deploy and supervise a number of specific therapies; Trained case managers; Nursing staff of several kinds – enough inpatient nurses to provide care round the clock and throughout the week, nursery nurses to care for the infants, mothercraft nurses, public health nurses and community nurses who can treat mothers at home; Midwives working in antenatal clinics and postnatal wards and in a public health role; Psychotherapists of various kinds and disciplines; Social workers, not only to conduct social casework with families, but also to manage the relationship with a multitude of social and child protection agencies in the locality served; Occupational and art therapists, who have a role in psychotherapy, rehabilitation and habilitation in mothering skills; Paediatricians’.

This ‘Best Practice’ MBU team may be out of reach in many regions of the world. On the basis of her experience in India, Chandra et al. (2013) recommends at least one permanent trained nurse per five beds, whereas Margison and Brockington (1982) describe a ratio need of 1.1 staff members per patient in the UK. The Bangalore (India) MBU maintains (based in part on the lack of trained staff and funding) the Indian cultural tradition that each mother–baby dyad is admitted with a family member to provide care to the baby and the mentally unwell mother.

Staff Training and Needs

Full-time (24-h a day) psychiatric MBUs admit women with severe mental health problems or disorders. Therefore, staff members need two different types of expertise: the first in treating women with severe psychiatric disorders and the second in childcare and development. Staff in this clinical setting faces especially complex situations, with women mothering infants who are often especially vulnerable owing to pregnancy risk factors (pregnancy with psychotropic medications, poor pregnancy care, and lifestyle), maternal mental health symptoms, and genetic vulnerability.

¹² See footnote 1.

Glangeaud-Freudenthal et al. (2014) in their review conclude that ‘Staff members must receive appropriate training to develop the special skills and understanding they will need, and also require continuous support from a psychiatric team’.

Nezelof et al. (2005) emphasise that in situations where mothers have major psychological disorders, the staff may feel emotions and intense fantasies when the question of the child’s placement is discussed. Opposite opinions usually arise among staff members, some of whom fear the parent will collapse in case of separation while others focus on the physical and mental health risks for the child who remains in contact with the mother. The MBU setting provides time and space to analyse these emotional movements. Training to understand these two points of view and their outcomes within the MBU can help to provide a framework in which the staff may support the regressive movement of the mother, while they try to get a ‘good enough’ environment for the child.

Networking with Other Services

Last but not least, as mentioned several times before in this chapter and in this book (Dugnat et al. 2015), MBUs must collaborate closely with adult and child psychiatric wards, as well as with obstetricians, other maternity unit staff, and paediatricians. MBUs must be part of a network of medical and social services, for referral and follow-up in the community after discharge (Isserlis et al. 2009).

The MBU staff, with their expertise, can also provide support to other professionals working in maternity units and in the community to choose the best organisation of care and treatment for mother and infant. These include the choice of drug or alternative therapies appropriate for pregnancy and the postpartum period, observation and detection of infant distress, enhancing maternal competencies and parent–child interaction, and involving the child’s father/woman’s partner and close family in the care project and follow-up.

Care in MBUs cannot exist without a working relationship with the medical and social care network both upstream and downstream. It is important to define the place and function of current and potential clinical partners in a comprehensive care project (midwives, nursery nurses, PMI doctors, social workers, and judiciary) to ensure continuity and coherence of care for women, their children, and their families. The social, medical, and family contexts of mother and child are very important for preparing discharge from the MBU (Nezelof et al. 2005; Austin 2015).

Conclusion and Summary

- MBUs can assess and deal with difficult perinatal disorders that may compromise both the mother’s physical and mental health and the baby’s safety and development, in the short or long term. Suffering associated with separation, sometimes necessary for child’s safety, requires a complete assessment of risks and resources.

- In multidisciplinary MBUs, well-trained teams provide comprehensive care including drug therapy, psychotherapy for the mother, and constant care and protection for the child. They also care for the parent–infant relationship.
- MBUs have gradually learned to work with and help babies' fathers (despite their frequent personal difficulties) and the family as the natural environment so important for the future of these children (and these families).
- The cost of this inpatient intensive care is high, but it must be considered in the light of the later disastrous consequences (and costs) that will follow in the absence of appropriate early postpartum care. The MBU, with all its expertise, is part of a perinatal network involving many partners.

References

- Abel KM, Webb RT, Salmon MP et al (2005) Prevalence and predictors of parenting outcomes in a cohort of mothers with schizophrenia admitted for joint mother and baby psychiatric care in England. *J Clin Psychiatry* 66:781–789
- Ainsworth MD, Blehar MC, Waters E et al (1978) Patterns of attachment: a psychological study of the strange situation. Lawrence Erlbaum, Hillsdale
- Austin M-P, Kingston D (2015) Psychosocial assessment and depression screening in the perinatal period: benefits, challenges and implementation. In: Sutter-Dallay A-L, Glangeaud-Freudenthal NM-C, Guedeney A, Riecher-Rössler A (eds) Joint care of parents and infants in perinatal psychiatry. Springer, Cham, pp 167–196
- Baker AA, Morison M, Game JA et al (1960) Admitting schizophrenic mothers with their babies. *Lancet* 2:237–239
- Bales M, Pambrun E, Melchior M et al (2015) Prenatal psychological distress and access to mental health care in the ELFE cohort. *Eur Psychiatry* 30:322–328
- Bardon D, Glaser YIM, Prothero D et al (1968) Mother and baby unit: psychiatric survey of 115 cases. *Br Med J* 2:755–758
- Bowlby J (1958) The nature of the child's tie to his mother. *Int J Psychoanal* 41:89–113
- Brazelton TB (1973) Neonatal behavioral assessment scale: clinics in developmental medicine. Heinemann, London
- Brockington IF (1996) Services. In: Motherhood and mental health. Oxford University Press, Oxford, pp 552–583
- Buist AE, Dennerstein L, Burrows GD (1990) Review of a mother-baby unit in a psychiatric hospital. *Aust N Z J Psychiatry* 24:103–108
- Buist A, Morse CA, Durkin S (2003) Men's adjustment to fatherhood: implications for obstetric health care. *J Obstet Gynecol Neonatal Nurs* 32:172–180
- Buist A, Minto B, Szego K et al (2004) Mother-baby psychiatric units in Australia – the Victorian experience. *Arch Womens Ment Health* 7(1):81–87
- Cantwell R (2015) Maternal perinatal psychopathology: overview. In: Sutter-Dallay A-L, Glangeaud-Freudenthal NM-C, Guedeney A, Riecher-Rössler A (eds) Joint care of parents and infants in perinatal psychiatry. Springer, Cham, pp 13–24
- Cazas O, Glangeaud-Freudenthal NM (2004) The history of mother-baby units (MBUs) in France and Belgium and of the French version of the Marce checklist. *Arch Womens Ment Health* 7:53–58
- Chandra P, Desai G, Thippeswamy H (2013) An inpatient mother baby psychiatric unit in India: a three year experience. *Arch Womens Ment Health* 16(suppl):s88
- Cramer B (1989) Les thérapies spécifiques mère-bébé et la consultation thérapeutique. In: Lebovici S (ed) Psychopathologie du bébé. PUF, Paris, pp 827–849

- Dolman C, Jones I, Howard LM (2013) Pre-conception to parenting: a systematic review and meta-synthesis of the qualitative literature on motherhood for women with severe mental illness. *Arch Womens Ment Health* 16:173–196
- Douglas G (1956) Psychotic mothers. *Lancet* 1:124–125
- Dugnat M, Dallay D (2015) A crucial therapeutic instrument: networking (the example of the French perinatal networks). In: Sutter-Dallay A-L, Glangeaud-Freudenthal NM-C, Guedeney A, Riecher-Rössler A (eds) Joint care of parents and infants in perinatal psychiatry. Springer, Cham, pp 197–206
- Elkin A, Gilburt H, Gregoire A et al (2009) A national survey of psychiatric mother and baby units in England. *Psychiatr Serv* 60:629–633
- Esquirol JED (1818) De l'aliénation mentale des nouvelles accouchées et des nourrices. *Annales Méd chirurgiques Hop Paris* 1:600–632
- Fowler DB, Brandon RE (1965) A psychiatric mother and baby unit. *Lancet* 1:160–161
- Glangeaud-Freudenthal NMC (2002) Channi Kumar's contribution to perinatal psychiatry. A personal tribute from France. *Psychol Med* 32:559–561
- Glangeaud-Freudenthal NMC (2003) Channi Kumar and the history of the Marcé Society. *Arch Womens Ment Health* 6 suppl2:79–82
- Glangeaud-Freudenthal NMC (2004) Mother-baby psychiatric units (MBUs): national data collection in France and in Belgium. *Arch Womens Ment Health* 7:59–64
- Glangeaud-Freudenthal N, Sutter-Dallay AL, Dagens-Lafont V et al (2009) L'enfant dans les Unités mère-bébé en France et en Belgique: historique et résultats d'une recherche multicentrique. In: Poinso F, Glangeaud-Freudenthal N-MC (eds) Orages à l'aube de la vie. Eres, Toulouse, pp 117–129. doi:10.3917/eres.poins.2009.01.0117
- Glangeaud-Freudenthal NM, Sutter AL, Thieulin AC et al (2011) Inpatient mother-and-child postpartum psychiatric care: factors associated with improvement in maternal mental health. *Eur Psychiatry* 26:215–223
- Glangeaud-Freudenthal NM, Sutter-Dallay AL, Thieulin AC et al (2013) Predictors of infant foster care in cases of maternal psychiatric disorders. *Soc Psychiatry Psychiatr Epidemiol* 48:553–561
- Glangeaud-Freudenthal N M-C, Howard L, Sutter-Dallay A-L (2014) Treatment – mother-infant inpatient units. In: O'Hara M, Wisner K, Joseph J (eds) Perinatal mental illness: guidance for the obstetrician-gynecologist USA. *Best Pract Res Clin Obstet Gynaecol* 28:147–157
- Glatigny-Dallay E, Guedeney A (2015) Parent-infant interaction assessment. In: Sutter-Dallay A-L, Glangeaud-Freudenthal NM-C, Guedeney A, Riecher-Rössler A (eds) Joint care of parents and infants in perinatal psychiatry. Springer, Cham, pp 93–108
- Grunebaum HU, Weiss JL (1963) Psychotic mothers and their children joint admission to an adult psychiatric hospital. *Am J Psychiatry* 119:927–933
- Guedeney A, Fermanian JA (2001) Validity and reliability study of assessment and screening for sustained withdrawal reaction in infancy: the alarm distress baby scale. *Infant Ment Health J* 5:559–575
- Howard LM (2000) The separation of mothers and babies in the treatment of postpartum psychotic disorders in Britain 1900–1960. *Arch Womens Ment Health* 3:1–5
- Howard LM, Hunt K (2008) The needs of mothers with severe mental illness: a comparison of assessments of needs by staff and patients. *Arch Womens Ment Health* 11:131–136
- Howard L, Shah N, Salmon M, Appleby L (2003) Predictors of social services supervision of babies of mothers with mental illness after admission to a psychiatric mother and baby unit. *Soc Psychiatry Psychiatr Epidemiol* 38:450–455
- Howard LM, Thornicroft G, Salmon M et al (2004) Predictors of parenting outcome in women with psychotic disorders discharged from mother and baby units. *Acta Psychiatr Scand* 110:347–355
- Howard M, Battle CL, Pearlstein T et al (2006) A psychiatric mother-baby day hospital for pregnant and postpartum women. *Arch Womens Ment Health* 9:213–218
- Howard L, Flach C, Leese M et al (2010) Effectiveness and cost-effectiveness of admissions to women's crisis houses compared with traditional psychiatric wards: pilot patient-preference randomised controlled trial. *Br J Psychiatry* 197:32–40

- Isserlis C, Dugnat M, Rainelli C et al (2009) Les unités mère-bébé en hospitalisation temps plein: leurs rôles en psychiatrie périnatale. *Pluriels Lettre Mission Nationale d'Appui en Santé Mentale* 80:2–12
- Joy C, Saylan M (2007) Mother and baby units for schizophrenia. *Cochrane Database Syst Rev* (1):CD006333
- Kumar R, Marks M, Platz C et al (1995) Clinical survey of a psychiatric mother and baby unit: characteristics of 100 consecutive admissions. *J Affect Disord* 33:11–22
- Le Foll J, Guedeney A (2015) Ambulatory care: home-based perinatal interventions. In: Sutter-Dallay A-L, Glangeaud-Freudenthal NM-C, Guedeney A, Riecher-Rössler A (eds) *Joint care of parents and infants in perinatal psychiatry*. Springer, Cham, pp 139–146
- Lebovici S (1983) *Le nourrisson, sa mère et le psychanalyste*. In: *Les interactions précoces*. Parks: Le Centurion, Paris
- Lebovici S, Weil-Halpern F (1989) *Psychopathologie du bébé*. PUF, Paris, p 882p
- Main TF (1958) Mothers with children in a psychiatric hospital. *Lancet* 2:845–847
- Marcé LV (1858) *Traité de la folie des femmes enceintes, des nouvelles accouchées et des nourrices*. Baillière, Paris
- Margison F, Brockington IF (1982) Psychiatric mother and baby units. In: Brockington IF, Kumar R (eds) *Motherhood and mental illness*. Academic, London, pp 223–227
- Marmorstein NR, Malone SM, Iacono WG (2004) Psychiatric disorders among offspring of depressed mothers: associations with paternal psychopathology. *Am J Psychiatry* 161:1588–1594
- Meltzer-Brody S, Brandon AR, Pearson B et al (2014) Evaluating the clinical effectiveness of a specialized perinatal psychiatry inpatient unit. *Arch Womens Ment Health* 17(2):107–113
- Milgrom J, Ericksen J, Sved-Williams A (2015) Impact of parental psychiatric illness on infant development. In: Sutter-Dallay A-L, Glangeaud-Freudenthal NM-C, Guedeney A, Riecher-Rössler A (eds) *Joint care of parents and infants in perinatal psychiatry*. Springer, Cham, pp 47–78
- Munk-Olsen T, Laursen TM, Pedersen CB et al (2006) New parents and mental disorders: a population-based registered study. *JAMA* 296:2582–2589
- Neil S, Sanderson H, Wieck A (2006) A satisfaction survey of women admitted to a psychiatric mother and baby unit in the northwest of England. *Arch Womens Ment Health* 9:109–112
- Nezelof S, Vulliez-Coady L (2009) Des services de maternité aux unités mère-bébé. In: Poinso F, Glangeaud-Freudenthal NMC (eds) *Orages à l'aube de la vie*. Eres, Toulouse, pp 167–174
- Nezelof S, Cazas O, Sutter AL et al (2005) L'hospitalisation conjointe mère-bébé en psychiatrie. *Ann Med Psychol* 163:529–534
- Oates M (1996) Psychiatric services for women following childbirth. *Int Rev Psychiatry* 8:87–98
- Poinso F, Gay MP, Glangeaud-Freudenthal NMC et al (2002) Care in a mother–baby psychiatric unit: analysis of separation at discharge. *Arch Womens Ment Health* 5:49–58
- Racamier PC, Sens C, Carretier L (1961) La mère et l'enfant dans les psychoses du post-partum. *Evol Psychiatr* 26:525–570
- Ramchandani P, Stein A, Evans J, et al; ALSPAC Study Team (2005) Paternal depression in the postnatal period and child development: a prospective population study. *Lancet* 365:2201–2205
- Salmon MP, Appleby A (2000) Predictors of clinical outcome, other outcomes and risk of harm to babies using data from the National Audit of mother and baby admissions to psychiatric hospitals. *Arch Womens Ment Health* 3:107
- Salmon M, Abel K, Cordingley L et al (2003) Clinical and parenting skills outcomes following joint mother-baby psychiatric admission. *Aust N Z J Psychiatry* 37:556–562
- Salmon MP, Abel K, Webb R et al (2004) A national audit of joint mother and baby admissions to UK psychiatric hospitals: an overview of findings. *Arch Womens Ment Health* 7:65–70
- Seneviratne G, Sue C, Marks M (2003) Parenting assessment in a psychiatric mother and baby unit. *Br J Soc Work* 33:535–555
- Sharp PT, Dennerstein L, Hrasky M et al (1986) A mother and baby unit in a psychiatric hospital. *Aust N Z J Obstet Gynaecol* 26:44–48

