THE OFFICIAL PARENT'S SOURCEBOOK *on*

URINARY TRACT INFECTION IN CHILDREN

JAMES N. PARKER, M.D.
AND PHILIP M. PARKER, PH.D., EDITORS

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Dedication

To the healthcare professionals dedicating their time and efforts to the study of urinary tract infection in children.

Acknowledgements

The collective knowledge generated from academic and applied research summarized in various references has been critical in the creation of this sourcebook which is best viewed as a comprehensive compilation and collection of information prepared by various official agencies which directly or indirectly are dedicated to urinary tract infection in children. All of the *Official Parent's Sourcebooks* draw from various agencies and institutions associated with the United States Department of Health and Human Services, and in particular, the Office of the Secretary of Health and Human Services (OS), the Administration for Children and Families (ACF), the Administration on Aging (AOA), the Agency for Healthcare Research and Quality (AHRQ), the Agency for Toxic Substances and Disease Registry (ATSDR), the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the Healthcare Financing Administration (HCFA), the Health Resources and Services Administration (HRSA), the Indian Health Service (IHS), the institutions of the National Institutes of Health (NIH), the Program Support Center (PSC), and the Substance Abuse and Mental Health Services Administration (SAMHSA). In addition to these sources, information gathered from the National Library of Medicine, the United States Patent Office, the European Union, and their related organizations has been invaluable in the creation of this sourcebook. Some of the work represented was financially supported by the Research and Development Committee at INSEAD. This support is gratefully acknowledged. Finally, special thanks are owed to Tiffany LaRochelle for her excellent editorial support.

About the Editors

James N. Parker, M.D.

Dr. James N. Parker received his Bachelor of Science degree in Psychobiology from the University of California, Riverside and his M.D. from the University of California, San Diego. In addition to authoring numerous research publications, he has lectured at various academic institutions. Dr. Parker is the medical editor for the *Official Parent's Sourcebook* series published by ICON Health Publications.

Philip M. Parker, Ph.D.

Philip M. Parker is the Eli Lilly Chair Professor of Innovation, Business and Society at INSEAD (Fontainebleau, France and Singapore). Dr. Parker has also been Professor at the University of California, San Diego and has taught courses at Harvard University, the Hong Kong University of Science and Technology, the Massachusetts Institute of Technology, Stanford University, and UCLA. Dr. Parker is the associate editor for the *Official Parent's Sourcebook* series published by ICON Health Publications.

About ICON Health Publications

In addition to urinary tract infection in children, *Official Parent's Sourcebooks* are available for the following related topics:

- The Official Patient's Sourcebook on Childhood Nephrotic Syndrome
- The Official Patient's Sourcebook on Cystocele
- The Official Patient's Sourcebook on Glomerular Disease
- The Official Patient's Sourcebook on Goodpasture Syndrome
- The Official Patient's Sourcebook on Hematuria
- The Official Patient's Sourcebook on Hemochromatosis
- The Official Patient's Sourcebook on Immune Thrombocytopenic Purpura
- The Official Patient's Sourcebook on Impotence
- The Official Patient's Sourcebook on Interstitial Cystitis
- The Official Patient's Sourcebook on Kidney Failure
- The Official Patient's Sourcebook on Kidney Stones
- The Official Patient's Sourcebook on Lupus Nephritis
- The Official Patient's Sourcebook on Nephrotic Syndrome
- The Official Patient's Sourcebook on Peyronie
- The Official Patient's Sourcebook on Polycystic Kidney Disease
- The Official Patient's Sourcebook on Prostate Enlargement
- The Official Patient's Sourcebook on Prostatitis
- The Official Patient's Sourcebook on Proteinuria
- The Official Patient's Sourcebook on Pyelonephritis
- The Official Patient's Sourcebook on Renal Osteodystrophy
- The Official Patient's Sourcebook on Renal Tubular Acidosis
- The Official Patient's Sourcebook on Simple Kidney Cysts
- The Official Patient's Sourcebook on Urinary Incontinence
- The Official Patient's Sourcebook on Urinary Incontinence for Women
- The Official Patient's Sourcebook on Urinary Incontinence with Children
- The Official Patient's Sourcebook on Urinary Tract Infections in Adults
- The Official Patient's Sourcebook on Vesicoureteral Reflux

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ICON Group International, Inc.
4370 La Jolla Village Drive, Fourth Floor
San Diego, CA 92122 USA
Fax: 858-546-4341
Web site: **www.icongrouponline.com/health**

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INTRODUCTION

Overview

Dr. C. Everett Koop, former U.S. Surgeon General, once said, "The best prescription is knowledge."[1] The Agency for Healthcare Research and Quality (AHRQ) of the National Institutes of Health (NIH) echoes this view and recommends that all parents incorporate education into the treatment process. According to the AHRQ:

> Finding out more about your [child's] condition is a good place to start. By contacting groups that support your [child's] condition, visiting your local library, and searching on the Internet, you can find good information to help guide your decisions for your [child's] treatment. Some information may be hard to find—especially if you don't know where to look.[2]

As the AHRQ mentions, finding the right information is not an obvious task. Though many physicians and public officials had thought that the emergence of the Internet would do much to assist parents in obtaining reliable information, in March 2001 the National Institutes of Health issued the following warning:

> The number of Web sites offering health-related resources grows every day. Many sites provide valuable information, while others may have information that is unreliable or misleading.[3]

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[1] Quotation from http://www.drkoop.com.
[2] The Agency for Healthcare Research and Quality (AHRQ): http://www.ahcpr.gov/consumer/diaginfo.htm.
[3] From the NIH, National Cancer Institute (NCI): **http://cancertrials.nci.nih.gov/beyond/evaluating.html**.

Since the late 1990s, physicians have seen a general increase in parent Internet usage rates. Parents frequently enter their children's doctor's offices with printed Web pages of home remedies in the guise of latest medical research. This scenario is so common that doctors often spend more time dispelling misleading information than guiding children through sound therapies. *The Official Parent's Sourcebook on Urinary Tract Infection in Children* has been created for parents who have decided to make education and research an integral part of the treatment process. The pages that follow will tell you where and how to look for information covering virtually all topics related to urinary tract infection in children, from the essentials to the most advanced areas of research.

The title of this book includes the word "official." This reflects the fact that the sourcebook draws from public, academic, government, and peer-reviewed research. Selected readings from various agencies are reproduced to give you some of the latest official information available to date on urinary tract infection in children.

Given parents' increasing sophistication in using the Internet, abundant references to reliable Internet-based resources are provided throughout this sourcebook. Where possible, guidance is provided on how to obtain free-of-charge, primary research results as well as more detailed information via the Internet. E-book and electronic versions of this sourcebook are fully interactive with each of the Internet sites mentioned (clicking on a hyperlink automatically opens your browser to the site indicated). Hard copy users of this sourcebook can type cited Web addresses directly into their browsers to obtain access to the corresponding sites. Since we are working with ICON Health Publications, hard copy *Sourcebooks* are frequently updated and printed on demand to ensure that the information provided is current.