- Spitz R (1946) Anaclitic depression. The Psychoanalytic study of the child. International Universities Press, New York, pp 313–342
- Sutter-Dallay AL, Riecher-Rössler A (2015) Psychotropic drugs and the perinatal period. In: Sutter-Dallay A-L, Glangeaud-Freudenthal NM-C, Guedeney A, Riecher-Rössler A (eds) Joint care of parents and infants in perinatal psychiatry. Springer, Cham, pp 79–92
- Sutter-Dallay AL, Murray L, Dequae-Merchadou L et al (2011) A prospective longitudinal study of the impact of early postnatal vs. chronic maternal depressive symptoms on child development. *Eur Psychiatry* 26:484–489
- Sutter-Dallay AL, Cosnefroy O, Glatigny-Dallay E et al (2012) Evolution of perinatal depressive symptoms from pregnancy to two years postpartum in a low-risk sample: the MATQUID cohort. *J Affect Disord* 139:23–29
- Sved-Williams AE (1992) Phobic reactions of mothers to their own babies. *Aust N Z J Psychiatry* 26:631–638
- Tardieu A (1860) Étude médico-légale sur les sévices et mauvais traitements exercés sur des enfants. *Ann Hyg Publique Méd Lég*
- Van der Walde PH, Meeks D, Grunebaum HU et al (1968) Joint admission of mother and children to a state hospital. *Arch Gen Psychiatry* 18:706–712
- Viaux-Savelon S (2015) Establishing parent–infant interactions. In: Sutter-Dallay A-L, Glangeaud-Freudenthal NM-C, Guedeney A, Riecher-Rössler A (eds) Joint care of parents and infants in perinatal psychiatry. Springer, Cham, pp 25–46
- Wendland J (2015) Ambulatories cares: parent–infant psychotherapy in perinatal mental health. In: Sutter-Dallay A-L, Glangeaud-Freudenthal NM-C, Guedeney A, Riecher-Rössler A (eds) Joint care of parents and infants in perinatal psychiatry. Springer, Cham, pp 121–138
- Winnicott DW (1956) Primary maternal preoccupation. In: *Collected papers: through paediatrics to psychoanalysis*. Tavistock, London

Part IV

Perinatal Care Management

Psychosocial Assessment and Depression Screening in the Perinatal Period: Benefits, Challenges and Implementation

11

Marie-Paule Austin and Dawn Kingston

Background and Terminology

Primary prevention and early intervention have the potential to be very powerful approaches perinatally, because of the frequent contacts that women have with health services at this time and the significant morbidity associated with untreated maternal mental health conditions, not only for mother but also infant and family. Implicit in this public health approach is the use of screening tools and programmes, with all the challenges that they bring. Early identification and treatment of psychosocial morbidity are especially important in relation to the functioning of the family unit and the critical parent-infant relationship with potential to positively impact on the health of the next generation.

It is imperative that the key terms be clearly defined, in a field that is fraught with multiple uses and interpretations of the lexicon of complex concepts arising from the epidemiological literature.

Preventive intervention aims to reduce the burden of chronic conditions by early identification of people with risk factors or symptoms and the application of therapeutic interventions as appropriate. It is the key premise underlying the benefits of psychosocial assessment and depression screening. Mrazek and Haggerty (1994), in their Institute of Medicine report, defined preventive interventions as those that can

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be offered ‘universally’ (i.e. to the whole population), those that are offered to ‘selected’ or ‘targeted’ groups who are at significantly higher risk of developing the index disorder and those that are ‘indicated’ for individuals who have detectable symptoms while not meeting full diagnostic criteria.

Early intervention aims to minimise psychosocial morbidity at a critical time in both a mother’s and her infant’s and family’s developmental trajectories. In this chapter, ‘intervention’ is used in its broad sense to cover *the activities of detection, referral and treatment (or some form of care)*.

Screening, known as case identification in the National Institute for Health and Clinical Excellence (NICE 2014) guidelines, is an epidemiological term which, narrowly defined, refers to the examination of a group of usually asymptomatic people to detect – with a high degree of probability – a clearly defined disorder. In the perinatal mental health setting, the term *screening* has been primarily reserved for depressive illness, by means of a validated scale such as the Edinburgh Postnatal Depression Scale (EPDS; Cox et al. 1987). Critically, a *screeener is not a diagnostic tool*. Diagnosis requires a full mental health assessment.

Screening – while apparently simple – does not just consist of administering a test but rather involves a multicomponent programme, in order to be viable and effective. Screening should only be undertaken if the key criteria for such a programme are met (UK National Screening Committee 2009). In brief, the condition being screened needs to have significant prevalence (e.g. depression); there needs to be a validated, brief (according to NICE [2014, p. 85], should not be more than 12 items) screening tool with a ‘cut-off’ which identifies those who are ‘screen positive’ and triggers clear, simple rules for handling who is offered what (if anything); effective treatments need to exist for the condition and be available within the screening programme; there must be integration between the ‘screening’ and, as appropriate, referral for diagnostic assessment and treatment; adequate staff training and ongoing supervision are essential; and finally, a screening programme needs to be associated with more benefit than harm. The issue of harm (to the woman by either over- or under-diagnosis and society in terms of health-care costs vs. reduced morbidity) is a source of ongoing debate.

Depression screening is mostly undertaken in the primary care setting and thus amenable to *universal* implementation, i.e. administration to *all* women irrespective of whether they have symptoms or particular risk for depression. This is in contrast to *targeted (or selected)* screening that is only undertaken in high-risk groups (e.g. young, single, substance-using mothers). There are arguments for both approaches, centring on the balance between costs and benefits.

Psychosocial assessment refers to the broad enquiry about a woman’s mental health and social circumstances, both past and current, including risk and protective factors (Austin 2004). Such assessment needs to consider the full spectrum of mental health conditions (including psychosis, mood and anxiety disorders) and psychosocial risk factors (including trauma history, domestic violence, substance misuse, quality of relationships, supports and stressors), all of which may impact the mother in her parenting role and her risk for onset or relapse of a psychiatric episode. In contrast to screening, psychosocial assessment *does not* aim to identify women with

a possible current diagnosis (e.g. depression). Rather it gives the clinician a comprehensive ‘snapshot’ to inform decisions about best care, including psychiatric options (Johnson et al. 2012). Psychosocial assessment and depression screening are closely linked and should be undertaken as part of one programme, ideally integrated within a mainstream maternal and infant care framework.

The Rationale for Screening and Psychosocial Assessment

The impetus for perinatal psychosocial assessment and care is driven in part by the high prevalence of perinatal mental illness, epidemiologic evidence describing the continuation of untreated perinatal depression and anxiety, and strong evidence from longitudinal studies on the adverse impact of prenatal and postnatal mental illness (subclinical to severe symptom severity) on infant health and development.

In Anglophone countries, about 30 % of women surveyed in the perinatal period report a past episode of depression or anxiety (Austin et al. 2005; Kingston et al. 2015b, in press; Reilly et al. 2013a). Mental health problems are common in the perinatal period with up to one in five women experiencing symptoms of depression, anxiety or stress during the prenatal or postnatal period (Gavin et al. 2005; Kingston et al. 2012a; Milgrom et al. 2008). While the majority have mild or moderate severity episodes, a substantial minority (20 %) of these develop more severe episodes of unipolar depression or puerperal psychosis (Jones et al. 2014), while as many as 22 % endorsed a diagnosis of bipolar disorder (Wisner et al. 2013). Often these arise in conjunction with complex life circumstances, requiring specialty and inpatient psychiatric care and other services (e.g. addiction, domestic violence; Priest et al. 2008). Without treatment, up to 48 % of women with *prenatal* anxiety and 70 % of those with *prenatal* depression (Grant et al. 2008) can continue to experience symptoms through the post-partum period (Milgrom et al. 2008) and into their children’s early years of life (Horwitz et al. 2009; Woolhouse et al. 2015).

Major risk factors for poor emotional adjustment perinatally include a mental health history (most commonly current or past depression), substance misuse, issues in partner relationship including domestic violence (Desmarais et al. 2014; Howard et al. 2013), any history of past physical or sexual abuse (Silverman and Loudon 2010), lack of supports, significant adversity and personality vulnerabilities, e.g. neuroticism (anxious, obsessional traits or low self-esteem). Not surprisingly, the greater the number of psychosocial risk factors, the greater the risk for PND (Austin et al. 2005; Silverman and Loudon 2010).

Table 11.1 reports on psychosocial risk factors commonly associated with increased risk for depression in the postnatal period – i.e. past/current depression or anxiety, general supports, partner support, life events and personality vulnerability (neuroticism) – and finds effect sizes of between 0.4 and 0.75 (O’Hara and Swain 1996; Robertson et al. 2004) and adjusted odds ratios of up to 2 (Milgrom et al. 2008). Intimate partner violence (IPV) has gained increasing interest as a risk factor, and a meta-analysis by Howard et al. (2013) reports a pooled odds ratio of 3:1 for the risk of postnatal depressive, anxiety or PTSD symptoms in women

Table 11.1 Individual psychosocial risk factors and risk for elevated postnatal EPDS

Study	Past history of depression or anxiety	Pregnancy, depression or anxiety	General supports	LEs or adversity	Partner support	Neuroticism (personality vulnerability)	IPV in pregnancy
^a O'Hara and Swain (1996) Meta-analysis- Ns 1000–2000; variable F/U period	^a 0.57	^a 0.75	^a -0.63	^a 0.6	^a 0.13	^a 0.4–0.5	
^a Robertson (2004) Meta-analysis- Ns 2000–3000; variable F/U period	^a 0.58	^a 0.75	^a >0.6 'large ES'	^a 0.61	^a 0.39		
Milgrom (2008) Prospective study- Ns 8000–10,000; F/U EPDS 6 week p-p	^b 1.7 (95 % CI 1.39–2.07) <i>p</i> <.0001	^b 1.39 (95 % CI 1.12–1.73) <i>p</i> <.01	Nonsignificant AOR	Daily hassles ^b 0.79 (95 % CI 0.64–0.97) <i>p</i> <.05	^b 0.68 (95 % CI .59–.89) <i>p</i> <.01 High support vs. moderate	Perfectionism ^b 1.26 (95 % CI 1.04–1.52) <i>p</i> <.05	N/A
Howard (2013) Meta-analysis- Pooled ORs: Ns 400–500 variable F/U period	N/A	N/A	N/A	N/A	N/A	N/A	^c 3.1 (95 % CI 2.7–3.6)

Note:

^aCohen's *d*: 0.4–0.6 moderate and 0.6–0.8 large effect size. 95 % CIs not available

^bAOR adjusted odds ratios, LEs life events, IPV intimate partner violence, F/U follow-up, EPDS Edinburgh postnatal depression scale

^cUnadjusted, pooled odds ratios (ORs)

experiencing IPV in pregnancy. A prospective clinical study found that these symptoms were reported more commonly in the antenatal and perinatal periods if a woman had any history of IPV, and the more serious the abuse, the greater the postnatal symptomatology (Desmarais et al. 2014).

Recent reviews support an association between prenatal anxiety, stress and depression and adverse birth outcomes, including preterm and small for gestational age birth (Dunkel Schetter and Tanner 2012; Grote et al. 2010). While many studies do not distinguish between treated and untreated mental illness, evidence based on a recent systematic review suggests that unmedicated prenatal depression increases the risk for preterm birth (in four out of four studies; Davalos et al. 2012) and low birth weight (in four out of four studies; Davalos et al. 2012) compared to non-depressed controls. Comparisons of infant outcomes in medicated versus unmedicated depressed pregnant women are less clear, with studies showing similar increases in risk of preterm and small for gestational age delivery, in both medicated and unmedicated women (Oberlander et al. 2006), and greater risk among unmedicated depressed women (Dayan et al. 2006). Prenatal and postnatal anxiety and depression have also been implicated in suboptimal development across the spectrum of domains of cognitive, psychomotor, socio-emotional development and behaviour among infants (Kingston et al. 2012b) and school-aged children (Kingston and Tough 2014). Long-term effects of prenatal and postnatal depression, stress and anxiety have also been reported. For example, studies have found greater risk of mental disorder among 4–13-year-old children of mothers with anxiety during pregnancy compared to those without (12.3 % vs. 6.8 %; O'Donnell et al. 2014) and epigenetic changes in the DNA of 8-year-old children of women exposed to a natural disaster (and thus severe emotional stress) during pregnancy (Cao-Lei et al. 2014). Studies comparing the outcomes of adolescents of mothers with and without postnatal depression have reported poorer educational performance at age 16 (boys; Murray et al. 2010), depression at age 16 (boys and girls, 41.5 % vs. 12.5 %; Murray et al. 2011) and externalising problems and impaired social competence at age 16 (boys; Korhonen et al. 2012, 2014) among those whose mothers had post-partum depression (PPD).

Although few studies have examined the effect of chronic mental illness on child outcomes (Kingston et al. 2012b), one study reported that infants of mothers who experienced depressive symptoms during pregnancy and post-partum had greater risk of suboptimal cognitive development compared with those whose mothers were depressed during the post-partum period alone (Beckwith et al. 1999). In terms of severity of symptoms, reviews report associations between a range of symptom severity and adverse child outcomes from mild to severe (Glover 2014; Kingston et al. 2012b).

Indeed, recent findings using the data from Australia's longitudinal pregnancy cohort study, the Maternal Health Study, indicate that children of women with high levels of depressive symptoms (EPDS 10-14) and those with subclinical symptoms (EPDS 6-8) had greater odds of emotional-behavioural difficulties (24 % and 19 % respectively), compared with women with no symptoms (7 %; Giallo et al. 2015).

The value of perinatal psychosocial assessment and intervention is underscored by the substantial clinical impact of perinatal mental illness on child outcomes. For instance, in their meta-analysis, Grote et al. (2010) report 39 and 49 % increases in risk of preterm and small for gestational age delivery, respectively, among women with prenatal depression compared to those without (Grote et al. 2010). Based on studies using the Avon Longitudinal Study of Parents and Children (ALSPAC), an attributable risk of 10–15 % has been estimated as the contribution of prenatal anxiety and depression to suboptimal child development (Glover 2014; Talge et al. 2007). Furthermore, the lack of specificity of the type of mental illness and child outcome (Glover 2014; Kingston and Tough 2014; Kingston et al. 2012b; O'Donnell et al. 2014) supports assessment of a broad spectrum of illness.

Perinatal mental health problems are severely underdetected and undertreated (Coates et al. 2004; Spitzler et al. 2000). Without standardised psychosocial assessment, as many as 80 % of cases are not detected (Carroll et al. 2005; Mitchell and Coyne 2009). Although the benefit of psychosocial assessment is recognised by health-care providers (Buist et al. 2006; Chew-Graham et al. 2008; Leiferman et al. 2008; Reid et al. 1998), significant barriers to routine perinatal psychosocial assessment and referral have been cited, including most prominently the lack of time, education, and linkages with mental health resources (Byatt et al. 2012; Kim et al. 2010). At the same time, significant barriers deter women from seeking mental health care (Byatt et al. 2012; Flynn et al. 2010; Reay et al. 2011; Sword et al. 2008) and self-disclosing mental health concerns during the prenatal and postnatal periods (Sword et al. 2008; Woolhouse et al. 2009) including stigma, being reassured by family and friends that their emotions are 'normal', preferring to address their concerns on their own without professional assistance, perceiving that the health-care provider is disinterested or lacks time, and lacking the knowledge of what emotions constitute a 'normal' versus 'abnormal' experience (Kingston et al. 2015b, in press). Further barriers impede women from engaging in follow-up assessment or treatment following a positive screen (Kim et al. 2010). Indeed, recent research suggests that only half of those who screen positive during follow-up with a subsequent mental health assessment (Kim et al. 2010) and 30–85 % (Bales et al. 2015; Bowen et al. 2012; Marcus et al. 2003; Reay et al. 2011; Woolhouse et al. 2009) do not engage in treatment. Highlighting the impact of routine psychosocial assessment on treatment engagement, a recent study also found that women who were not asked about emotional health were far less likely to seek formal mental health care during pregnancy (AOR 0.09, 95 % CI 0.04–0.24) or post-partum (AOR 0.07, 95 % CI 0.02–0.13; Reilly et al. 2014). This study also demonstrated the importance of the referral process, as women who had undergone mental health screening but did not receive a formal referral were less likely to engage in treatment in pregnancy (AOR 0.26, 95 % CI 0.15–0.45) and post-partum periods (AOR 0.14, 95 % CI 0.07–0.27; Reilly et al. 2013b). Additionally, the actual process of screening appears to influence women's decisions regarding treatment uptake. A recent Canadian study found that 78 % of women reported that the 'way' a provider asked about their emotional health would have a major impact on whether they sought treatment or not (Kingston et al. 2015b, in press).

While personal and system-related barriers deter women from self-initiating discussions regarding concerns with their mental health, the vast majority responds to provider-initiated care (Sword et al. 2008; Woolhouse et al. 2009), and fewer than 4 % refuses provider-initiated screening (Austin et al. 2010; Chew-Graham et al. 2009; Miller et al. 2009). Overall, studies across Canada, 44 (Kingston et al. 2015b, in press; Reid et al. 1998) Australia (Bales et al. 2015; Bowen et al. 2012; Reay et al. 2011), and the United States (Chew-Graham et al. 2009; Miller et al. 2009) report high levels of acceptability of mental health screening by midwives, nurses, family physicians and obstetricians among pregnant and post-partum women. Importantly, vulnerable women also report high acceptability, including those with high depression scores at the time of screening (Gemmill et al. 2006), women of non-English-speaking background (Matthey et al. 2005), those having a previous diagnosis or treatment history for mental illness (Kingston et al. 2015b, in press) and those experiencing IPV (Matthey et al. 2005). Indeed, a recent Canadian study found that 99 % of pregnant women who have not been screened would be comfortable with provider-initiated screening, and 97 % of those who had been screened reported the same (Kingston et al. 2015b, in press). In this same study, demographics, type of provider and history of diagnosis or treatment for mental illness were unrelated to whether pregnant women found screening acceptable or not. Finally, regarding provider views of feasibility of perinatal mental health assessment, providers in settings that have implemented an infrastructure for routine psychosocial assessment as part of a system of assessment-referral-care have found it to be a feasible, effective approach (Flynn et al. 2010; Mitchell and Coyne 2009; Reay et al. 2011; Sword et al. 2008). Thus, a key message from this evidence is that opportunistic screening that occurs, as a component of routine prenatal and postnatal care, is highly acceptable to women and providers and considered to be a feasible approach to perinatal mental health care.

The Debate Around Depression Screening: Harms, Benefits and Cost-Effectiveness

While the benefits of screening are intuitively appealing, the harms – in particular the cost to women through over-detection and incorrect labelling and the cost to the system in terms of resourcing – are less easy to quantify but just as important to consider. The current evidence base is inconclusive as to whether the benefits of perinatal depression screening outweigh the risks (Myers et al. 2013). Indeed a clear resolution may not be attainable because a perfect evidence base is not feasible in a field where translation of research into practice has to walk a fine line between slavish reliance on randomised controlled trial (RCT) findings and the demands of strict systematic literature reviews – and the exigencies of the real-world clinical setting. While these questions are complex as they involve understanding of both psychometric and health economic parameters and modelling, it is incumbent upon us to clarify the key parameters of the debate as much as possible.

Psychometric Parameters of Screening Tools

In order to discuss the psychometrics of commonly used tools, some key definitions are in order. A screener is considered adequate if both its sensitivity and specificity are at least 80 %. Sensitivity is a measure of ‘true positives’ – i.e. women correctly identified on a depression screener, e.g. the EPDS (Cox et al. 1987) using a set cut-off – most commonly ten or more for any depression (minor or major) and 13 or more for major depression. Specificity is a measure of ‘true negatives’ – i.e. women correctly identified on the EPDS as not having depression using the same cut-off (12 or less on the EPDS for major depression). The positive predictive value (PPV) is the number of cases correctly identified as a proportion of *all test-positive women* (both true and false positive) on the screener and is also a function of the disorder prevalence. For the EPDS, PPV sits between 40 and 60 % (depending on the input parameters used). In essence, only about one in two positive screeners has an actual diagnosis of depression. At best using an EPDS cut-off of 13 or more with sensitivity of 81 % and specificity of 96 % (derived from the largest study of Murray and Carrothers 1990) and point prevalence of 6.8 % for major depression at 6 weeks post-partum, the EPDS yields a 62 % PPV (Milgrom et al. 2011). It is notable that low prevalence conditions (e.g. depression) usually have much better specificity and thus negative predictive value; hence, PPV will never be very high. The NICE guidelines (2014) recommend the use of sensitivity and specificity (rather than PPV) as these are *not* population dependent and hence more generalisable. Conceptually, the challenge lies in understanding that improved sensitivity is at the cost of specificity and vice versa, i.e. these psychometric parameters vary in relation to each other depending on where the screener cut-off is set (see Table 11.2 for examples with different EPDS cut-offs).

One alternative to the EPDS considered in the NICE guidelines (2014) has been the two questions by Whooley et al. (1997) – *During the ‘past month’, have you ‘often’ been bothered by (1) feeling down, depressed or hopeless and (2) little*

Table 11.2 Sensitivity and specificity table: EPDS example at different cut-offs

EPDS score	Sensitivity (true positives)	Specificity (true negatives)	Consequences
≤16	.31 Miss many women Many more false negatives	.99 Few false positives	Miss more women Fewer ‘cases’ = less cost PPV not available
≤13	.81	.99	^a PPV = 62 %
≤10	Sensitivity = .82 Include more women Fewer false negatives	Specificity = .86 Exclude less women = more false positives	Miss fewer women More ‘cases’ = greater cost PPV not available

Note: Based on a pooled prevalence for major depression of 6.8 % at 3 months post-partum (Milgrom et al. 2011)

^aSensitivity and specificity used to calculate PPV taken from Murray and Carrothers (1990; N=645)

interest or pleasure in doing things? Women are screened positive if they endorse either Q 1 or 2 and screened negative if they endorse *neither* Q 1 nor 2. While it has 100 % sensitivity, specificity is only 68 %, and there is thus a need to reduce false positives (Mann et al. 2012).

One of the key factors underpinning the debate around screening includes a consideration of screener accuracy. In light of the above discussion, it is clear that improving cost-effectiveness (i.e. reducing false positives and the associated added cost to the service) while improving clinical effectiveness, i.e. minimising false negatives (cost to women of not being detected), is a balancing act impossible to achieve with the use of one screening tool alone. A number of approaches to optimise screening have thus been advocated with some being currently examined (Kingston et al. 2014a). One approach suggested by NICE (2014) is the sequential contingent administration of two depression screeners in a two-step procedure where the two-item Whooley is given to all women and followed by the *targeted* administration of the ten-item EPDS (i.e. in Whooley-positive women only) with the aim of obtaining optimum sensitivity (100 % on the Whooley), much improved specificity (on the contingent EPDS administration) and potentially reduced cost (NICE 2014). Alternative approaches to reducing the burden of screening include doing a *targeted* EPDS, i.e. only in women deemed at significant psychosocial risk (at the cost of reduced sensitivity; Canadian Task Force on Preventive Health Care et al. 2013), and repeating the EPDS ~2 weeks later in screen-positive women only (Matthey and Ross-Hamid 2012) though issues of feasibility will arise, given the lack of continuity of care in the primary sector. Finally, another option is that of using a higher than usual EPDS cut-off to define screen-positive women (e.g. score of 16 or more) as per Paulden et al. (2009), leading to excellent specificity (99 %) and reduced system costs but much reduced sensitivity (31 %), i.e. significant under-detection. This approach would not be acceptable in better-resourced settings (NICE 2014); however, it may be acceptable in less economically advantaged settings.

While there is no doubt that postnatal depression will incur significant costs both direct (health care) and indirect or societal (workforce productivity, offspring outcomes), the evidence for clinical effectiveness of depression screening programmes let alone their cost-effectiveness is a much more complex matter to disentangle.

Costs Associated with Untreated Perinatal Depression

Two recent detailed economic reports commissioned by consumer organisations outline the high cost of untreated mental health morbidity in the perinatal period. The Post and Antenatal Depression Association (PANDA 2012) report examined the direct cost to the Australian economy in terms of direct costs for treating perinatal depression and indirect costs of productivity loss (where impact on both mothers and fathers was considered). In total, perinatal depression costs almost \$½ billion in 2012 (health-care costs but mostly productivity losses), assuming up to one third of young families are affected. This study did not examine costs associated with sub-optimal child outcomes. The London School of Economics report (Bauer et al. 2015) examined direct costs of treating maternal perinatal depression and anxiety

and postnatal psychosis and the indirect costs in terms of children's outcomes; it did not examine loss of productivity. They found a cost of eight billion pounds to the UK economy in 2013 (mostly attached to poorer child outcomes).

Evidence for Clinical Effectiveness of Depression Screening (Perinatal) RCTs (See Table 11.3)

The small RCT evidence base, although encouraging, is at best of low to moderate strength in favour of the clinical effectiveness of depression screening programmes. Thombs et al. (2014), in a systematic review examining the impact of using a depression screener in addition to care as usual (CAU), found that only one of the three relevant RCTs (Leung et al. 2011) met all review criteria as well as controlling for the care components common to the two groups. This study examined the value of administering the EPDS to CAU compared to the CAU condition alone (which consisted of informal enquiry about current depression by the postnatal nurse, followed by nurse counselling or referral to mental health, as needed). The addition of that simple EPDS at 2 months post-partum was associated with a significant reduction in EPDS scores at 6 months post-partum (effect size 0.34, Leung et al. 2011). Thombs et al. (2014) however discounted this study as being a likely false positive finding – based on the study being biased (halo effect and selective reporting of favourable results) and underpowered. Like the UK National Screening Committee (Hill 2010), the review authors emphasised the potential harms of screening and advised against the benefit of depression screening postnatally while recommending that clinicians 'be aware' of possible depression in their clients. It is notable that the two cluster RCTs (excluded by Thombs et al. 2014), examining depression screening as part of an 'enhanced' care programme, found improved clinical outcomes compared to CAU (see Table 11.3), using better more robust methodology. Yawn et al. (2012) in a US study found an adjusted odds ratio of 1.74 (95 % CI 1–2.86; $p < .01$) in favour of improved depression scores at 12 months in the intervention group. Morrell et al. (2009) in a UK study reported very similar findings. The Yawn et al. (2012) and Morrell et al. (2009) studies echo the positive effect sizes of depression screening and collaborative (enhanced) care RCTs undertaken in the general population (Gilbody et al. 2006). Chaudron and Wisner (2014) in their comment on the Thombs et al. (2014) review, caution against hasty discounting of depression screening on the basis of a narrow interpretation of the findings and lack of carefully balancing the risks and benefits of implementing screening in a 'real-life' clinical setting.

Evidence for the cost-effectiveness of routine depression screening followed by appropriate care is so far very limited and based on modelled data only. Paulden et al. (2009), comparing informal enquiry about depression by the health visitor nurse (CAU) to the use of an EPDS screen (using an EPDS cut-off of ≥ 16) and assuming that a woman scoring ≥ 16 would have an average of 15 clinical consults (compared to none if CAU), found the 'intervention' was not value for money. That is, the incremental cost-effectiveness ratio (ICER) of £41,000 was much greater than the UK *willingness to pay* threshold in terms of cases of depression averted (£20k–30k/QALY). Two key reasons for lack of cost-effectiveness in this study were the assumption that false positives (on EPDS) would still get referred for full

Table 11.3 Summary of RCTs examining the clinical effectiveness of screening programmes for PND

Study (recruit time)	Ns (% screen +)	'Screen +ve' definition	Intervention details	1 ^o outcomes	Results at 6–12 months
Morrell (2009) UK Cluster RCT (6 weeks p-p)	2277 vs. 1172 IV 404 (17.7 %) CAU 191 (16.3 %)	EPDS ≥12	Nurse home visits CBT Additional EPDS at 8 week	EPDS ≥ 12 at 6 months p-p	34 % (IV) vs. 46 % (CAU) are 'depressed' (EPDS) at 6 months and 12 months AOR 0.6 (95 % CI .38–.96; <i>p</i> = .028)
Yawn (2012) US Cluster RCT (5–12 weeks p-p)	1163 vs. 913 IV 399 (35 %) CAU 255 (35 %)	≥10 EPDS or PHQ-9 ≥ 10 ('depression')	GP training Nurse home visit Algorithm for managing screen +ve; case manage and medication (if functional impairment on PHQ-9)	PHQ-9 score ↓ by 5 or more points 6 and 12 months p-p	45 % (IV) vs. 35 % (CAU) are 'not depressed' (PHQ-9) at 12 months AOR 1.74 (95 % CIs 1.0–2.86; <i>p</i> < .01)
Leung (2011) Hong Kong RCT (2 months p-p)	231/group IV 73 (32 %) CAU 14 (6 %); *as per next column	≥10 EPDS, or Q10 +ve or *depressed on 'clinical impression'	Nurse counselling or psychiatry referral For both arms-only difference was IV group given EPDS	EPDS <10 at 6 months p-p	ES 0.34 (95 % CI .15–.52; <i>p</i> < .001)

Note: *p-p* post-partum, *RCT* randomised controlled trial, *IV* intervention, *CAU* care as usual, *EPDS* Edinburgh Postnatal Depression Scale, *PHQ* patient health questionnaire, *AOR* adjusted odds ratio, *ES* effect size, *Q10* +ve self-harm ideation on EPDS
 *Depressed on 'clinical impression'

treatment and that such an extensive range of treatment would be accessed in the primary care setting. Campbell et al. (2008), in a NZ modelling study, evaluated the cost-effectiveness of 'formal case identification' for postnatal depression using the PHQ-3 (in addition to the routine use of the EPDS in the CAU group). In contrast to Paulden et al. (2009), they found that this formal case identification approach was highly cost-effective for postnatal depression in NZ with an ICER of NZ\$3461/QALY well below their *willingness to pay* threshold (close to the Australian threshold of \$50,000/QALY) or the UK 20,000 lb/QALY. The limitations of this study were that costs were mostly/totally based on antidepressant medication and that GPs would always correctly diagnose women (without the cost of false positives).

Contradictory findings in not dissimilar studies highlight the fact that cost-effectiveness studies are predicated on the key assumptions underpinning their modelling. Ideally, we would have real-world cost-effectiveness studies done in perinatal populations that identify both direct (health related) and indirect (societal, i.e. offspring and workforce) costs. In terms of translation of these studies to the clinical setting, extant evidence has been variably interpreted. The SLR-based Australian CPGL clearly recommends all women to have *depression screening* (using the EPDS and in association with enquiry about mental health history), followed by formal MH assessment as indicated.

In contrast, on the basis of consensus expert opinion, NICE (2014) has recommend 'case identification' by means of routine 'enquiry' in relation to the woman's mental health history, past and current and family history. The use of screening tools is optional, i.e. the clinician may 'consider' the use of a depression and anxiety screener (for identification of a current episode). Though still somewhat ambiguous, there has been a shift in the revised 2014 guidelines which now suggest *universal* use of the brief two questions of Whooley (depression), and GAD-2 (anxiety) screeners could be followed by (*targeted*) the use of a second longer screening tool (e.g. the EPDS and GAD-7) but only if either the Whooley or GAD-2 is positive. The wording around such contingent use of two screeners has been kept deliberately ambiguous in the NICE guideline, given the lack of adequate evidence base for such an approach.