In addition to extensive references accessible via the Internet, every chapter presents a "Vocabulary Builder." Many health guides offer glossaries of technical or uncommon terms in an appendix. In editing this sourcebook, we have decided to place a smaller glossary within each chapter that covers terms used in that chapter. Given the technical nature of some chapters, you may need to revisit many sections. Building one's vocabulary of medical terms in such a gradual manner has been shown to improve the learning process.

We must emphasize that no sourcebook on urinary tract infection in children should affirm that a specific diagnostic procedure or treatment discussed in a research study, patent, or doctoral dissertation is "correct" or your child's best option. This sourcebook is no exception. Each child is unique. Deciding

on appropriate options is always up to parents in consultation with their children's physicians and healthcare providers.

Organization

This sourcebook is organized into three parts. Part I explores basic techniques to researching urinary tract infection in children (e.g. finding guidelines on diagnosis, treatments, and prognosis), followed by a number of topics, including information on how to get in touch with organizations, associations, or other parent networks dedicated to urinary tract infection in children. It also gives you sources of information that can help you find a doctor in your local area specializing in treating urinary tract infection in children. Collectively, the material presented in Part I is a complete primer on basic research topics for urinary tract infection in children.

Part II moves on to advanced research dedicated to urinary tract infection in children. Part II is intended for those willing to invest many hours of hard work and study. It is here that we direct you to the latest scientific and applied research on urinary tract infection in children. When possible, contact names, links via the Internet, and summaries are provided. It is in Part II where the vocabulary process becomes important as authors publishing advanced research frequently use highly specialized language. In general, every attempt is made to recommend "free-to-use" options.

Part III provides appendices of useful background reading covering urinary tract infection in children or related disorders. The appendices are dedicated to more pragmatic issues facing parents. Accessing materials via medical libraries may be the only option for some parents, so a guide is provided for finding local medical libraries which are open to the public. Part III, therefore, focuses on advice that goes beyond the biological and scientific issues facing children with urinary tract infection and their families.

Scope

While this sourcebook covers urinary tract infection in children, doctors, research publications, and specialists may refer to your child's condition using a variety of terms. Therefore, you should understand that urinary tract infection in children is often considered a synonym or a condition closely related to the following:

- Acute Bacterial Nephritis

- Acute Bladder Infection
- Acute Pyelonephritis
- Acute Upper Urinary Tract Infection
- Acute Urinary Tract Infection (uti)
- Bladder Infection
- Chronic or Recurrent Uti
- Complicated Urinary Tract Infection
- Infection - Kidney
- Kidney Infection
- Lobar Nephronia
- Pyonephrosis
- Renal Carbuncle
- Uncomplicated Urinary Tract Infection
- Urinary Tract Infection
- Urinary Tract Infection - Chronic or Recurrent
- Urinary Tract Infection - Complicated
- Uti - Chronic or Recurrent

In addition to synonyms and related conditions, physicians may refer to urinary tract infection in children using certain coding systems. The International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) is the most commonly used system of classification for the world's illnesses. Your physician may use this coding system as an administrative or tracking tool. The following classification is commonly used for urinary tract infection in children:[4]

- 590.0 chronic pyelonephritis
- 590.1 acute pyelonephritis
- 590.10 acute pyelonephritis without lesion of medullary necrosis
- 590.8 nonspecific pyelonephritis
- 590.81 pyelonephritis

[4] This list is based on the official version of the World Health Organization's 9th Revision, International Classification of Diseases (ICD-9). According to the National Technical Information Service, "ICD-9CM extensions, interpretations, modifications, addenda, or errata other than those approved by the U.S. Public Health Service and the Health Care Financing Administration are not to be considered official and should not be utilized. Continuous maintenance of the ICD-9-CM is the responsibility of the federal government."

- 595.0 acute cystitis
- 595.2 chronic cystitis
- 595.3 trigonitis
- 595.9 cystitis
- 599.0 urinary tract infection

For the purposes of this sourcebook, we have attempted to be as inclusive as possible, looking for official information for all of the synonyms relevant to urinary tract infection in children. You may find it useful to refer to synonyms when accessing databases or interacting with healthcare professionals and medical librarians.

Moving Forward

Since the 1980s, the world has seen a proliferation of healthcare guides covering most illnesses. Some are written by parents, patients, or their family members. These generally take a layperson's approach to understanding and coping with an illness or disorder. They can be uplifting, encouraging, and highly supportive. Other guides are authored by physicians or other healthcare providers who have a more clinical outlook. Each of these two styles of guide has its purpose and can be quite useful.

As editors, we have chosen a third route. We have chosen to expose you to as many sources of official and peer-reviewed information as practical, for the purpose of educating you about basic and advanced knowledge as recognized by medical science today. You can think of this sourcebook as your personal Internet age reference librarian.

Why "Internet age"? When their child has been diagnosed with urinary tract infection, parents will often log on to the Internet, type words into a search engine, and receive several Web site listings which are mostly irrelevant or redundant. Parents are left to wonder where the relevant information is, and how to obtain it. Since only the smallest fraction of information dealing with urinary tract infection in children is even indexed in search engines, a non-systematic approach often leads to frustration and disappointment. With this sourcebook, we hope to direct you to the information you need that you would not likely find using popular Web directories. Beyond Web listings, in many cases we will reproduce brief summaries or abstracts of available reference materials. These abstracts often contain distilled information on topics of discussion.

Before beginning your search for information, it is important for you to realize that urinary tract infection is considered a relatively uncommon condition. Because of this, far less research is conducted on urinary tract infection compared to other health problems afflicting larger populations, like breast cancer or heart disease. Nevertheless, this sourcebook will prove useful for two reasons. First, if more information does become available on urinary tract infection, the sources given in this book will be the most likely to report or make such information available. Second, some will find it important to know about patient support, symptom management, or diagnostic procedures that may be relevant to both urinary tract infection and other conditions. By using the sources listed in the following chapters, self-directed research can be conducted on broader topics that are related to urinary tract infection but not readily uncovered using general Internet search engines (e.g. **www.google.com** or **www.yahoo.com**). In this way, we have designed this sourcebook to complement these general search engines that can provide useful information and access to online patient support groups.[5]

While we focus on the more scientific aspects of urinary tract infection in children, there is, of course, the emotional side to consider. Later in the sourcebook, we provide a chapter dedicated to helping you find parent groups and associations that can provide additional support beyond research produced by medical science. We hope that the choices we have made give you and your child the most options in moving forward. In this way, we wish you the best in your efforts to incorporate this educational approach into your child's treatment plan.