The influential US AHRQ systematic review (Myers et al. 2013) – while not overtly recommending against universal depression screening – implicitly does so by concluding that 'while currently available screening instruments are reasonably sensitive and specific in detecting postpartum depression, there is insufficient evidence to draw any conclusions about the net balance of benefits and harms of screening for postpartum depression, or about whether specific tools or strategies would result in a more favourable balance (Myers et al. 2013, p 65.)'.

In summary, while *universal* (or routine) depression screening has many compelling benefits, it remains contentious because of the substantial inherent limitations and risks of depression screeners, economic burden of comprehensive, integrated screening programmes and lack of clear evidence of cost benefit, i.e. the additional costs to the system sitting within an acceptable *willingness to pay band*. Furthermore, the ambiguities contained in the recent systematic review of the literature (Thombs et al. 2014), the NICE guideline (2014) and AHRQ report (Myers et al. 2013) leave

the primary care clinician with a major quandary: they are supposed to enquire about ‘signs’ of depression and make assessment of the ‘risk factors’ without having the tools to assist them in this task.

Psychosocial Assessment: The Road Less Travelled

It is critical that clinicians not separate mental health disorder from the psychosocial context in which it arises, and yet this has been the *modus operandi* when it comes to mental health screening in the primary care setting. This dichotomy is especially problematic in the perinatal context where psychosocial context and function take on greater prominence as women transition to the parenting role, which relies heavily on psychosocial context.

Increasing awareness of this dichotomy has led to strong advocacy from expert clinicians and researchers (Austin et al. 2011; Austin and Marcé Society Position Statement Advisory Committee 2014) for combining cross-sectional depression (or anxiety) screening with the contextual psychosocial assessment. While more challenging conceptually, there is a good rationale for considering universal psychosocial assessment as part of holistic perinatal care in the primary care setting (rather than such an approach only being used in the mental health sector). Combining physical and emotional health assessment within the mainstream primary care context can also contribute to the de-stigmatisation of mental health care for women and families. The Marcé International Position Statement¹ (Austin and Marcé Society Position Statement Advisory Committee 2014) using expert clinical opinion argued strongly in favour of universal psychosocial assessment on the following grounds:

- (a) ‘*Opening up the conversation* about psychosocial issues that can be addressed by non-mental health trained care providers.’ Indeed, enquiry about emotional distress in the primary care setting is associated with higher patient satisfaction (Gross et al. 2007).
- (b) ‘*Raising awareness and educating* pregnant and postnatal women, their carers and clinicians about the fact that mental health and social concerns often arise, or become more accentuated at this time; that they will impact on the woman and her offspring; and that there is thus a more urgent need for identification and care.’ (Kingston et al. 2014b).

Fundamental differences in approach across the UK and Australian Clinical Practice Guidelines have contributed to the debate in the perinatal setting. These have centred on the conceptualisation of and value ascribed to psychosocial assessment per se (as opposed to depression case identification) and, more recently as the debate has progressed (NICE 2014), the appropriateness of such enquiry in

¹Marcé International Society (2013) Position statement on psychosocial assessment and depression screening in perinatal women <http://marcesociety.com/>.

some versus all women. Encouragingly in their recent update, NICE guidelines introduced new (consensus based) recommendations for enquiry about a number of key psychosocial risk factors (see section 9, pp 833–857; NICE 2014), although they did not term it ‘psychosocial assessment’. However, NICE only advocated such enquiry in ‘case positive’ women (i.e. targeted psychosocial assessment in those with likely depression or broader mental health disorder, i.e. ~10 %); and there was some ambiguity as to who would undertake such psychosocial risk enquiry (mental health vs. the primary sector).

Psychosocial Assessment Tools: Methodology

Going beyond the clear philosophical (and definitional) differences found in the literature in relation to psychosocial assessment, there is a need to consider the various approaches to such assessment. A key methodological issue both for depression screening and psychosocial assessment is the choice between informal clinician enquiry (very reliant on clinician training and skill) and a structured tool. While a structured tool which is easy to administer and has simple referral rules may be an advantage in less resourced settings or where staff knowledge, skills and attitude are variable or limited, the advantages of informal clinician enquiry may be in the quality of engagement with the client. There is a strong argument for combining the two methods in that standardised screen improves case detection (Carroll et al. 2005; Mitchell and Coyne 2009), while follow-up discussion and debriefing regarding the women’s responses and care options impact treatment uptake (Kingston et al. 2015b, in press, Reilly et al. 2014). For example, ideally the clinician begins with open-ended enquiry as part of the holistic perinatal assessment and transitions to a structured questionnaire to assist with decision-making and record-keeping. This is followed by the feedback to the woman and other clinicians about the meaning of the findings and further referral as needed (and consented to). Either way, it is essential for primary care clinicians to have adequate training and ongoing support from mental health and for assessment to be integrated with a structured referral and enhanced care setting (Mitchell et al. 2011). Where structured tools are used, critical factors include tool acceptability (to clinician and patient) and brevity, especially where repeat administration is desirable, timing of assessment(s) in the clinical interview and mode of administration (paper, electronic, self-administered with clinician present or clinician administered).

The literature shows that a number of structured psychosocial assessment tools with good face validity (Johnson et al. 2012) are acceptable across antenatal (Austin et al. 2005; Austin et al. 2013b; Matthey et al. 2005; Priest and Barnett 2008); and postnatal (Christl et al. 2015, in press; Reilly et al. 2015; in press, Zekowitz et al. 2014) settings, to both women and their care providers (Austin et al. 2013b). They are acceptable in both Australian and Canadian settings (Midmer et al. 2004; Kingston et al. 2015b, in press; Zekowitz et al. 2014) and in women of NESB (Matthey et al. 2005) and equally acceptable whether self or clinician administered (Austin et al. 2013b; Midmer et al. 2004), though there seems to be a preference by

women for self-administered compared to clinician-administered (Kingston et al. 2015b, in press) assessment. Of interest, a current survey has found that women's self-reported ability to disclose their mental health concerns was greater using a computer tablet compared with a paper-based version of the EPDS and ALPHA (Kingston et al. 2015b, unpublished data). The best described tools are reviewed below.

The Australian Antenatal Risk Questionnaire (ANRQ; Austin et al. 2005, 2013b) – an 11-item tool that includes the broad history of emotional neglect in childhood or any form of abuse – perceived the impact of recent stressors, trait anxiety or perfectionism, recent domestic violence or substance misuse, quality of partner relationship and supports and children in care. Items consist of 'yes/no' and Likert scale answers (scored 1–5). This simple scoring system alerts the clinician to level of risk, with higher scores and specific weighted items (significant mental health or abuse history) associated with greater risk particular profiles with tailored referral pathways (dependent on local resources). A preliminary psychometric evaluation of the ANRQ (Austin et al. 2005) in 1196 women surveyed in the third trimester found that a cut-off of 23 or above was associated with an odds ratio of 6:3 for a diagnosis of major depression or an anxiety disorder on the CIDI approximately 6 months later (i.e. between 2 and 4 months post-partum). While this tool is not a proxy for a depression screener, it performed better than the EPDS (using a cut-off of 13 or more) in a study comparing the ANRQ precursor (the Pregnancy Risk Questionnaire; PRQ) and EPDS in terms of their predictive value for PND (Austin et al. 2005), i.e. the area under the curve for the PRQ was 0.79 versus 0.66 for the EPDS, when considering the above parameters. The value of the ANRQ is to both characterise the woman's psychosocial context at the time of antenatal assessment and alert clinicians to those women at greater risk of subsequent depression so that they may be monitored more closely for emergence of such symptoms.

The Canadian Antenatal Psychosocial Health Assessment (ALPHA; Carroll et al. 2005) is a 35-item tool which collates key risk factors (family violence, partner relationship, mental health history, past abuse, stressors and supports) and in which the clinician records their concerns as 'low, medium or high'. No scoring or referral rules are given as it is seen as an adjunct to the clinical interview. Carroll et al. (2005) demonstrated in an RCT that clinicians using the ALPHA had a 4.8 increased odds ratio of detecting major psychosocial risk than those not using the tool.

The Risk Factor Assessment (RFA; Vythilingum et al. 2013) was used in conjunction with the EPDS in a resource-constrained setting in South Africa. This tool has 11 'yes/no' items and scored 1 for positive risk and 0 for no risk, with a maximum score of 11. On the basis of a small naturalistic study, a combination of three or more RFA items and a score of 13 or more on the EPDS was best at discriminating between women needing counselling only and those who with a *DSM-IV-TR* (American Psychiatric Association [APA], 2000) diagnosis of major depression or anxiety disorder (at psychiatric interview) and who would also require a psychiatric assessment. Specifically, RFA items (a) past psychiatric history, (b) not being pleased with the pregnancy plus endorsement of EPDS question eight (been sad and miserable in the past week) yielded the best area under the curve of 0.75 when

logistic regression and ROC analysis were undertaken. Screening staff has indicated the usefulness of combined psychosocial risk assessment and depression symptoms, and it has been noted that such an approach enables an engagement with the women that may facilitate their uptake of referrals (Honikman S and van Heyningen T, February 18, 2015, personal communication). The use of these tools can be either clinician administered (in the presence of the clinician to provide feedback and discuss results) or by self-report. The ANRQ, ALPHA and RFA all recommend joint use with a depression screener, and both the ANRQ and RFA devise their referral rules based on a combination of the two tools.

General Principles of Psychosocial Assessment and Depression Screening

Underpinning any depression screening and psychosocial assessment programme is a comprehensive framework of policies, guidelines and training programmes. Policies and training programmes which are developed at a local level are informed by evidence-based clinical practice guidelines which have now been developed at a national level, both in the UK and Australia. Many of the recommendations, in relation to the screening and assessment aspects of psychosocial care, concur across NICE and Australian Guidelines. These have also been outlined in the Marcé Position Statement (Austin and Marcé Society Position Statement Advisory Committee 2014) and can be summarised as follows:

1. Universal enquiry (or ‘screening’ if using a screening tool) about current depression and significant past mental health history should be done at least at ‘booking in’ (first antenatal visit) and again early post-partum and repeated at any time in the perinatal period as needed.
2. Broader psychosocial assessment – including enquiry about past mental health history, domestic violence, childhood abuse and trauma and substance misuse – should also be undertaken in all women at their first clinic visit. Note that here the authors have gone with the recommendation made in the Australian Guidelines (Austin and Hight 2011) and acknowledge that NICE would only recommend such assessment if the woman is screening positive for current depression (i.e. it would only be undertaken in about 10 % of women vs. all women), as per Marcé Position Statement (2014) and the Australian Guidelines (Austin and Hight 2011).
3. Such universal enquiry/screening would be undertaken by primary care clinicians who need to be well supported by the mental health sector.
4. A minimum set of professional competencies is required for those undertaking screening and psychosocial assessment in the primary sector.
5. Universal depression screening and psychosocial assessment should not be a stand-alone activity but fully integrated with further care pathways (including referral for formal mental health assessment as needed).
6. Irrespective of the woman’s results on depression screening and psychosocial assessment, she may still be referred for mental health assessment if the clinician has concerns. That is, while routine assessment including the use of struc-

tured tools will standardise such activity, this is embedded in the broader clinical interview – in which the clinician actively engages the woman and uses their clinical judgement to override screener results (should these be negative for risk) as needed.

7. A clear set of protocols for referral across services need to be established.
8. A stepped care (aka managed network) model is recommended: i.e. with screening and milder cases managed in the primary sector and gradual intensification of care across secondary and tertiary care levels for more severe or complex cases.
9. Access to specialist perinatal psychiatry services is ideal as part of this stepped care model.
10. Interdisciplinary communication is essential.
11. Consideration of the impact of maternal mental health on the parenting role and infant attachment – including identification of risk of harm to infant – and problematic mother-infant interaction is essential.

Implementing Universal Integrated Psychosocial Assessment and Care in a Real-World Setting

Since the Australian National Perinatal Depression Initiative (NPDI; Department of Health and Ageing, 2010) and the Clinical Practice Guidelines (Austin and Highet 2011), *integrated psychosocial assessment and enhanced care models* have been implemented to various degrees in the Australian primary care setting, both antenatally (Fisher et al. 2012) and postnatally (Reilly et al. 2013a). Thus, in 2008–2010, depression screening using the EPDS was occurring in 65–80 % of maternity settings (Fisher et al. 2012; Reilly et al. 2013a) and 75 % of postnatal settings (Reilly et al. 2013a), while enquiry about past history was occurring in both antenatal (Fisher et al. 2012) and postnatal settings in between 40 and 50 % of women in addition to the EPDS (Reilly et al. 2013a). In women reporting significant history of depression or anxiety, such assessment has been shown to be associated with increased rates of appropriate (and not inflated) referral for psychosocial care (Reilly et al. 2013a). This integrated approach is yet to be evaluated in terms of cost and benefit both clinical and to the health-care system. Work is now underway to evaluate one particular such model both in Australia and Canada.

Below is a detailed overview of an antenatal psychosocial assessment and enhanced care model used at a Sydney tertiary maternity (3500–4000 births/annum) hospital since the year 2000. Components can be broken down as follows:

- All women are assessed by their midwife for psychosocial risk as part of their first antenatal clinic visit.
- The integrated psychosocial risk assessment begins with the midwife engaging the woman and enquiring about her general physical and emotional wellbeing in pregnancy and explaining the importance of psychosocial assessment as part of holistic care.

- She then goes on to administer the structured psychosocial tool (see [Appendix A](#)), as well as mandated questions around domestic violence and substance misuse, and finally the EPDS.
- Questionnaire results are entered by the midwife into the maternity database (along with other pregnancy information).
- The database produces a psychosocial report outlining the woman's key psychosocial risk factors, her EPDS total score and answer to Q10.
- The midwife then discusses the results with the woman (including documenting details of Q10) and raises any relevant referral options available within the hospital (i.e. social work, mental health nurse, substance use service or psychiatry).
- With her consent, the midwife flags the woman with the perinatal mental health nurse (or social worker as appropriate), who upon review of the detailed psychosocial report decides whether the woman has more complex needs, and thus additionally warrants discussion at the weekly multidisciplinary intake meeting (attended by a senior clinic midwife, social worker, the perinatal mental health nurse and psychiatrist).
- A more detailed care plan is drawn up for complex cases outlining details of care around delivery, postnatal plan and agencies involved. This is revised as needed.
- The psychosocial section of the electronic database and hard copy reports act as a conduit for liaison between clinical providers, as do the key psychosocial team meetings which also act as feedback loops to referrers and other colleagues involved in the woman's care.
- Post-partum, the psychosocial report is forwarded to the woman's postnatal care providers.

A survey of this programme was undertaken in 2004 (Priest et al. 2008) with 2142 responders, about half of who were primiparous, 94 % partnered and the majority well educated (about half had 11–15 years education and ~40 % had completed a tertiary degree). In terms of their questionnaire scores, 8.8 % scored 13 or more on the EPDS (3.6 % of all women endorsed Q10), about 70 % scored below the ANRQ cut-off of 23 (i.e. no significant psychosocial risk – see above section for details), about 25 % had an ANRQ score above 23 (i.e. significant psychosocial risk) and 7–10 % were complex or severe mental health cases – i.e. had a score 13 or more on EPDS or self-harm and a high score (34 or more) on the ANRQ psychosocial questionnaire, including endorsement of a history of abuse and/or major mental health history.