The Editors

[5] For example, one can simply go to **www.google.com,** or other general search engines (e.g. **www.yahoo.com**, **www.aol.com**, **www.msn.com**) and type in "urinary tract infection support group" to find any active online support groups dedicated to urinary tract infection.

PART I: THE ESSENTIALS

ABOUT PART I

Part I has been edited to give you access to what we feel are "the essentials" on urinary tract infection in children. The essentials typically include a definition or description of the condition, a discussion of who it affects, the signs or symptoms, tests or diagnostic procedures, and treatments for disease. Your child's doctor or healthcare provider may have already explained the essentials of urinary tract infection in children to you or even given you a pamphlet or brochure describing the condition. Now you are searching for more in-depth information. As editors, we have decided, nevertheless, to include a discussion on where to find essential information that can complement what the doctor has already told you. In this section we recommend a process, not a particular Web site or reference book. The process ensures that, as you search the Web, you gain background information in such a way as to maximize your understanding.

CHAPTER 1. THE ESSENTIALS ON URINARY TRACT INFECTION IN CHILDREN: GUIDELINES

Overview

Official agencies, as well as federally-funded institutions supported by national grants, frequently publish a variety of guidelines on urinary tract infection in children. These are typically called "Fact Sheets" or "Guidelines." They can take the form of a brochure, information kit, pamphlet, or flyer. Often they are only a few pages in length. The great advantage of guidelines over other sources is that they are often written with the parent in mind. Since new guidelines on urinary tract infection in children can appear at any moment and be published by a number of sources, the best approach to finding guidelines is to systematically scan the Internet-based services that post them.

The National Institutes of Health (NIH)[6]

The National Institutes of Health (NIH) is the first place to search for relatively current guidelines and fact sheets on urinary tract infection in children. Originally founded in 1887, the NIH is one of the world's foremost medical research centers and the federal focal point for medical research in the United States. At any given time, the NIH supports some 35,000 research grants at universities, medical schools, and other research and training institutions, both nationally and internationally. The rosters of those who have conducted research or who have received NIH support over the years include the world's most illustrious scientists and physicians. Among them are 97 scientists who have won the Nobel Prize for achievement in medicine.

There is no guarantee that any one Institute will have a guideline on a specific medical condition, though the National Institutes of Health collectively publish over 600 guidelines for both common and rare disorders. The best way to access NIH guidelines is via the Internet. Although the NIH is organized into many different Institutes and Offices, the following is a list of key Web sites where you are most likely to find NIH clinical guidelines and publications dealing with urinary tract infection in children and associated conditions:

- Office of the Director (OD); guidelines consolidated across agencies available at **http://www.nih.gov/health/consumer/conkey.htm**
- National Library of Medicine (NLM); extensive encyclopedia (A.D.A.M., Inc.) with guidelines available at **http://www.nlm.nih.gov/medlineplus/healthtopics.html**
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK); guidelines available at **http://www.niddk.nih.gov/health/health.htm**

Among these, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) is particularly noteworthy. The NIDDK's mission is to conduct and support research on many of the most serious diseases affecting public health.[7] The Institute supports much of the clinical research on the diseases of internal medicine and related subspecialty fields as well as many basic science disciplines. The NIDDK's Division of Intramural Research encompasses the broad spectrum of metabolic diseases such as diabetes, inborn errors of metabolism, endocrine disorders, mineral metabolism,

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[6] Adapted from the NIH: **http://www.nih.gov/about/NIHoverview.html**.

[7] This paragraph has been adapted from the NIDDK: **http://www.niddk.nih.gov/welcome/mission.htm**. "Adapted" signifies that a passage is reproduced exactly or slightly edited for this book.

digestive diseases, nutrition, urology and renal disease, and hematology. Basic research studies include biochemistry, nutrition, pathology, histochemistry, chemistry, physical, chemical, and molecular biology, pharmacology, and toxicology. NIDDK extramural research is organized into divisions of program areas:

- Division of Diabetes, Endocrinology, and Metabolic Diseases
- Division of Digestive Diseases and Nutrition
- Division of Kidney, Urologic, and Hematologic Diseases

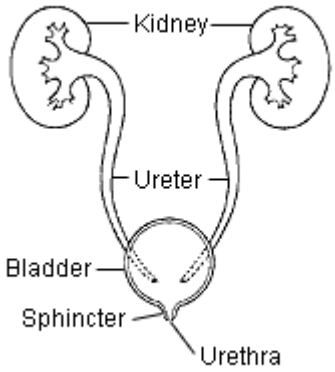
The Division of Extramural Activities provides administrative support and overall coordination. A fifth division, the Division of Nutrition Research Coordination, coordinates government nutrition research efforts. The Institute supports basic and clinical research through investigator-initiated grants, program project and center grants, and career development and training awards. The Institute also supports research and development projects and large-scale clinical trials through contracts. The following patient guideline was recently published by the NIDDK on urinary tract infection in children.

What Is Urinary Tract Infection in Children?[8]

Aside from unexpected wetting, the most common urinary problem among children is infections. An estimated 3 percent of girls and 1 percent of boys have had a urinary tract infection (UTI) by the age of 11. Some researchers believe these estimates are low because many cases of UTI go undetected. The symptoms are not always obvious to parents, and younger children are usually unable to describe how they feel. Recognizing and treating urinary tract infections is important. Untreated UTIs can lead to serious kidney problems that could threaten the life of your child.

[8] Adapted from The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK): **http://www.niddk.nih.gov/health/urolog/pubs/utichild/utichild.htm**.

How Does the Urinary Tract Normally Function?

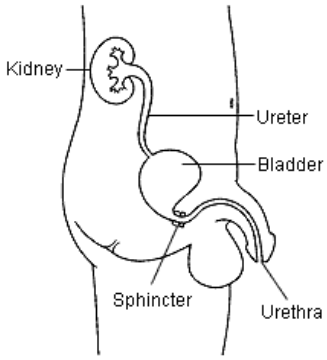


Front view of urinary tract

The kidneys filter and remove waste and water from the blood to produce urine. They get rid of about 1-1/2 to 2 quarts of urine per day in an adult and less in a child, depending on the child's age. The urine travels from the kidneys down two narrow tubes called the ureters. The urine is then stored in a balloon-like container called the bladder. In a child, the bladder can hold about 1 to 1-1/2 ounces of urine for each year of the child's age. So, the bladder of a 4-year-old child may hold about 4 to 6 ounces (less than 1 cup); an 8-year-old can hold 8 to 12 ounces. When the bladder empties, urine flows out of the body through the urethra, a tube at the bottom of the bladder. The opening of the urethra is at the end of the penis in boys and in front of the vagina in girls.

How Does the Urinary Tract Become Infected?