About 30 % of all antenatal women needed some form of consideration of their psychosocial circumstances, with referral pathways as follows: mild cases were referred to antenatal CBT and psychoeducational groups or for further monitoring by their midwife as needed (e.g. repeat EPDS); more symptomatic women or those with significant mental health histories were referred to the perinatal mental health (PNMH) nurse for initial assessment and then from there referred to a psychologist or the psychiatry clinic as needed; while those in need of social support, bereavement or relationship counselling or history of abuse were referred to social work. Finally, those with multiple, complex psychosocial and or mental health needs (i.e. domestic violence, homelessness, young and single, substance misuse, children in

care, personality disorder, severe psychiatric disorder or suicidal ideation), i.e. up to 10 % of all women, were discussed at the weekly multidisciplinary team meeting. Further discussion with child protection services and multidisciplinary case meetings were instigated as needed. Irrespective of questionnaire results, midwives would still flag women about whom they had clinical concerns, i.e. women could report no concerns and still be discussed with the PNMH nurse.

To enable this integrated psychosocial programme to run in a maternity setting, the minimum resources required are a mental health nurse and a psychiatrist. The nurse to coordinate the programme, provide clinical assessments, liaise with post-natal and other key agencies, as well as train and support midwives undertaking the psychosocial assessment. In addition, the psychiatrist renders at least 1.5 days per week to lead the maternity hospital psychiatry service, provide staff supervision, patient clinics and ward consultations.

Future Research Directions: The Need for 'Real-Life', i.e. Clinical Effectiveness Trials

As outlined in the NICE (2014) guideline, there is a need to develop an evidence base on the use of depression and anxiety screeners, including in particular the Whooley questions and the EPDS and GAD-2. The Australian Guidelines recommend development of comprehensive psychosocial risk assessment tools and of integrated screening and care models with evaluation of effectiveness of these tools and care models and a focus on design and methodology that is appropriate to the primary care sector, in particular, the need to optimise study numbers (e.g. use of administrative datasets), optimise translation of findings to policy and practice, assess routine care in 'real-world' settings, use pragmatic and cluster RCTs and conduct observational studies with pre-/post methodology and parallel cohorts. Engagement of key stakeholders (clinicians, patients and health services) in the development of methodologies needs to be done from the outset. Linking of studies across international settings to allow for meta-analysis is critical and is the identification – and where possible approaches to the reduction – of system and personal barriers to patient honesty around mental health enquiry and uptake of services. Such consumer-targeted work is underway in Canada (Kingston et al. 2014b) and will in turn inform better trial methodology.

The Australian Guidelines (Austin and Highet 2011) also recommend studies that examine the persistence of particular risk factors in terms of maternal and infant outcomes postnatally. This includes mapping care pathways in particular care settings to ascertain system efficiencies, and cost-effectiveness studies outlining not only direct (health care) but also indirect (productivity, offspring outcome) costs. Such work is now underway (Giallo et al. 2015; Howard L, March 2015, personal communication; Kingston et al. 2014a; Kingston et al. 2015b; in press). Of particular interest is the Giallo et al. (2015) study, demonstrating that even subclinical depression symptoms will persist across pregnancy to 4 years postnatal and be associated with a twofold increase in childhood emotional and behavioural problems.

Additional work needs to be done in under-resourced settings to assist ease of use of screening or psychosocial assessment tools by clinician. Thus, the three questions of Whooley is being further developed in South Africa (Vythilingum et al. 2013), while in Australia and Canada, (Kingston et al. 2014a; Kingston et al. 2015a) testing is underway on electronic algorithms for defining psychosocial risk level for the ANRQ, with simple referral rules adaptable to a number of maternity and post-natal settings. An electronic screening of clinical decision support system has already proven effective in the improved detection of PND in the paediatric setting (Carroll et al. 2013).

Of relevance to the debate is the growing evidence that low-intensity psychological interventions, including internet-based programmes (Griffiths et al. 2010; Kingston et al. 2014a; Kingston et al. 2015a; Milgrom and Gemmill 2014), social support and peer support (Dennis 2006; Dennis and Hodnett 2007; Dennis et al. 2009) are effective in the management of milder mood or adjustment disorders. Such interventions may be successful at engaging women who prefer to use self-help approaches for managing their mood disorders than professional services and who would otherwise not uptake treatment (Reay et al. 2011; Woolhouse et al. 2009). In addition, low-intensity psychological interventions may circumvent the perceived increased workload for the health-care sector as a whole.

Conclusions

The key dilemmas around perinatal assessment and screening are now better defined but need ongoing consideration from a number of fronts:

1. For *researchers*: We would argue the case for applying more appropriate, less stringent methodologies for generating an acceptable degree of evidence in a clinical effectiveness setting, i.e. level III (1–3) approaches (non-RCT trials), including level III-1, cluster or alternate randomisation; level III-2 (e.g. cohort study) with concurrent nonrandomised controls and level III-3, studies without concurrent randomised controls, e.g. use of a historical control or interrupted time series (pre-/post trials). In addition, firstly, study methodologies need to ensure they target evaluation of *integrated screening programmes* – i.e. case identification linked with structured care pathways that link primary to secondary care levels as needed – rather than stand-alone case identification. Secondly, they need to very carefully define their care as usual condition such that it does not include any form of systematic screening or referral pathways (i.e. women are managed in the usual way in the primary care setting). Finally, systematic reviews need to consider evidence grades that are less than excellent or good (A or B) and instead consider level C (satisfactory) evidence as adequate as long as the level III evidence considered has a low risk of bias; there is reasonable consistency across studies; a moderate clinical impact is detected; and results may be reasonably applied and generalised to the relevant population.
2. For *clinicians*: The central dilemma remains that while some key documents (Austin et al. 2013b; NICE 2014) recommend against routine screening, they

simultaneously urge clinicians to be alert to and enquire about depression and other mental health conditions. Clinicians are therefore expected to function as de facto screening tools, without any clear guidance on how to implement such activity (Gemmill 2014). Given that (1) adequate evidence will take a long time to emerge, (2) primary care clinician expertise and attitude are variable and (3) the morbidity for mother, infant and family is so substantial, there is an argument for recommending routine structured screening and assessment as has been done in the Australian Clinical Practice Guidelines (Austin et al. 2013a) and Marcé International Position Statement (Austin and Marcé Society Position Statement Advisory Committee 2014).

3. For *policymakers*: When weighing up the costs and benefits, policymakers will want to consider universal versus targeted approaches, method of assessment – e.g. structured versus unstructured and use of screening systems embedded within electronic medical records – primary care clinician training and support and identification of clear, defined, accessible and acceptable care pathways within existing services. Each setting will require different approaches to these parameters, dependent on resources and organisational structures.
4. For *consumers and carers*, i.e. women, their families and clinicians: Some of the key obstacles to uptake of care – i.e. stigma (Kingston et al. 2015b, in press), inappropriate reliance on family for advice about mental health issues (Kingston et al. 2015b, in press, Reilly et al. 2014) and clinician reluctance to explore mental health matters (Kingston et al. 2015b, in press) – will require ongoing awareness and educational campaigns, i.e. a primary preventative approach will be critical in this area (Kingston et al. 2014a).

Appendix A: The Antenatal Risk Questionnaire (ANRQ)

ANTENATAL RISK QUESTIONNAIRE (ANRQ) –CLINICIAN INFO & SCORING

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Background: The ANRQ covers key psychosocial risk factors associated with increased risk of perinatal mental health morbidity (e.g., depressive or anxiety disorder) and sub-optimal parenting and mother-infant interaction.

It can be **self or clinician administered** in **Pregnancy and Postnatally***. The ANRQ has 12 scored items covering:

- Past significant mental health history
- Past history of physical, sexual or emotional abuse/neglect
- Current level of supports
- support from partner
- Anxiety and perfectionism levels
- Stressors/losses in the last year (eg. bereavement, separation etc.).

*In **POSTNATAL** women can use **3 optional unscored Qs** (*delivery, experience of parenting, baby settledness*).

1. Rules for Clinical Use of the ANRQ

It is essential that the following rules be adhered to when administering the ANRQ

- The ANRQ is only intended as an **adjunct to clinical history** taking ; it does not replace good clinical practice.
- The ANRQ should only be used by appropriately **trained** staff with ongoing clinical supervision;
- Administer toward **end of visit** then review with woman to feedback and discuss a care plan as needed.
- We recommend you also administer **depression screener** (eg. EPDS) to assess for *possible current depression*.
- **Cut-off scores** are an aid to identifying women at increased psychosocial risk but *not a substitute for clinical judgement* ie. even if woman not endorsing any risk factors, if she's clinically distressed, must be explored.

2. Scoring the ANRQ

- **Higher the score more psychosocial risk**; total score range: 5 - 60. Each question scores a maximum of 5.

- **Yes/No questions** (Q 2, 2b, 4, 8, 9): Score: No = 0; Yes = 5.

Note 1: SKIP Qs: Qs 2 & 4: If answer is "No": don't score 2a or 2b (SKIP to Q2c); or 4a (SKIP to Q5).

Note 2:- Q2c is *not* scored

- **Likert-scale questions** (Q 1, 2a, 3, 4a, 5, 6, 7): Score the number circled; (score from 1-5, left to right)

- Place each of the **12 scores** in **right hand score box**

- Place the sum of the scores in the **box at the top of the questionnaire**

- **Cut-Off scores:** There is *no absolute cut-off score*. We now* recommend ANRQ cut-off score of **28 or more**, to maximise specificity (i.e., minimise 'false positives').

*NB previously, a score of 23 or more (cut-off at which sensitivity and specificity are approximately equal but low ~ 0.60).

Ref: Austin et al (2013). The Antenatal Risk Questionnaire (ANRQ): Acceptability and use for psychosocial risk assessment in the maternity setting. *Women & Birth*, 26, 17-25.

**IMPORTANT EXCEPTION - 'AT RISK' WOMEN WHO DON'T MAKE ANRQ 'CUTOFF'

Questions with a "YES" response on any or all of the following:

- Q2 –has a history of depression

AND it caused either *significant* functional impairment (Q2a scores ≥ 4)

or sought professional help (Q2b)

OR

• Q2c – has a history of other mental health problems or]

• Q8 – relating to emotional abuse or]

• Q9 – relating to physical or sexual abuse

ie. a significant past psychiatric or abuse history puts the woman at increased risk of poor psychosocial outcome *irrespective of the total ANRQ score*

3. ANRQ results interpretation & Care Planning:

- Women scoring **28 or more** **OR**
- **With a significant past psychiatric or abuse history** (*irrespective of the total ANRQ score*) – see box above**. are at increased risk of poor psychosocial or Mental Health (MH) outcome.
- They should be discussed with the appropriate MH trained clinician.

ANTENATAL RISK QUESTIONNAIRE (ANRQ) –CLINICIAN INFO & SCORING

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Brief Scoring Instructions & Interpretation of Results:

- Place *each score* in far right hand box. Sum all scores and place the total in bolded 'Total' box at top (scores 5- 60)
 - *higher scores indicate greater psychosocial risk going from left to right*
 - Women at **increased psychosocial & mental health risk: score of ≥ 28** ; **OR** endorse past psychiatric or abuse history (*below)
- *"Yes" to: Q2, **and either** score ≥ 4 on Q2a, or Yes to 2b; **OR** "Yes" to Q2c (Past Hx); **OR** "Yes" to Q8 or Q9 (abuse Qs) *regardless of total score.*

Instructions for women identified as "at increased risk" (as per above):

- Explore specific questions further as needed;
- Take ANRQ & *EPDS results to the psychosocial clinical meeting to establish a care plan as appropriate.
- Enter the scores into Psychosocial Care Plan (separate form)

Total (5-60)

*NB- The ANRQ should be completed with a depression screener (EPDS) to assess for current depressive symptoms.

<p>1 When you were growing up, did you feel your mother was emotionally supportive of you?</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; font-size: small;">Very much 1</td> <td style="text-align: center; font-size: small;">Quite a lot 2</td> <td style="text-align: center; font-size: small;">Somewhat 3</td> <td style="text-align: center; font-size: small;">A little 4</td> <td style="text-align: center; font-size: small;">Not at all 5 <small>No mother</small></td> <td style="width: 30px; text-align: center; vertical-align: middle;"><input type="text"/></td> </tr> </table>	Very much 1	Quite a lot 2	Somewhat 3	A little 4	Not at all 5 <small>No mother</small>	<input type="text"/>																																											
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<p>2 Have you ever had a period of 2 weeks or more when you felt particularly worried, miserable or depressed? If Yes, did this:</p> <p>a) Seriously interfere with your work and your relationships with friends and family?</p> <p>b) Lead you to seek professional help?</p> <p style="font-size: small;">Did you see a: psychiatrist <input type="checkbox"/> psychologist/counsellor <input type="checkbox"/> GP <input type="checkbox"/> Did you take tablets/herbal medicine? No <input type="checkbox"/> Yes <input type="checkbox"/></p> <p>c) Do you have <u>any other history of mental health problems?</u> e.g. eating disorders, psychosis, bipolar, schizophrenia No <input type="checkbox"/> Yes <input type="checkbox"/></p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; font-size: small;">No 0</td> <td style="text-align: center; font-size: small;">Yes 5</td> <td colspan="4"></td> <td style="width: 30px; text-align: center; vertical-align: middle;"><input type="text"/></td> </tr> <tr> <td colspan="7" style="text-align: center; font-size: small;">If No, SKIP 2a&b to Q2c</td> </tr> <tr> <td style="text-align: center; font-size: small;">Not at all 1</td> <td style="text-align: center; font-size: small;">A little 2</td> <td style="text-align: center; font-size: small;">Somewhat 3</td> <td style="text-align: center; font-size: small;">Quite a lot 4</td> <td style="text-align: center; font-size: small;">Very much 5</td> <td colspan="2" style="text-align: center; vertical-align: middle;"><input type="text"/></td> </tr> <tr> <td style="text-align: center; font-size: small;">No 0</td> <td style="text-align: center; font-size: small;">Yes 5</td> <td colspan="4"></td> <td style="width: 30px; text-align: center; vertical-align: middle;"><input type="text"/></td> </tr> <tr> <td colspan="7" style="font-size: small;">→ Name of professional: _____</td> </tr> <tr> <td colspan="7" style="font-size: small;">→ Specify medication: _____</td> </tr> <tr> <td colspan="7" style="font-size: small;">If yes, please list: _____</td> </tr> </table>	No 0	Yes 5					<input type="text"/>	If No, SKIP 2a&b to Q2c							Not at all 1	A little 2	Somewhat 3	Quite a lot 4	Very much 5	<input type="text"/>		No 0	Yes 5					<input type="text"/>	→ Name of professional: _____							→ Specify medication: _____							If yes, please list: _____						
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<p>4 Have you had any stresses, changes or losses in the last 12 months? <i>(eg only: separation, domestic violence, job loss, bereavement etc.)</i> If Yes:</p> <p>a) How distressed were you by these stresses, changes or losses?</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; font-size: small;">No 0</td> <td style="text-align: center; font-size: small;">Yes 5</td> <td colspan="4"></td> <td style="width: 30px; text-align: center; vertical-align: middle;"><input type="text"/></td> </tr> <tr> <td colspan="7" style="text-align: center; font-size: small;">If No, SKIP to Q5</td> </tr> <tr> <td colspan="7" style="font-size: small;">If yes, please list: _____</td> </tr> <tr> <td style="text-align: center; font-size: small;">Not at all 1</td> <td style="text-align: center; font-size: small;">A little 2</td> <td style="text-align: center; font-size: small;">Somewhat 3</td> <td style="text-align: center; font-size: small;">Quite a lot 4</td> <td style="text-align: center; font-size: small;">Very much 5</td> <td colspan="2" style="text-align: center; vertical-align: middle;"><input type="text"/></td> </tr> </table>	No 0	Yes 5					<input type="text"/>	If No, SKIP to Q5							If yes, please list: _____							Not at all 1	A little 2	Somewhat 3	Quite a lot 4	Very much 5	<input type="text"/>																						
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<p>5 Would you generally consider yourself a worrier?</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; font-size: small;">Not at all 1</td> <td style="text-align: center; font-size: small;">A little 2</td> <td style="text-align: center; font-size: small;">Somewhat 3</td> <td style="text-align: center; font-size: small;">Quite a lot 4</td> <td style="text-align: center; font-size: small;">Very much 5</td> <td style="width: 30px; text-align: center; vertical-align: middle;"><input type="text"/></td> </tr> </table>	Not at all 1	A little 2	Somewhat 3	Quite a lot 4	Very much 5	<input type="text"/>																																											
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<p>7 Do you feel you will have people you can depend on for support with your baby?</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; font-size: small;">Very much 1</td> <td style="text-align: center; font-size: small;">Quite a lot 2</td> <td style="text-align: center; font-size: small;">Somewhat 3</td> <td style="text-align: center; font-size: small;">A little 4</td> <td style="text-align: center; font-size: small;">Not at all 5</td> <td style="width: 30px; text-align: center; vertical-align: middle;"><input type="text"/></td> </tr> </table>	Very much 1	Quite a lot 2	Somewhat 3	A little 4	Not at all 5	<input type="text"/>																																											
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<p>9 Have you ever been sexually <input type="checkbox"/> or physically <input type="checkbox"/> abused?</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; font-size: small;">No 0</td> <td style="text-align: center; font-size: small;">Yes 5</td> <td colspan="4"></td> <td style="width: 30px; text-align: center; vertical-align: middle;"><input type="text"/></td> </tr> </table>	No 0	Yes 5					<input type="text"/>																																										
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For POSTNATAL women you may want to use *additional Qs (NOT scored)*.