Normal urine contains no bacteria (germs). Bacteria may, at times, get into the urinary tract (and the urine) from the skin around the rectum and genitals by traveling up the urethra into the bladder. When this happens, the bacteria can infect and inflame the bladder, resulting in swelling and pain in the lower abdomen and side. This is called "cystitis."



Side view of male urinary tract

If the bacteria travel further up through the ureters to the kidneys, a kidney infection can develop. The infection is usually accompanied by pain and fever. Kidney infections are much more serious than bladder infections.

In some children a urinary tract infection may be a sign of an abnormal urinary tract that may be prone to repeated problems. For this reason, when a child is found to have a urinary infection, additional tests are often recommended. In other cases, children develop urinary tract infections because they are prone to such infections the way, for example, other children are prone to getting coughs, colds, or ear infections. Or a child may happen to get an infection with a type of bacteria that has a special ability to cause urinary tract infections.

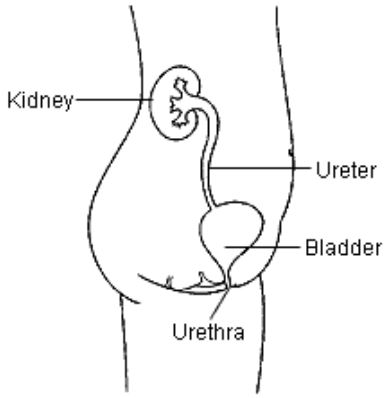
What Are the Signs of Urinary Tract Infection?

The lining of the bladder, urethra, ureters, and kidneys become irritated with a urinary tract infection, just like the inside of the nose or throat with a cold. If your child is an infant or is only a few years old, the signs of a urinary tract infection may not be clear, since children that young cannot tell you just how they feel. Your child may have a high fever, be irritable, or not eat.

On the other hand, sometimes a child may have only a low-grade fever, experience nausea and vomiting, or just not seem healthy. The diaper urine may have an unusual smell. If your child has a high temperature and appears sick for more than a day without signs of a runny nose or other obvious cause for discomfort, he or she may need to be checked for a bladder infection.

An older child with bladder irritation may complain of pain in the abdomen and pelvic area. Your child may urinate often. If the kidney is infected, your

child may complain of pain under the side of the rib cage (the flank) or low back pain. Crying or complaining that it hurts to urinate and producing only a few drops of urine at a time are other signs of urinary tract infection. Your child may have difficulty controlling the urine and may leak urine into clothing or bedsheets. The urine may smell unusual or look cloudy.



Side view of female urinary tract

How Do You Find Out Whether Your Child Has a Urinary Tract Infection?

Only by consulting a health care provider can you find out for certain whether your child has a urinary tract infection.

Some of your child's urine will be collected and examined. The way urine is collected may depend on how old your child is. The health care provider may place a plastic collection bag over your child's genital area (sealed to the skin with an adhesive strip) if the child is not yet toilet trained. An older child may be asked to urinate into a container. The sample needs to come as directly into the container as possible to avoid picking up bacteria from the skin or rectal area. A doctor or nurse may need to pass a small tube into the urethra. Urine will drain directly from the bladder into a clean container through this tube (called a catheter). Sometimes the best way to get the urine is by placing a needle directly into the bladder through the skin of the lower abdomen. Getting urine through the tube or needle will make sure that the urine collected is pure.

Some of the urine will be examined under a microscope. If an infection is present, bacteria and sometimes pus will be in the urine. If the bacteria from the sample are hard to see at first, the health care provider may place the

sample in a tube or dish with a substance that encourages any bacteria present to grow. Once the germs have multiplied, they can then be identified and tested to see which medications will provide the most effective treatment. The process of growing bacteria in the laboratory is known as performing a culture and often takes a day or more to complete.

The reliability of the culture depends on how long the urine stands before the culture is started. If you collect your child's urine at home, it should be refrigerated as soon as collected and the container should be transported in a plastic bag filled with ice.

How Are Urinary Tract Infections Treated?

Urinary tract infections are treated with antibiotics (infection-fighting drugs). After a urine sample is obtained, the health care provider may begin treatment with a drug that treats the bacteria most likely to be causing the infection. Once culture results are known, the health care provider may switch your child to another antibiotic, if necessary.

The way the antibiotic is given and the number of days that it must be taken depend in part on the type of infection and how severe it is. When a child is sick or not able to drink fluids, the antibiotic may need to be put directly into the bloodstream through a vein in the arm or hand. Otherwise, the medicine (liquid or pills) may be given by mouth or by shots. The medicine is given for at least 3 to 5 days and possibly for as long as several weeks. The daily treatment schedule recommended depends on the specific drug prescribed: The schedule may call for a single dose each day or up to four doses each day. In some cases, your child will need to take the medicine until further tests are finished.

After a few doses of the antibiotic, your child may appear much better, but often several days may pass before all symptoms are gone. In any case, your child should take the medicine for as long as the doctor says. Do not stop medications because the symptoms have gone away. Infections may return, and germs can resist future treatment if the drug is stopped too soon.
Children should drink fluids when they wish. Make sure your child drinks what he or she needs, but do not force your child to drink large amounts of fluid. The health care provider needs to know if the child is not interested in drinking.

What Tests May Be Needed after the Infection Is Gone?

Once the infection has cleared, additional tests may be recommended to check for abnormalities in the urinary tract. Repeated infections in abnormal urinary tracts may cause kidney damage. The kinds of tests ordered will depend on your child and the type of urinary infection. Because no single test can tell everything about the urinary tract that might be important to know, more than one of the following tests may be needed:

Kidney and Bladder Ultrasound

A test that examines the kidney and bladder using sound waves. This test shows shadows of the kidney and bladder that may point out certain abnormalities; this test cannot reveal all important urinary abnormalities. It also cannot measure how well a kidney works.

Voiding Cystourethrogram (VCUG)

A test that examines the urethra and bladder while the bladder fills and empties. A liquid that can be seen on x-rays is placed into the bladder through a catheter. The bladder is filled until the child urinates. This test can reveal abnormalities of the inside of the urethra and bladder. The test can also determine whether the flow of urine is normal when the bladder empties.

Intravenous Pyelogram

A test that examines the whole urinary tract. A liquid that can be seen on x-rays is injected into a vein. The substance travels into the kidneys and bladder, revealing possible obstructions.

Nuclear Scans

A number of tests using radioactive materials that are usually injected into a vein to show how well the kidneys work, the shape of the kidneys, and whether urine empties from the kidneys in a normal way. The many kinds of nuclear scans each give different information about the kidneys and bladder. Nuclear scans expose a child to no more radiation than he or she would receive from a conventional x-ray. At times, it can even be less.

What Abnormalities Lead to Urinary Problems?

Many children who get urinary tract infections have normal kidneys and bladders, but children who have an abnormality need to have it detected as early as possible in life to try to protect their kidneys against damage. Abnormalities that could occur include the following:

Vesicoureteral Reflux

Urine normally flows from the kidneys down the ureters to the bladder in one direction. With reflux, when the bladder fills, the urine may also flow backward from the bladder up the ureters to the kidneys. This abnormality is common in children with urinary infections.

Urinary Obstruction

Blockages to urinary flow may occur at many sites in the urinary tract. Blockages usually occur if the ureter or urethra is too narrow or a kidney stone at some point stops the urinary flow from leaving the body. Occasionally, the ureter may join the kidney or bladder at the wrong place, preventing urine from leaving the kidney in a normal way.

Do Urinary Tract Infections Have Long-Term Effects?

Young children are at the greatest risk for kidney damage from urinary tract infections, especially if they have some unknown urinary tract abnormality. Such damage includes kidney scars, poor kidney growth, poor kidney function, high blood pressure, and other problems. For this reason it is important that children with urinary tract infections receive prompt treatment and careful evaluation.

Points to Remember

- Urinary tract infections occur in about 3 percent of girls and 1 percent of boys by age 11.
- A urinary tract infection in a young child may be a sign of an abnormality in the urinary tract that could lead to repeated problems.

- Symptoms of a urinary infection range from slight burning with urination or unusual smelling urine to severe pain and high fever.
- Untreated urinary infections can lead to serious kidney damage.
- Talk to a doctor if you suspect your child has a urinary tract infection.

Additional Resources

American Foundation for Urologic Disease
1128 North Charles Street
Baltimore, MD 21201
Phone: 1-800-242-2383 or (410) 468-1800
Email: admin@afud.org
Internet: **www.afud.org**

National Kidney and Urologic Diseases Information Clearinghouse
3 Information Way
Bethesda, MD 20892-3580
Email: National Kidney and Urologic Diseases Information Clearinghouse
The National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). NIDDK is part of the National Institutes of Health under the U.S. Department of Health and Human Services. Established in 1987, the clearinghouse provides information about diseases of the kidneys and urologic system to people with kidney and urologic disorders and to their families, health care professionals, and the public. NKUDIC answers inquiries; develops, reviews, and distributes publications; and works closely with professional and patient organizations and Government agencies to coordinate resources about kidney and urologic diseases. Publications produced by the clearinghouse are carefully reviewed for scientific accuracy, content, and readability.

More Guideline Sources

The guideline above on urinary tract infection in children is only one example of the kind of material that you can find online and free of charge. The remainder of this chapter will direct you to other sources which either publish or can help you find additional guidelines on topics related to

urinary tract infection in children. Many of the guidelines listed below address topics that may be of particular relevance to your child's specific situation, while certain guidelines will apply to only some children with urinary tract infection in children. Due to space limitations these sources are listed in a concise manner. Do not hesitate to consult the following sources by either using the Internet hyperlink provided, or, in cases where the contact information is provided, contacting the publisher or author directly.

Topic Pages: MEDLINEplus

For parents wishing to go beyond guidelines published by specific Institutes of the NIH, the National Library of Medicine has created a vast and parent-oriented healthcare information portal called MEDLINEplus. Within this Internet-based system are "health topic pages." You can think of a health topic page as a guide to patient guides. To access this system, log on to **http://www.nlm.nih.gov/medlineplus/healthtopics.html**.

If you do not find topics of interest when browsing health topic pages, then you can choose to use the advanced search utility of MEDLINEplus at **http://www.nlm.nih.gov/medlineplus/advancedsearch.html**. This utility is similar to the NIH Search Utility, with the exception that it only includes material linked within the MEDLINEplus system (mostly parent-oriented information). It also has the disadvantage of generating unstructured results. We recommend, therefore, that you use this method only if you have a very targeted search.

The National Guideline Clearinghouse™

The National Guideline Clearinghouse™ offers hundreds of evidence-based clinical practice guidelines published in the United States and other countries. You can search their site located at **http://www.guideline.gov** by using the keyword "urinary tract infection in children" or synonyms. The following was recently posted:

- **Evidence based clinical practice guideline for patients 6 years of age or less with a first time acute urinary tract infection (UTI).**

  Source: Cincinnati Children's Hospital Medical Center.; 1999 March 28; 14 pages

  http://www.guideline.gov/FRAMESETS/guideline_fs.asp?guideline=001196&sSearch_string=urinary+tract+infection+in+children

- **The diagnosis, treatment, and evaluation of the initial urinary tract infection in febrile infants and young children.**

  Source: American Academy of Pediatrics.; 1999 April 5; 19 pages

  http://www.guideline.gov/FRAMESETS/guideline_fs.asp?guideline=001064&sSearch_string=urinary+tract+infection+in+children

Healthfinder™

Healthfinder™ is an additional source sponsored by the U.S. Department of Health and Human Services which offers links to hundreds of other sites that contain healthcare information. This Web site is located at **http://www.healthfinder.gov**. Again, keyword searches can be used to find guidelines. The following was recently found in this database:

- **Age Page - Urinary Incontinence**

  Summary: Incontinence does not happen because of aging. It may be caused by changes in your body due to disease. For example, incontinence may be the first and only symptom of a urinary tract infection.

  Source: National Institute on Aging, National Institutes of Health

  http://www.healthfinder.gov/scripts/recordpass.asp?RecordType=0&RecordID=808

- **All About Urinary Tract Infections**

  Summary: Urinary tract infections are explained to teens in this article. Information is presented on symptoms, diagnosis, treatment, and prevention.

  Source: Nemours Foundation

  http://www.healthfinder.gov/scripts/recordpass.asp?RecordType=0&RecordID=4392

- **Urinary Tract Infections in Children**

  Summary: Describes the function of the urinary tract and the signs, tests, and treatment of urinary tract infections.

  Source: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health

  http://www.healthfinder.gov/scripts/recordpass.asp?RecordType=0&RecordID=6545

The NIH Search Utility

After browsing the references listed at the beginning of this chapter, you may want to explore the NIH Search Utility. This allows you to search for documents on over 100 selected Web sites that comprise the NIH-WEB-SPACE. Each of these servers is "crawled" and indexed on an ongoing basis. Your search will produce a list of various documents, all of which will relate in some way to urinary tract infection in children. The drawbacks of this approach are that the information is not organized by theme and that the references are often a mix of information for professionals and parents. Nevertheless, a large number of the listed Web sites provide useful background information. We can only recommend this route, therefore, for relatively rare or specific disorders, or when using highly targeted searches. To use the NIH search utility, visit the following Web page: **http://search.nih.gov/index.html**.