- Was your experience of giving birth to this baby disappointing or frightening?
- Has your experience of parenting this baby been a positive one?
- Overall has your baby been unsettled or feeding poorly?

ANTENATAL RISK QUESTIONNAIRE –CLIENT

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The questions below are designed to help you and your clinician understand whether you may benefit from some extra support during this time of change. There are no right or wrong answers.

Please **tick** the response that most closely describes your situation; fill in ALL questions unless instructed to SKIP a question.

This is confidential information and will be kept in your file.

Once you have filled it in, your clinician will discuss the questions with you. If you have any concerns about any of the questions, please let your clinician know.

Total
(5-60)

<p>1 When you were growing up, did you feel your mother was emotionally supportive of you?</p>	<p>Very much <input type="checkbox"/> Quite a lot <input type="checkbox"/> Somewhat <input type="checkbox"/> A little <input type="checkbox"/> Not at all <input type="checkbox"/></p> <p style="text-align: right; font-size: small;">No mother <input type="checkbox"/></p>
<p>2 Have you ever had a period of 2 weeks or more when you felt particularly worried, miserable or depressed?</p> <p>If Yes, did this:</p> <p>a) Seriously interfere with your work and your relationships with friends and family?</p> <p>b) Lead you to seek professional help?</p> <p>Did you see a: psychiatrist <input type="checkbox"/> psychologist/counsellor <input type="checkbox"/> GP <input type="checkbox"/> Did you take tablets/herbal medicine? No <input type="checkbox"/> Yes <input type="checkbox"/></p> <p>c) Do you have any other history of mental health problems? e.g. eating disorders, psychosis, bipolar, schizophrenia No <input type="checkbox"/> Yes <input type="checkbox"/></p>	<p>No <input type="checkbox"/> Yes <input type="checkbox"/></p> <p style="text-align: center; font-size: small;">If No SKIP to Q2c</p> <p>Not at all <input type="checkbox"/> A little <input type="checkbox"/> Somewhat <input type="checkbox"/> Quite a lot <input type="checkbox"/> Very much <input type="checkbox"/></p> <p>No <input type="checkbox"/> Yes <input type="checkbox"/></p> <p>→ Name of professional: _____ → if, yes, list medication(s): _____</p> <p>If yes, please list: _____</p>
<p>3 Is your relationship with your partner an emotionally supportive one?</p>	<p>Very much <input type="checkbox"/> Quite a lot <input type="checkbox"/> Somewhat <input type="checkbox"/> A little <input type="checkbox"/> Not at all <input type="checkbox"/></p> <p style="text-align: right; font-size: small;">No partner <input type="checkbox"/></p>
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<p>5 Would you generally consider yourself a worrier?</p>	<p>Not at all <input type="checkbox"/> A little <input type="checkbox"/> Somewhat <input type="checkbox"/> Quite a lot <input type="checkbox"/> Very much <input type="checkbox"/></p>
<p>6 In general, do you become upset if you do not have order in your life? (eg. regular timetable, tidy house)</p>	<p>Not at all <input type="checkbox"/> A little <input type="checkbox"/> Somewhat <input type="checkbox"/> Quite a lot <input type="checkbox"/> Very much <input type="checkbox"/></p>
<p>7 Do you feel you will have people you can depend on for support with your baby?</p>	<p>Very much <input type="checkbox"/> Quite a lot <input type="checkbox"/> Somewhat <input type="checkbox"/> A little <input type="checkbox"/> Not at all <input type="checkbox"/></p>
<p>8 Were you emotionally abused when you were growing up?</p>	<p>No <input type="checkbox"/> Yes <input type="checkbox"/></p>
<p>9 Have you ever been sexually <input type="checkbox"/> or physically <input type="checkbox"/> abused?</p>	<p>No <input type="checkbox"/> Yes <input type="checkbox"/></p>

Have you had any other concerns that you want to talk about today? _____

References

- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th edn, (text rev.), Washington, DC, American Psychiatric Association
- Austin M-P (2004) Antenatal screening and early intervention for 'perinatal' distress, depression and anxiety: where to from here? *Arch Womens Ment Health* 7:1–6
- Austin M-P, Hadzi-Pavlovic D, Priest SR et al (2010) Depressive and anxiety disorders in the postpartum period: how prevalent are they and can we improve their detection? *Arch Womens Ment Health* 13:395–401
- Austin M-P, Hadzi-Pavlovic D, Saint K et al (2005) Antenatal screening for the prediction of postnatal depression: validation of a psychosocial Pregnancy Risk Questionnaire. *Acta Psychiatr Scand* 112:310–317
- Austin M-P, Hight N and the Guidelines Expert Advisory Committee (2011) Clinical practice guidelines for depression and related disorders – anxiety, bipolar disorder and puerperal psychosis – in the perinatal period. A guideline for primary care health professionals. beyondblue: the national depression initiative, Melbourne
- Austin M-P, Marcé Society Position Statement Advisory Committee (2014) Marcé International Society position statement on psychosocial assessment and depression screening in perinatal women. *Best Pract Res Clin Obstet Gynaecol* 28:179–187
- Austin M-P, Middleton P, Reilly NM et al (2013a) Detection and management of mood disorders in the maternity setting: the Australian Clinical Practice Guidelines. *Women Birth J Aust Coll Midwives* 26:2–9
- Austin M-P, Colton J, Priest S et al (2013b) The antenatal risk questionnaire (ANRQ): acceptability and use for psychosocial risk assessment in the maternity setting. *Women Birth* 26:17–25
- Bales M, Pambrun E, Melchior M et al (2015) Prenatal psychological distress and access to mental health care in the ELFE cohort. *Eur Psychiatry* 30:322–328
- Bauer A, Pawlby S, Plant DT et al (2015) Perinatal depression and child development: exploring the economic consequences from a South London cohort. *Psychol Med* 45:51–61
- Beckwith L, Howard J, Espinosa M et al (1999) Psychopathology, mother-child interaction, and infant development: substance-abusing mothers and their offspring. *Dev Psychopathol* 11:715–725
- Bowen A, Bowen R, Butt P et al (2012) Patterns of depression and treatment in pregnant and postpartum women. *Can J Psychiatry* 57:161–167
- Buist A, Condon J, Brooks J et al (2006) Acceptability of routine screening for perinatal depression. *J Affect Disord* 93:233–237
- Byatt N, Simas TAM, Lundquist RS et al (2012) Strategies for improving perinatal depression treatment in North American outpatient obstetric settings. *J Psychosom Obstet Gynecol* 33:143–161
- Campbell S, Norris S, Standfield L et al (2008) Screening for postnatal depression within the Well Child Tamariki Ora Framework. HSAC Report 2(1) University of Canterbury, Christchurch
- Canadian Task Force on Preventive Health Care; Joffres M, Jaramillo A, Dickinson J et al (2013) Recommendations on screening for depression in adults. *CMAJ Can Med Assoc J* 185:775–782
- Cao-Lei L, Massart R, Suderman MJ et al (2014) DNA methylation signatures triggered by prenatal maternal stress exposure to a natural disaster: Project Ice Storm. *PLoS One* 9, e107653
- Carroll JC, Reid AJ, Biringer A et al (2005) Effectiveness of the Antenatal Psychosocial Health Assessment (ALPHA) form in detecting psychosocial concerns: a randomized controlled trial. *CMAJ* 173:253–259
- Carroll AE, Biondich P, Anand V et al (2013) A randomized controlled trial of screening for maternal depression with a clinical decision support system. *J Am Med Inform Assoc* 20:311–316
- Chaudron LH, Wisner KL (2014) Perinatal depression screening: let's not throw the baby out with the bath water! *J Psychosom Res* 76(6):489–491

- Chew-Graham C, Chamberlain E, Turner K et al (2008) GPs' and health visitors' views on the diagnosis and management of postnatal depression: a qualitative study. *Br J Gen Pract* 58:169–176
- Chew-Graham CA, Sharp D, Chamberlain E et al (2009) Disclosure of symptoms of postnatal depression, the perspectives of health professionals and women: a qualitative study. *BMC Fam Pract* 10:7
- Christl B, Reilly N, Yin C et al (2015) Clinical profile and outcomes of women admitted to a psychiatric mother-baby unit. *Arch Women Ment Health* (in press)
- Coates AO, Schaefer CA, Alexander JL (2004) Detection of postpartum depression and anxiety in a large health plan. *J Behav Health Serv Res* 31:117–133
- Cox JL, Holden JM, Sagovsky R (1987) Detection of postnatal depression. Development of the 10-item Edinburgh postnatal depression scale. *Br J Psychiatry* 150:782–786
- Davalos DB, Yadon CA, Tregellas HC (2012) Untreated prenatal maternal depression and the potential risks to offspring: a review. *Arch Womens Ment Health* 15:1–14
- Dayan J, Creveuil C, Marks MN et al (2006) Prenatal depression, prenatal anxiety, and spontaneous preterm birth: a prospective cohort study among women with early and regular care. *Psychosom Med* 68:938–946
- Dennis CL (2006) Intensive postpartum support for postnatal depression has the most beneficial outcome – meta-analysis. *Evid Based Obstet Gynecol* 8:94–95
- Dennis CL, Hodnett E (2007) Psychosocial and psychological interventions for treating postpartum depression. *Cochrane Database Syst Rev* (4):CD006116
- Dennis CL, Hodnett E, Kenton L et al (2009) Effect of peer support on prevention of postnatal depression among high risk women: multisite randomised controlled trial. *BMJ* 338:a3064
- Department of Health and Ageing (2010) National perinatal depression initiative [online]. <http://www.health.gov.au/internet/main/publishing.nsf/Content/mental-perinat>. Accessed 8 May 2012
- Desmarais SL, Prtichard A, Lowder EM et al (2014) Intimate partner abuse before and during pregnancy as risk factors for postpartum mental health problems. *BMC Pregnancy Childbirth* 14:132
- Dunkel Schetter C, Tanner L (2012) Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Curr Opin Psychiatry* 25:141–148
- Fisher J, Chatham E, Haseler S (2012) Uneven implementation of the National Perinatal Depression Initiative: findings from a survey of Australian women's hospitals. *Aust N Z J Obstet Gynaecol* 52:559–564
- Flynn HA, Henshaw E, O'Mahen H et al (2010) Patient perspectives on improving the depression referral processes in obstetrics settings: a qualitative study. *Gen Hosp Psychiatry* 32:9–16
- Gavin NI, Gaynes BN, Lohr KN et al (2005) Perinatal depression: a systematic review of prevalence and incidence. *Obstet Gynecol* 106:1071–1083
- Gemmill AW (2014) The long gestation of screening programmes for perinatal depressive disorders. *J Psychosom Res* 77:242–243
- Gemmill AW, Leigh B, Ericksen J et al (2006) A survey of the clinical acceptability of screening for postnatal depression in depressed and non-depressed women. *BMC Public Health* 6:211
- Giallo R, Woolhouse H, Gartland D et al (2015) The emotional-behavioural functioning of children exposed to maternal depressive symptoms across pregnancy and early childhood: a prospective Australian pregnancy cohort study. *Eur Child Adolesc Psychiatry*
- Gilbody S, Bower P, Fletcher J et al (2006) Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. *Arch Inter Med* 166(21):2314–2321
- Glover V (2014) Maternal depression, anxiety and stress during pregnancy and child outcome: what needs to be done. *Best Pract Res Clin Obstet Gynaecol* 28:25–35
- Grant KA, McMahon C, Austin MP (2008) Maternal anxiety during the transition to parenthood: a prospective study. *J Affect Disord* 108:101–111
- Griffiths KM, Farrer L, Christensen H (2010) The efficacy of internet interventions for depression and anxiety disorders: a review of randomised controlled trials. *Med J Aust* 192:S4–S11
- Gross R, Brammli-Greenberg S, Tabenkin H (2007) Primary care physicians' discussion of emotional distress and patient satisfaction. *Int J Psychiatry Med* 37:331–335

- Grote NK, Bridge JA, Gavin AR et al (2010) A meta-analysis of depression during pregnancy and the risk of preterm birth, low birth weight, and intrauterine birth restriction. *Arch Gen Psychiatry* 67:1012–1024
- Hill C (2010) An evaluation of screening for postnatal depression against NSC criteria. UK National Screening Committee, London
- Horwitz SM, Briggs-Gowan MJ, Storfer-Isser A et al (2009) Persistence of maternal depressive symptoms throughout the early years of childhood. *J Womens Health (Larchmt)* 18:637–645
- Howard LM, Oram S, Galley H et al (2013) Domestic violence and perinatal mental disorders: a systematic review and meta-analysis. *PLoS Med* 10:e1001452
- Johnson M, Schmeid V, Lupton SJ et al (2012) Measuring perinatal mental health risk. *Arch Womens Ment Health* 15:375–386
- Jones I, Chandra PS, Dazzan P et al (2014) Bipolar disorder, affective psychosis, and schizophrenia in pregnancy and the post-partum period. *Lancet* 384:1789–1799
- Kim JJ, La Porte LM, Corcoran M et al (2010) Barriers to mental health treatment among obstetric patients at risk for depression. *Am J Obstet Gynecol* 202:312.e1–312.e5
- Kingston D, Heaman M, Fell D et al (2012a) Factors associated with perceived stress and stressful life events in pregnant women: findings from a Canadian Maternity Experiences Survey. *Matern Child Health J* 16:158–168
- Kingston D, Tough S, Whitfield H (2012b) Prenatal and postpartum maternal psychological distress and infant development: a systematic review. *Child Psychiatry Hum Dev* 43:683–714
- Kingston D, Tough S (2014) Prenatal and postnatal maternal mental health and school-age child development: a systematic review. *Matern Child Health J* 18:1728–1741
- Kingston D, Austin MP, Hegadoren K et al (2014a) Study protocol for a randomized, controlled, superiority trial comparing the clinical- and cost-effectiveness of integrated online mental health assessment-referral-care in pregnancy to usual prenatal care on prenatal and postnatal mental health and infant health and development: the Integrated Maternal Psychosocial Assessment to Care Trial (IMPACT). *BMC Trials* 15:72
- Kingston D, McDonald S, Austin MP et al (2014b) The public's views of mental health in pregnant and postpartum women: a population-based study. *BMC Pregnancy Childbirth* 14:84
- Kingston D, Janes-Kelley S, Tyrell J et al (2015a) An integrated web-based mental health intervention of assessment-referral-care to reduce stress, anxiety, and depression in hospitalized pregnant women with medically high-risk pregnancies: a feasibility study protocol of hospital-based implementation. *JMIR Res Protoc* 4:e9
- Kingston D, Biringir A, McDonald S et al (2015b) Preferences of screening among pregnant women: a cross-sectional study. *Am J Prev Med* (in press)
- Korhonen M, Luoma I, Salmelin R et al (2012) A longitudinal study of maternal prenatal, postnatal and concurrent depressive symptoms and adolescent well-being. *J Affect Disord* 136:680–692
- Korhonen M, Luoma I, Salmelin R et al (2014) Maternal depressive symptoms: associations with adolescents' internalizing and externalizing problems and social competence. *Nord J Psychiatry* 68:323–332
- Leiferman JA, Dauber SE, Heisler K et al (2008) Primary care physicians' beliefs and practices toward maternal depression. *J Womens Health (Larchmt)* 17:1143–1150
- Leung SS, Leung C, Lam TH et al (2011) Outcome of a postnatal depression screening programme using the Edinburgh Postnatal Depression Scale: a randomized controlled trial. *J Public Health (Oxf)* 33:292–301
- Mann R, Adamson J, Gilbody S (2012) Diagnostic accuracy of case-finding questions to identify perinatal depression. *CMAJ Can Med Assoc J* 184:E424–E430
- Marcus SM, Flynn HA, Blow FC et al (2003) Depressive symptoms among pregnant women screened in obstetrics settings. *J Womens Health (Larchmt)* 12:373–380
- Matthey S, Ross-Hamid C (2012) Repeat testing on the Edinburgh Depression Scale and the HADS-A in pregnancy: differentiating between transient and enduring distress. *J Affect Disord* 141:213–221