Additional Web Sources

A number of Web sites that often link to government sites are available to the public. These can also point you in the direction of essential information. The following is a representative sample:

- AOL: **http://search.aol.com/cat.adp?id=168&layer=&from=subcats**
- drkoop.com®: **http://www.drkoop.com/conditions/ency/index.html**
- Family Village: **http://www.familyvillage.wisc.edu/specific.htm**
- Google: **http://directory.google.com/Top/Health/Conditions_and_Diseases/**
- Med Help International: **http://www.medhelp.org/HealthTopics/A.html**
- Open Directory Project: **http://dmoz.org/Health/Conditions_and_Diseases/**
- Yahoo.com: **http://dir.yahoo.com/Health/Diseases_and_Conditions/**
- WebMD®Health: **http://my.webmd.com/health_topics**

Vocabulary Builder

The material in this chapter may have contained a number of unfamiliar words. The following Vocabulary Builder introduces you to terms used in this chapter that have not been covered in the previous chapter:

Abdomen: That portion of the body that lies between the thorax and the pelvis. [NIH]

Antibiotic: A chemical substance produced by a microorganism which has the capacity, in dilute solutions, to inhibit the growth of or to kill other microorganisms. Antibiotics that are sufficiently nontoxic to the host are used as chemotherapeutic agents in the treatment of infectious diseases of man, animals and plants. [EU]

Antimicrobial: Killing microorganisms, or suppressing their multiplication or growth. [EU]

Bacteria: Unicellular prokaryotic microorganisms which generally possess rigid cell walls, multiply by cell division, and exhibit three principal forms: round or coccal, rodlike or bacillary, and spiral or spirochetal. [NIH]

Catheter: A tubular, flexible, surgical instrument for withdrawing fluids from (or introducing fluids into) a cavity of the body, especially one for introduction into the bladder through the urethra for the withdraw of urine. [EU]

Endocrinology: A subspecialty of internal medicine concerned with the metabolism, physiology, and disorders of the endocrine system. [NIH]

Hematology: A subspecialty of internal medicine concerned with morphology, physiology, and pathology of the blood and blood-forming tissues. [NIH]

Molecular: Of, pertaining to, or composed of molecules : a very small mass of matter. [EU]

Nausea: An unpleasant sensation, vaguely referred to the epigastrium and abdomen, and often culminating in vomiting. [EU]

Pediatrics: A medical specialty concerned with maintaining health and providing medical care to children from birth to adolescence. [NIH]

Pelvic: Pertaining to the pelvis. [EU]

Penis: The male organ of copulation and of urinary excretion, comprising a root, body, and extremity, or glans penis. The root is attached to the descending portions of the pubic bone by the crura, the latter being the extremities of the corpora cavernosa, and beneath them the corpus spongiosum, through which the urethra passes. The glans is covered with mucous membrane and ensheathed by the prepuce, or foreskin. The penis is homologous with the clitoris in the female. [EU]

Pyelonephritis: Inflammation of the kidney and its pelvis, beginning in the interstitium and rapidly extending to involve the tubules, glomeruli, and blood vessels; due to bacterial infection. [EU]

Spectrum: A charted band of wavelengths of electromagnetic vibrations obtained by refraction and diffraction. By extension, a measurable range of

activity, such as the range of bacteria affected by an antibiotic (antibacterial s.) or the complete range of manifestations of a disease. [EU]

Toxicology: The science concerned with the detection, chemical composition, and pharmacologic action of toxic substances or poisons and the treatment and prevention of toxic manifestations. [NIH]

Ureter: One of a pair of thick-walled tubes that transports urine from the kidney pelvis to the bladder. [NIH]

Urology: A surgical specialty concerned with the study, diagnosis, and treatment of diseases of the urinary tract in both sexes and the genital tract in the male. It includes the specialty of andrology which addresses both male genital diseases and male infertility. [NIH]

CHAPTER 2. SEEKING GUIDANCE

Overview

Some parents are comforted by the knowledge that a number of organizations dedicate their resources to helping people with urinary tract infection. These associations can become invaluable sources of information and advice. Many associations offer parent support, financial assistance, and other important services. Furthermore, healthcare research has shown that support groups often help people to better cope with their conditions.[9] In addition to support groups, your child's physician can be a valuable source of guidance and support.

In this chapter, we direct you to resources that can help you find parent organizations and medical specialists. We begin by describing how to find associations and parent groups that can help you better understand and cope with your child's condition. The chapter ends with a discussion on how to find a doctor that is right for your child.

There are a number of directories that list additional medical associations that you may find useful. While not all of these directories will provide different information, by consulting all of them, you will have nearly exhausted all sources for parent associations.

The National Health Information Center (NHIC)

The National Health Information Center (NHIC) offers a free referral service to help people find organizations that provide information about urinary

[9] Churches, synagogues, and other houses of worship might also have groups that can offer you the social support you need.

tract infection in children. For more information, see the NHIC's Web site at **http://www.health.gov/NHIC/** or contact an information specialist by calling 1-800-336-4797.

DIRLINE

A comprehensive source of information on associations is the DIRLINE database maintained by the National Library of Medicine. The database comprises some 10,000 records of organizations, research centers, and government institutes and associations which primarily focus on health and biomedicine. DIRLINE is available via the Internet at the following Web site: **http://dirline.nlm.nih.gov**. Simply type in "urinary tract infection in children" (or a synonym) or the name of a topic, and the site will list information contained in the database on all relevant organizations.

The Combined Health Information Database

Another comprehensive source of information on healthcare associations is the Combined Health Information Database. Using the "Detailed Search" option, you will need to limit your search to "Organizations" and "urinary tract infection in children". Type the following hyperlink into your Web browser: **http://chid.nih.gov/detail/detail.html**. To find associations, use the drop boxes at the bottom of the search page where "You may refine your search by." For publication date, select "All Years." Then, select your preferred language and the format option "Organization Resource Sheet." By making these selections and typing in "urinary tract infection in children" (or synonyms) into the "For these words:" box, you will only receive results on organizations dealing with urinary tract infection in children. You should check back periodically with this database since it is updated every 3 months.

The National Organization for Rare Disorders, Inc.

The National Organization for Rare Disorders, Inc. has prepared a Web site that provides, at no charge, lists of associations organized by specific medical conditions. You can access this database at the following Web site: **http://www.rarediseases.org/cgi-bin/nord/searchpage**. Select the option called "Organizational Database (ODB)" and type "urinary tract infection in children" (or a synonym) in the search box.

Online Support Groups

In addition to support groups, commercial Internet service providers offer forums and chat rooms to discuss different illnesses and conditions. WebMD®, for example, offers such a service at their Web site: **http://boards.webmd.com/roundtable**. These online communities can help you connect with a network of people whose concerns are similar to yours. Online support groups are places where people can talk informally. If you read about a novel approach, consult with your child's doctor or other healthcare providers, as the treatments or discoveries you hear about may not be scientifically proven to be safe and effective.

Finding Doctors

All parents must go through the process of selecting a physician for their children with urinary tract infection. While this process will vary, the Agency for Healthcare Research and Quality makes a number of suggestions, including the following:[10]

- If your child is in a managed care plan, check the plan's list of doctors first.
- Ask doctors or other health professionals who work with doctors, such as hospital nurses, for referrals.
- Call a hospital's doctor referral service, but keep in mind that these services usually refer you to doctors on staff at that particular hospital. The services do not have information on the quality of care that these doctors provide.
- Some local medical societies offer lists of member doctors. Again, these lists do not have information on the quality of care that these doctors provide.

Additional steps you can take to locate doctors include the following:

- Check with the associations listed earlier in this chapter.
- Information on doctors in some states is available on the Internet at **http://www.docboard.org**. This Web site is run by "Administrators in Medicine," a group of state medical board directors.
- The American Board of Medical Specialties can tell you if your child's doctor is board certified. "Certified" means that the doctor has completed a training program in a specialty and has passed an exam, or "board," to

[10] This section is adapted from the AHRQ: www.ahrq.gov/consumer/qntascii/qntdr.htm.

assess his or her knowledge, skills, and experience to provide quality patient care in that specialty. Primary care doctors may also be certified as specialists. The AMBS Web site is located at **http://www.abms.org/newsearch.asp**.[11] You can also contact the ABMS by phone at 1-866-ASK-ABMS.

- You can call the American Medical Association (AMA) at 800-665-2882 for information on training, specialties, and board certification for many licensed doctors in the United States. This information also can be found in "Physician Select" at the AMA's Web site: **http://www.ama-assn.org/aps/amahg.htm**.

Finding a Urologist

The American Urological Association (AUA) provides the public with a free-to-use "Find A Urologist" service to help patients find member urologists in their area. The database can be searched by physician name, city, U.S. State, or country and is available via the AUA's Web site located at **http://www.auanet.org/patient_info/find_urologist/index.cfm**. According to the AUA: "The American Urological Association is the professional association for urologists. As the premier professional association for the advancement of urologic patient care, the AUA is pleased to provide Find A Urologist, an on-line referral service for patients to use when looking for a urologist. All of our active members are certified by the American Board of Urology, which is an important distinction of the urologist's commitment to continuing education and superior patient care."[12]

If the previous sources did not meet your needs, you may want to log on to the Web site of the National Organization for Rare Disorders (NORD) at **http://www.rarediseases.org/**. NORD maintains a database of doctors with expertise in various rare medical conditions. The Metabolic Information Network (MIN), 800-945-2188, also maintains a database of physicians with expertise in various metabolic diseases.

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[11] While board certification is a good measure of a doctor's knowledge, it is possible to receive quality care from doctors who are not board certified.

[12] Quotation taken from the AACE's Web site: **http://www.aace.com/memsearch.php**.

Selecting Your Doctor[13]

When you have compiled a list of prospective doctors, call each of their offices. First, ask if the doctor accepts your child's health insurance plan and if he or she is taking new patients. If the doctor is not covered by your child's plan, ask yourself if you are prepared to pay the extra costs. The next step is to schedule a visit with your first choice. During the first visit you will have the opportunity to evaluate your child's doctor and to find out if your child feels comfortable with him or her.

Working with Your Child's Doctor[14]

Research has shown that parents who have good relationships with their children's doctors tend to be more satisfied with their children's care. Here are some tips to help you and your child's doctor become partners:

- You know important things about your child's symptoms and health history. Tell the doctor what you think he or she needs to know.
- Always bring any medications your child is currently taking with you to the appointment, or you can bring a list of your child's medications including dosage and frequency information. Talk about any allergies or reactions your child has had to medications.
- Tell your doctor about any natural or alternative medicines your child is taking.
- Bring other medical information, such as x-ray films, test results, and medical records.
- Ask questions. If you don't, the doctor will assume that you understood everything that was said.
- Write down your questions before the doctor's visit. List the most important ones first to make sure that they are addressed.
- Ask the doctor to draw pictures if you think that this will help you and your child understand.
- Take notes. Some doctors do not mind if you bring a tape recorder to help you remember things, but always ask first.

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[13] This section has been adapted from the AHRQ: www.ahrq.gov/consumer/qntascii/qntdr.htm.
[14] This section has been adapted from the AHRQ: www.ahrq.gov/consumer/qntascii/qntdr.htm.

- Take information home. Ask for written instructions. Your child's doctor may also have brochures and audio and videotapes on urinary tract infection in children.

By following these steps, you will enhance the relationship you and your child have with the physician.

Broader Health-Related Resources

In addition to the references above, the NIH has set up guidance Web sites that can help parents find healthcare professionals. These include:[15]

- Caregivers:
  http://www.nlm.nih.gov/medlineplus/caregivers.html
- Choosing a Doctor or Healthcare Service:
  http://www.nlm.nih.gov/medlineplus/choosingadoctororhealthcareservice.html
- Hospitals and Health Facilities:
  http://www.nlm.nih.gov/medlineplus/healthfacilities.html

[15] You can access this information at:
http://www.nlm.nih.gov/medlineplus/healthsystem.html.

PART II: ADDITIONAL RESOURCES AND ADVANCED MATERIAL

ABOUT PART II

In Part II, we introduce you to additional resources and advanced research on urinary tract infection in children. All too often, parents who conduct their own research are overwhelmed by the difficulty in finding and organizing information. The purpose of the following chapters is to provide you an organized and structured format to help you find additional information resources on urinary tract infection in children. In Part II, as in Part I, our objective is not to interpret the latest advances on urinary tract infection in children or render an opinion. Rather, our goal is to give you access to original research and to increase your awareness of sources you may not have already considered. In this way, you will come across the advanced materials often referred to in pamphlets, books, or other general works. Once again, some of this material is technical in nature, so consultation with a professional familiar with urinary tract infection in children is suggested.

CHAPTER 3. STUDIES ON URINARY TRACT INFECTION IN CHILDREN

Overview

Every year, academic studies are published on urinary tract infection in children or related conditions. Broadly speaking, there are two types of studies. The first are peer reviewed. Generally, the content of these studies has been reviewed by scientists or physicians. Peer-reviewed studies are typically published in scientific journals and are usually available at medical libraries. The second type of studies is non-peer reviewed. These works include summary articles that do not use or report scientific results. These often appear in the popular press, newsletters, or similar periodicals.

In this chapter, we will show you how to locate peer-reviewed references and studies on urinary tract infection in children. We will begin by discussing research that has been summarized and is free to view by the public via the Internet. We then show you how to generate a bibliography on urinary tract infection in children and teach you how to keep current on new studies as they are published or undertaken by the scientific community.