- Matthey S, White T, Phillips J et al (2005) Acceptability of routine antenatal psychosocial assessments to women from English and non-English speaking backgrounds. *Arch Womens Ment Health* 8:171–180
- Midmer D, Bryanton J, Brown R (2004) Assessing antenatal psychosocial health: randomized controlled trial of two versions of the ALPHA form. *Can Fam Physician* 50:80–87
- Milgrom J, Gemmill A (2014) Feasibility and efficacy of an internet treatment for postnatal depression utilising a behavioural activation approach. *Evid Based Nurs* 17(4):102
- Milgrom J, Gemmill A, Bilstza JL et al (2008) Antenatal risk factors for postnatal depression: a large prospective study. *J Affect Disord* 108:147–157
- Milgrom J, Mendelsohn J, Gemmill AW (2011) Does postnatal depression screening work? Throwing out the bathwater, keeping the baby. *J Affect Disord* 132:301–310
- Miller L, Shade M, Vasireddy V (2009) Beyond screening: assessment of perinatal depression in a perinatal care setting. *Arch Womens Ment Health* 12:329–334
- Mitchell AJ, Coyne J (2009) Screening for postnatal depression: barriers to success. *BJOG* 116:11–14
- Mitchell AJ, Rao S, Vaze A (2011) Can general practitioners identify people with distress and mild depression? A meta-analysis of clinical accuracy. *J Affect Disord* 130:26–36
- Morrell C, Warner R, Slade P et al (2009) Psychological interventions for postnatal depression: cluster randomised trial and economic evaluation. The PoNDER trial. *Health Technol Assess* 13:1–176
- Mrazek PJ, Haggerty RJ (1994) Reducing risks for mental disorders: frontiers for preventive intervention research. The National Academies Press, Washington, DC
- Murray L, Carothers AD (1990) The validation of the Edinburgh Postnatal Depression Scale on a community sample. *Br J Psychiatry* 157:288–290
- Murray L, Arteche A, Fearon P et al (2010) The effects of maternal postnatal depression and child sex on academic performance at age 16 years: a developmental approach. *J Child Psychol Psychiatry* 51:1150–1159
- Murray L, Arteche A, Fearon P et al (2011) Maternal postnatal depression and the development of depression in offspring up to 16 years of age. *J Am Acad Child Adolesc Psychiatry* 50:460–470
- Myers ER, Aubuchon-Endlsey N, Bastian LA et al (2013) Efficacy and safety of screening for postpartum depression. Comparative effectiveness review 106. AHRQ Publication No. 13-EHC064-EF. Agency for Healthcare Research and Quality, Rockville
- National Institute for Health and Clinical Excellence (2014) Antenatal and postnatal mental health: clinical management and service guidance, updated edition, Clinical Guidance 192. National Collaborating Centre for Mental Health, London
- O'Donnell KJ, Glover V, Barker ED et al (2014) The persisting effect of maternal mood in pregnancy on childhood psychopathology. *Dev Psychopathol* 26:393–403
- O'Hara MW, Swain AM (1996) Rates and risk of postpartum depression: a meta-analysis. *Int Rev Psychiatry* 8:37–54
- Oberlander TF, Warburton W, Misri S et al (2006) Neonatal outcomes after prenatal exposure to selective serotonin reuptake inhibitor antidepressants and maternal depression using population-based linked health data. *Arch Gen Psychiatry* 63:898–906
- Paulden M, Palmer S, Hewitt S et al (2009) Screening for postnatal depression in primary care: cost effectiveness analysis. *BMJ* 339:b5203
- Post and Antenatal Depression Association (2012) The cost of perinatal depression in Australia. Final report (executive summary). Deloitte Access Economics, Melbourne
- Priest SR, Barnett B (2008) Perinatal depression and anxiety: issues, outcomes and interventions. In: Sved-Williams A, Cowling V (eds) *Infants of parents with mental illness*. Australian Academic Press, Bowen Hills
- Priest SR, Austin MP, Barnett BB et al (2008) A psychosocial risk assessment model (PRAM) for use with pregnant and postpartum women in primary care settings. *Arch Womens Ment Health* 11:307–317

- Reay R, Matthey S, Ellwood D et al (2011) Long-term outcomes of participants in a perinatal depression early detection program. *J Affect Disord* 129:94–103
- Reid AJ, Biringer A, Carroll JD et al (1998) Using the ALPHA form in practice to assess antenatal psychosocial health. *Antenatal Psychosocial Health Assessment*. *CMAJ* 159:677–684
- Reilly N, Harris S, Loxton D et al (2013a) Disparities in reported psychosocial assessment across public and private maternity settings: a national survey of women in Australia. *BMC Public Health* 13:1–15
- Reilly N, Harris S, Loxton D et al (2013b) Referral for management of emotional health issues during the perinatal period: does mental health assessment make a difference? *Birth* 40:297–306
- Reilly N, Harris S, Loxton D et al (2014) The impact of routine assessment of past or current mental health on help-seeking in the perinatal period. *Women Birth* 27:e20–e27
- Reilly N, Yin C, Monterosso L et al (2015) Identifying psychosocial risk of mothers in an Australian private maternity setting: a pilot study. *ANZJOG* (in press)
- Robertson E, Grace S, Wallington T et al (2004) Antenatal risk factors for postpartum depression: a synthesis of recent literature. *Gen Hosp Psychiatry* 26:289–295
- Silverman M, Loudon H (2010) Antenatal reports of pre-pregnancy abuse is associated with symptoms of depression in the postpartum period. *Arch Womens Ment Health* 13:411–415
- Spitzler RL, Wolliams JB, Kroenke K et al (2000) Validity and utility of the PRIME-MD patient health questionnaire in assessment of 3000 obstetric-gynecologic patients: the PRIME-MD Patient Health Questionnaire Obstetrics-Gynecology Study. *Am J Obstet Gynecol* 183:759–769
- Sword W, Busser D, Ganann R et al (2008) Women's care-seeking experiences after referral for postpartum depression. *Qual Health Res* 18:1161–1173
- Talge NM, Neal C, Glover V (2007) Antenatal maternal stress and long-term effects on child neurodevelopment: how and why? *J Child Psychol Psychiatry* 48:245–261
- Thombs BD, Arthurs E, Coronado-Montoya S et al (2014) Depression screening and patient outcomes in pregnancy or postpartum: a systematic review. *J Psychosom Res* 76:433–446
- UK National Screening Committee (2009) Criteria for appraising the viability, effectiveness and appropriateness of a screening program. National Health Service, Southampton
- Vythilingum B, Field S, Kafaar Z et al (2013) Screening and pathways to maternal mental health care in a South African antenatal setting. *Arch Womens Ment Health* 16:371–379
- Whooley MA, Avins AL, Miranda J et al (1997) Case-finding instruments for depression. Two questions are as good as many. *J Gen Intern Med* 12:439–445
- Wisner KL, Sit DK, McShea MC et al (2013) Onset timing, thoughts of self-harm, and diagnoses in postpartum women with screen-positive depression findings. *JAMA Psychiatry* 70:490–498
- Woolhouse H, Brown S, Krastev A et al (2009) Seeking help for anxiety and depression after childbirth: results of the Maternal Health Study. *Archives Women Ment Health* 12:75–83
- Woolhouse H, Gartland D, Mensah F et al (2015) Maternal depression from early pregnancy to 4 years postpartum in a prospective pregnancy cohort study: implications for primary health care. *BJOG Int J ObstetGynaecol* 122(3):312–21
- Yawn BP, Dietrich AJ, Wollan P et al (2012) TRIPPD: a practice-based network effectiveness study of postpartum depression screening and management. *Ann Fam Med* 10:320–329
- Zelkowitz P, Gold I, Feeley N et al (2014) Psychosocial stress moderates the relationships between oxytocin, perinatal depression, and maternal behavior. *Horm Behav* 66:351–360

A Crucial Therapeutic Instrument: Networking (The Example of the French Perinatal Networks)

12

Michel Dugnat and Dominique Dallay

Abstract

All pregnant women, but particularly those presenting several separate risk factors, should benefit from a planned, continuous and coherent medical psychosocial accompaniment. A “personalised network” or “micro-network” should be built up, with the various professionals knowing the woman and, wherever possible, knowing each other. The local networks (surrounding each maternity) should enable interaction between all the institutions situated within their territory. Ultimately, the regional (or “macro”) networks should guarantee – on a larger scale – interaction between maternity wards of different types, according to their degree of equipment in neonatal medicine, and with all of their partners. The interaction between these three levels of networks is needed to provide for the global health (physical and psychological) of both mother and baby. Preventive actions in this vital period – that of epigenesis – require individual attention to the father and mother of the baby through networking and hence constitute one of the dimensions of caring and taking care in the perinatal period.

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197

Introduction

The term “network” is polysemous (Musso 2003), with a heavy cognitive load, and it is used in multiple situations or organisations connected to care. In the 1990s, it took on considerable importance in the organisational semantics of the healthcare system and particularly in the perinatal field (Dayan et al. 2014).

In this field, it has been elemental in what remains an unfinished cultural revolution. Here, we will consider a “network” as a more or less formalised and hierarchical structure, composed of a set of individuals, legal entities or groups of people, all linked to each other (Dugnat 1996). It is neither an institution nor a closed system, but a set of interconnections whose main characteristic is that its configuration is constantly changing. The accent must clearly be placed on relations and the strength of links between members, requiring autonomy and initiative on the part of healthcare professionals. Individual or institutional networkers are often united under a charter or by conventions, but particularly through shared principles and objectives (Bourdillon 2009).

Networking and Prevention

The healthcare networks which arose in France following the decrees of the 1998 obstetric-paediatric reorganisation¹ were aimed at reducing the considerable number of dysfunctions which, while focussing on serious but rare risks, were preventing the development of a screening policy for all risks depending on their frequency. The absence of risk management before childbirth meant that fewer than one in six high-risk women gave birth in maternity wards capable of caring for both mother and baby correctly, compared to five out of six women in other European countries (Naiditch 2004). The Cultural Revolution came when high-risk newborn babies were no longer transported to distant neonatal medical departments from widely dispersed maternity units with little in the way of paediatric equipment. Maternities came to be organised according to their capacity to deal with the safety requirements of the mother-baby dyad, distinguishing three type levels and organising regional perinatal networks around hospital issues, while inter-establishment transfers remained focussed on medical high-risk cases. This first “revolution” – accomplished in the 2000s – led on to a second, devisk (Dugnat 2004).

While initially focussed on care, quality and physical safety, current health policies (embodied by the 2005–2007 Perinatal Plan)^{2,3} try to promote childbirth as

¹ Décret 1998: <http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000756322&dateTexte=&categorieLien=id>

² Plan périnatalité–2005–2007: humanité, proximité, sécurité, qualité, Paris, 10 novembre 2004 – http://www.sante.gouv.fr/IMG/pdf/Plan_perinatalite_2005-2007

³ Evaluation du plan de périnatalité 2005–2007. – 11 février 2011. DGS. <http://www.sante.gouv.fr/resultats-de-l-evaluation-du-plan-perinatalite-2005-2007.html>

an excellent opportunity for screening and prevention in every dimension, as well as for therapeutic education and health promotion⁴. “These prevention policies aim to improve the population’s state of health by avoiding the appearance, development or aggravation of disease and by encouraging individual and collective behaviour conducive to risk reduction. They are crucial in the perinatal period due to the importance of epigenesis. Beyond these purely hospital-based organisational schemes, the organisation of formalised care networks aims, on the other hand, to improve not only access to care but also the coordination, continuity and multi-professional approach in patient management, especially regarding certain populations, certain pathologies, certain care programmes or certain health services”⁵. Healthcare networks⁶ thus aim to tackle increasing professional specialisation, poor coordination between the various professionals both in and out of hospital and insufficient coordination between the medical and social sectors, as well as the strict separation between hospital staff and other professionals (independent professionals and medical/social services) (Capgras and Dugnat 2006a).

These networks thus have a vocation to contribute to the consistency of care programmes, involving independent health professionals, doctors and teams involved in mother-and-baby preventive health, doctors and hospital teams, health establishments, health centres, social or medico-social institutions and health or social organisations, as well as the representatives of users (Capgras and Dugnat 2006a, b).

They need to ensure care management that is adapted not only in terms of diagnosis and treatment but also of health education and prevention. Within this framework, they can participate in public health actions. They require assessment in order to guarantee the quality of their structure and their services (Hardy-Baylé et al. 2004).

In the perinatal field, prevention and healthcare networks are closely linked; early and timely intervention at this period is crucial for the long-term development of the individual. At this moment in life, a curative action to treat the mother is also preventive for the future of the baby while also allowing for the provision of parenting support.

Resistance

As a consequence of the numerous participating individuals and institutions, having neither the same type of governance nor the same modes of funding, various levels of resistance are met, in terms of health prevention:

⁴Circulaire DHOS/DGS/O2/6 C n° 2005–300 du 4 juillet 2005 relative à la promotion de la collaboration médico-psychologique en périnatalité. <http://www.sante.gouv.fr/fichiers/bo/2005/05-08/a0080026.htm>

⁵Circulaire réseaux DHOS/01-03/CNAMTS n° 2006–151 du 30 mars 2006 relative au Cahier des charges national des réseaux de santé en périnatalité (<http://www.sante.gouv.fr/fichiers/bo/2006/06-04/a0040022.htm>)

⁶<http://www.sante.gouv.fr/fichiers/bo/2007/07-04/a0040067.htm>

- *Individual resistance* is often emphasised, particularly the distress caused by any baby's intense physical and emotional demands. This subconscious individual resistance goes hand in hand with *conscious individual resistance*, which should not be neglected, not because it is more easily transformable but because it constitutes an obstacle in itself; it is well known to health education and mental health professionals and remains difficult to mobilise.
- *Intra-institutional resistance* has been described at length by Myriam David, Françoise Jardin and Martine Lamour. These child psychiatrists' researchers have been able to show how projections (emanating, according to them, from maternal psychopathology) can prevent the implementation of mechanisms that allow babies' needs to be met. For example, in terms of the need for continuity, divisive movements in risk assessment can cause tension in a team. Building an alliance with the families in greatest difficulty requires a high degree of consistency within the team particularly in situations of psychosocial risk. The transfer/counter-transfer diffraction related to the complexity of dyadic or triadic interaction must therefore be reviewed on a daily basis, developing the networking connections of all members of all the groups supporting the pregnancy.
- *Inter-institutional resistance*, as opposed to intra-institutional resistance, disrupts the indispensable consistency of care throughout pregnancy and postpartum. The issues are those of finance and/or power relations between institutions with differing competencies and modes of guardianship and which need to pull together rather than work in opposition (Neyrand 2004).

Finally, there is *societal resistance*, or cultural resistance. In our societies, "investment" in an individual – in terms of development aid and education – is inversely proportional to the development of his/her neuronal capital: it is only after adolescence – when neuronal development (second phase of *pruning*) is well advanced – that so-called developed societies spend the most on teaching and education. It is during pregnancy and in the first months of life that these receive the least investment, just when neuronal development, synaptogenesis and synaptic selection, as well as epigenesis (first *pruning*), are in full swing (Molénat 2003).

Developing Prevention and Developing Psychological Care

If lifelong actions of prevention are possible and desirable in terms of global health and, among others, mental health, perinatal mental health is the cornerstone supporting the future of a developing individual: the infant.

The 3rd French perinatal plan (2005–2007) subtitled *Humanity, proximity, security, quality* has shown the way for a second cultural revolution beyond the inter-hospital networks of the somatic high-risk, taking into account the psychological and social risks whose influence on health is increasingly understood. It has thus set out to promote collaboration between professional and institutional worlds even further apart than those of obstetrics and paediatrics, based on a medico-psychosocial approach (Tepaut 2015). For example, two measures have been drawn up: the

development of an early prenatal interview of couples and the requirement to develop the action of mental health professionals within the framework of a personalised network.

The legally determined systematic offer of interviewing the couple in early pregnancy (early prenatal interview) is closely related to this practice of personalised networking, whose objective should be the creation of secured consistent relationships, guaranteeing the quality of the care programme (Barandon 2014).

Recognition of the direct role with patients and the indirect one with care teams of the somatic care provided by perinatal mental health and psychiatry professionals is not enough. Health networking should define ways of organising the global review for each family, while enabling the development of broader actions to deal with women's emotional and/or psychological security. Outside these formalised networks as they are described here, many other forms of partnership can be implemented during the perinatal period. For example, developing the attention focussed by associations and voluntary groups on pregnant women, fathers-to-be and babies may enable women to be supported by and within the fabric of society, thus protecting them from the negative effects (both on the relationship and on the baby) of post-partum depression (Brockington 2004).

Example of Missions and Organisation of Perinatal Networks in France

In the early 2000s, due to their pre-eminent position in the (curative) care system, hospitals attempted to appropriate the fashionable term “network”.

This term was not intended to apply to actions of prevention or to upstream or downstream non-hospital work.

In the late 2000s, it was finally admitted – probably in the face of the difficulties which were amassing in the field of healthcare management – that all professionals should be mobilised to respond to these difficulties and that it was the whole course of pregnancy and the care programme which needed to benefit from networking by early detection of the psychological, social and medical risks, by adapting the follow-up to the needs of mothers and babies, by supporting the building of parenting projects and by setting up an appropriate follow-up in high-risk situations. Elsewhere, we have suggested defining the notion of networks in the following manner:

1. We can speak of...
2. Perinatal “local network” which may be on a territorial scale, or that of a single maternity

“Personalised network” or “micro-network” to designate all the professionals who are mobilised around any given woman during pregnancy, childbirth and post-partum

This mobilisation of professionals constitutes “personalised networking”. This responds to the demand by women to be considered as agents of their own

pregnancy monitoring, involved in their own health and not just as the objects of care, however long that care may last.

3. “Macro-networks” to designate regional maternity networks bringing together several institutions of differing nature: maternities, neonatal medical departments, nationwide services for maternal and infant protection and psychiatric departments

These three scales of network can be considered as nesting “Russian dolls”, with each level contributing to the smooth running of the others.

The *micro-network* is based on the commitment of professionals and on their precise knowledge, fostered by modern means of communicating women’s issues. They constitute an element of security for the pregnant woman or the young mother, the father-to-be or the young father and the baby, by contributing to the coherence of interventions by the various professionals; they constitute a form of psychological care.

The *local network* presupposes the establishment of medico-psychosocial staff, the foundations of a common culture composed of formalised procedures or working practices guaranteed by training initiatives and by the regular, regulated recovery of difficult cases. It requires a minimum of contractual arrangements between the institutions concerned.

The *macro-networks*, on the other hand, are what guarantee the care programme, as well as the medico-economical efficiency of the whole scheme. Based on a public health approach, their mission is to enable the global management of pregnant women and babies, by ensuring the appropriate care wherever they may be admitted throughout the entire healthcare territory. A certain amount of legislation is at the base of this organisation.

The first objective of the perinatal networks in France is to reduce perinatal mortality – maternal as well as infant – by organising the structuring of care in a scaled manner by grading maternities into type I, II and III according to the paediatric care available within the establishments. The perinatal plan *Humanity, proximity, security, quality* aimed at improving safety in childbirth and creating local networks allowing equal access to care throughout the territory. Another fundamental notion is that of medical/psychological collaboration during the perinatal period: a set of *national specifications for perinatal networks* has been drawn up which provides for the involvement of public psychiatry in perinatal networking.

In practical terms, the specifications provided for psychosocial management are the following:

- The creation of a directory of professional “resources” in the various thematic areas set out by the network, particularly in psychiatry.
- A common training corpus: Training in perinatal psychiatry, training in medical/psychological collaboration and training for the early perinatal interview.
- Training in the recovery of difficult cases involving adult as well as child psychiatric teams from the public sector.

- Training on the means of transmission of psychological or social information in respect of professional confidentiality.
- “Adapted psychosocial support” was also planned. The network has to identify and describe the help, support and psychological care systems that need to be implemented when psychological and/or social difficulties are identified. It is responsible for organising a telephone relay service, which a patient can contact in case of psychosocial difficulty.

The continuity and coherence of professional attitudes, from pregnancy to neonatal follow-up, are considered to be essential elements of this support.

Psychologists or psychiatrists present in maternity wards must be identified and their missions described or known to the professionals in the network. Meetings of the “medico-psychosocial staff” kind should bring together the various participants with the aim of coherence, continuity and anticipation in patient management in the permanent respect of confidentiality. Finally, links with psychiatry and child psychiatry departments as well as with private sector psychiatric services and child welfare services are indispensable.

However, it must be stressed that improvement in patient psychosocial management is but part of the mission of the perinatal network. It should equally be embodied itself as one of the dimensions of the care programme that it serves to guarantee. For example, in Aquitaine, the *Réseau Périnatal Aquitaine* (*Réseau* means “network”) supports 35,000 births, two multidisciplinary prenatal diagnostic centres and 5 M.A.R. centres. It is based on professional coordination, associating a paediatrician, obstetrician and epidemiologist, full-time. There are territorial midwives to coordinate the health territories, one of whose missions is to prevent ruptures in patient care programmes and to ensure ante- and postnatal continuity. The territorial midwives also have a role of implementing network policy by helping to organise the medico-psychosocial staff in health establishments. The *Réseau Périnatal Aquitaine* also participates in training and assessing health professionals in the region. Coordination of care by the network helps professionals to better organise care programmes, for example, by allowing better access to specialised consultations in the field of medically assisted reproduction (MAR), to prenatal diagnostics or to voluntary termination of pregnancy (VTP).

The care networks can guide health policy because they can develop tools that will allow them to establish reliable indicators using in-house resources.

Progress

Whatever legitimate concerns there may be over rising overall wealth in resources and in spite of the relative spending cuts in health and more particularly in mental health, while important developments have taken place thanks to the perinatal plan that can in no way be prioritised nor taken for granted, a second great step is underway in France. In spite of the transfer in midwives’ competencies, the shortage of obstetricians and anaesthetists in France imposes the clustering of maternities.

The number of psychologists intervening in maternity, working directly or indirectly, raises the question today of their links with other members of the obstetrics team and with the exterior (department of psychiatry, child psychiatry etc.).

Perinatal psychiatry – which should not be reduced to women’s psychiatry in the perinatal period – as well as attention to development of the newborn, is receiving somewhat greater attention from politicians. Beyond the work of maternity teams – which are fortunate in being able to intervene early in the antenatal period – only wide scale collaboration will enable the continuity of suitably adapted support for the more fragile women after childbirth.

This great step is that of national mobilisation in favour of a perinatal health programme which guarantees that the psychological and social high risk receives the same attention as the medical high risk. Indeed, much research and recent progress in epigenetics prove epidemiologically and conceptually model the fact that the environment (in the wider sense of the term⁷) is decisive for the health of the adult that the newborn baby will later become.

References

- Barandon S, Bales M, Melchior M et al (2014) Entretien prénatal précoce et séances de préparation à la naissance et à la parentalité: caractéristiques psychosociales et obstétricales associées chez les femmes de la cohorte ELFE. http://www.sfmp.net/download/sfmp2014_organisations_reseaux.pdf
- Bourdillon F (2009) *Traité de prévention*. Médecine-Sciences Flammarion Ed, Paris
- Brockington IF (2004) Diagnosis and management of post-partum disorders: a review. *World Psychiatry* 3:89–98
- Dayan J, Andro G, Dugnat M (2014) *Psychopathologie de la périnatalité et de la parentalité*. Elsevier Masson Eds, Paris
- Dugnat M (1996) Réseaux de soins précoces et hospitalisation conjointe mère-bébé: logiques contradictoires ou possible complémentarité? In: *Troubles relationnels père-mère/bébé, Quels Soins?* Eres Eds, Toulouse, pp 9–16
- Dugnat M (2004) *Prévention précoce en périnatalité*. Toulouse: Erès Eds
- Capgras D, Dugnat M (2006a) Construire un réseau de périnatalité de proximité, quelle(s) méthode(s) ? L'exemple de NOVANAT (Haut-Vaucluse/Sud-nord). *Vocation Sage-femme* 42:9–16
- Capgras D, Dugnat M (2006b) Quelques règles de mise en œuvre des principes d'une conduite de projets dans le développement d'un réseau local de périnatalité. *Vocation Sage-femme* 46–47:11–16
- Hardy-Baylé M-C, Bronnec C, Chaillet M-P et al (2004) Place de la recherche dans les réseaux de santé: l'exemple d'un réseau de promotion pour la santé mentale dans les Yvelines Sud. *Revue Française des Affaires Sociales* 1:126–137

⁷Toxic environments, micro-environments: individual and family factors [maltreatment, sexual abuse, absence of discipline, use of extreme punishment, poverty, minority, urban fabric, family psychiatric history, academic failure, single parent], macro-environments: cultural factors [competitive societies favouring short-term efficiency, densely populated, with cultural mixes due to migration].

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- Molénat F (2003) *Naissance: pour une éthique de la prévention*. Toulouse, Eres Eds
- Musso P (2003) *La critique des réseaux*. PUF Eds, Paris
- Naiditch M (2004) Des réseaux et des femmes. In: Dugnat M (ed) *Prévention précoce, parentalité et périnatalité*. Eres Eds, Toulouse, pp 75–88
- Neyrand G (2004) La dynamique d'un réseau de prévention psychique précoce: résistances et perspectives. *Revue française des affaires sociales* 1:103–125
- Tepaut A (2015) Les sages-femmes libérales dans la dynamique des réseaux de santé en périnatalité. *Vocation Sage-Femme* 113:10–14

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The importance of the “1001 critical days”, defined by the UK cross-party manifesto for children as conception to age 2 (Leadsom et al. 2014), underlies the need to act early in life to enhance children’s developmental outcomes. The early years are a crucial period of psychoaffective development, and the events that occur then lead to structural changes that can have lifelong consequences. Lack of intervention is likely to affect not only the children of today but also the generations to come. Children who suffer multiple adverse events achieve less educationally and are less healthy; the perpetuation of the cycle of harm in the following generation thus becomes more likely. Psychological development is simultaneously a very powerful and a very vulnerable process. As Tronick and Reck (2009) have brilliantly shown, “good enough” mother-infant interactions are misattuned or out of sync about 50 % of the time. What we call “resilience” usually allows infants and children to traverse daily developmental

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difficulties without major consequences thanks to what they called the “repair processes” within interactions. When it works, this system is one of the principal foundations of safe development. Of course, these repair processes have limits, and we must bear in mind that misattunements of early life can have durable developmental consequences. This is particularly frequent in cases of difficult parenthood.

For adults, transition to parenthood is a time of momentous adjustments and a major stressful life event. The strong emotional load of this experience can obviously make this transitional period much more challenging for adults with psychological, social and economic vulnerabilities.

Applying the “transactional model of development”, as conceptualized by Sameroff (2009), to the early perinatal period helps us to understand how the needs of normal infants can so easily affect a parent’s mental state and induce inadequate parenting behaviours. These in turn make the infant’s interactions more difficult and the infant’s development more likely to be impaired. Perinatal mental health is thus an important public health challenge for it is essential to provide services to enhance maternal and infant emotional well-being at a moment that is simultaneously when the mother’s social and emotional vulnerabilities are at their height and a critical time in the child’s development.

Perinatal mental health policies, including joint care of parents and infants in perinatal psychiatry units, must provide positive support for the potential virtuous circle between the skills and vulnerabilities of the infant and the parents (or must work to prevent the potential vicious circle) and for the “good enough” characteristics of each triad’s interactions. The perinatal period provides clinicians with a unique opportunity to address the psychological, social and physical health of families. A care pathway must be developed, through an integrated system of mental health care and treatment for parents and infants. This system must be integrated (1) across time periods, from the antenatal or preferably preconceptional period to the postnatal period, (2) across primary and secondary/tertiary health-care systems, (3) between health-care disciplines and (4) through psychosocial assessment based on well-trained clinicians, supervision and clear decision-making guidelines for clinicians (Marcé Society statement <http://www.postpartum.net/professionals/the-international-marce-society/marce-society-position-on-assessment-screening/>).

A recent UK report (Bauer et al. 2014) evaluated the cost of perinatal mental health problems at £8.1 billion per 1-year cohort of births in the UK; 72 % of these costs are related to the child. Public sector costs for perinatal mental health problems are currently five times higher than the cost needed for improving perinatal services would be. Thus, joint perinatal care should ideally cover a range of services from parent-infant psychotherapies to joint mother-baby hospitalizations, inside a coordinated multilevel administrative and health-care system. But we must remember first of all that the mainstream of joint perinatal care should be a preventive public health-based model involving all health-care professionals in their daily practices. Providers of perinatal physical and mental health-care and social services must address family mental health in the perinatal period through the daily development of secure care strategies, which is yet more urgent than the development of effective programmes and interventions. The first essential improvement in early

preventive parent-child interventions in psychosocially vulnerable families must include taking into account the infant's skills, the parental psychology and any psychopathology as well as the specificities of each interactive spiral, with the local resources.

References

- Bauer A, Parsonage M, Knapp M, Iemmi V, Adelaja B (2014) The cost of perinatal mental health problems. LSE & Centre for Mental Health. Available at http://socialwelfare.bl.uk/subject-areas/services-client-groups/adults-mental-health/centreformentalhealth/168376Costs_of_perinatal_mh.pdf
- Leadsom A, Field F, Burstow P, Lucas C (2014) The 1001 Critical Days: the importance of the conception to age 2 period. Available at http://www.1001criticaldays.co.uk/UserFiles/files/1001_days_jan28_15_final.pdf
- Sameroff A (2009) The transactional model of development: how children and contexts shape each other. Sameroff A Ed, APA, Washington, DC, US, 290 pp
- Tronick E, Reck C (2009) Infants of depressed mothers. *Harv Rev Psychiatry* 17(2):147–156