Federally-Funded Research on Urinary Tract Infection in Children

The U.S. Government supports a variety of research studies relating to urinary tract infection in children and associated conditions. These studies are tracked by the Office of Extramural Research at the National Institutes of

Health.[16] CRISP (Computerized Retrieval of Information on Scientific Projects) is a searchable database of federally-funded biomedical research projects conducted at universities, hospitals, and other institutions. Visit the site at **http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket**. You can perform targeted searches by various criteria including geography, date, as well as topics related to urinary tract infection in children and related conditions.

For most of the studies, the agencies reporting into CRISP provide summaries or abstracts. As opposed to clinical trial research using patients, many federally-funded studies use animals or simulated models to explore urinary tract infection in children and related conditions. In some cases, therefore, it may be difficult to understand how some basic or fundamental research could eventually translate into medical practice.

E-Journals: PubMed Central[17]

PubMed Central (PMC) is a digital archive of life sciences journal literature developed and managed by the National Center for Biotechnology Information (NCBI) at the U.S. National Library of Medicine (NLM).[18] Access to this growing archive of e-journals is free and unrestricted.[19] To search, go to **http://www.pubmedcentral.nih.gov/index.html#search**, and type "urinary tract infection in children" (or synonyms) into the search box. This search gives you access to full-text articles. The following is a sample of items found for urinary tract infection in children in the PubMed Central database:

- **Cohort study of bacterial species causing urinary tract infection and urinary tract abnormalities in children** by Olli Honkinen, Olli-Pekka

[16] Healthcare projects are funded by the National Institutes of Health (NIH), Substance Abuse and Mental Health Services (SAMHSA), Health Resources and Services Administration (HRSA), Food and Drug Administration (FDA), Centers for Disease Control and Prevention (CDCP), Agency for Healthcare Research and Quality (AHRQ), and Office of Assistant Secretary of Health (OASH).

[17] Adapted from the National Library of Medicine: http://www.pubmedcentral.nih.gov/about/intro.html.

[18] With PubMed Central, NCBI is taking the lead in preservation and maintenance of open access to electronic literature, just as NLM has done for decades with printed biomedical literature. PubMed Central aims to become a world-class library of the digital age.

[19] The value of PubMed Central, in addition to its role as an archive, lies the availability of data from diverse sources stored in a common format in a single repository. Many journals already have online publishing operations, and there is a growing tendency to publish material online only, to the exclusion of print.

Lehtonen, Olli Ruuskanen, Pentti Huovinen, and Jussi Mertsola; 1999 March 20
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=27791

- **Evaluating the benefits of antimicrobial prophylaxis to prevent urinary tract infections in children: a systematic review** by Nicole Le Saux, Ba' Pham, and David Moher; 2000 September 5
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=80458
- **Note:Leuconostoc pseudomesenteroides as a Cause of Nosocomial Urinary Tract Infections** by Elisabete A. Cappelli, Rosana R. Barros, Thereza Cristina F. Camello, Lucia M. Teixeira, and Vania Lucia C. Merquior; 1999 December
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=85896&rendertype=external
- **Risk Factors for Antibiotic-Resistant Escherichia coli Isolated from Hospitalized Patients with Urinary Tract Infections: a Prospective Study** by Albert Sotto, Corinne Merle De Boever, Pascale Fabbro-Peray, Anne Gouby, Danielle Sirot, and Jacques Jourdan; 2001 February
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=87756&rendertype=external

The National Library of Medicine: PubMed

One of the quickest and most comprehensive ways to find academic studies in both English and other languages is to use PubMed, maintained by the National Library of Medicine. The advantage of PubMed over previously mentioned sources is that it covers a greater number of domestic and foreign references. It is also free to the public.[20] If the publisher has a Web site that offers full text of its journals, PubMed will provide links to that site, as well as to sites offering other related data. User registration, a subscription fee, or some other type of fee may be required to access the full text of articles in some journals.

To generate your own bibliography of studies dealing with urinary tract infection in children, simply go to the PubMed Web site at **www.ncbi.nlm.nih.gov/pubmed**. Type "urinary tract infection in children"

[20] PubMed was developed by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) at the National Institutes of Health (NIH). The PubMed database was developed in conjunction with publishers of biomedical literature as a search tool for accessing literature citations and linking to full-text journal articles at Web sites of participating publishers. Publishers that participate in PubMed supply NLM with their citations electronically prior to or at the time of publication.

(or synonyms) into the search box, and click "Go." The following is the type of output you can expect from PubMed for "urinary tract infection in children" (hyperlinks lead to article summaries):

- **Cranberries for preventing urinary tract infections.**
  Author(s): Jepson RG, Mihaljevic L, Craig J.
  Source: Cochrane Database Syst Rev. 2001; (3): Cd001321. Review.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11686987&dopt=Abstract

- **Evolution of single kidney glomerular filtration rate in urinary tract infection.**
  Author(s): Arnello F, Ham HR, Tondeur M, Piepsz A.
  Source: Pediatric Nephrology (Berlin, Germany). 1999 February; 13(2): 121-4.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10228997&dopt=Abstract

- **Overall and single-kidney clearance in children with urinary tract infection and damaged kidneys.**
  Author(s): Arnello F, Ham HR, Tondeur M, Piepsz A.
  Source: Journal of Nuclear Medicine : Official Publication, Society of Nuclear Medicine. 1999 January; 40(1): 52-5.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9935056&dopt=Abstract

- **Renal function 16 to 26 years after the first urinary tract infection in childhood.**
  Author(s): Wennerstrom M, Hansson S, Jodal U, Sixt R, Stokland E.
  Source: Archives of Pediatrics & Adolescent Medicine. 2000 April; 154(4): 339-45.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10768669&dopt=Abstract

- **The application of "Bi-Digital O-Ring Test" in the diagnosis and treatment of urinary tract infection in symptomatic and asymptomatic patients.**
  Author(s): Chan JC.
  Source: Acupunct Electrother Res. 1986; 11(3-4): 233-41.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2880470&dopt=Abstract

- **Urinary tract infection following ritual Jewish circumcision.**
  Author(s): Goldman M, Barr J, Bistritzer T, Aladjem M.
  Source: Isr J Med Sci. 1996 November; 32(11): 1098-102.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8960080&dopt=Abstract

- **Whirlpool-associated Pseudomonas aeruginosa urinary tract infections.**
  Author(s): Salmen P, Dwyer DM, Vorse H, Kruse W.
  Source: Jama : the Journal of the American Medical Association. 1983 October 21; 250(15): 2025-6.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6413703&dopt=Abstract

Vocabulary Builder

Adjuvant: A substance which aids another, such as an auxiliary remedy; in immunology, nonspecific stimulator (e.g., BCG vaccine) of the immune response. [EU]

Bacteriuria: The presence of bacteria in the urine with or without consequent urinary tract infection. Since bacteriuria is a clinical entity, the term does not preclude the use of urine/microbiology for technical discussions on the isolation and segregation of bacteria in the urine. [NIH]

Chemotherapy: The treatment of disease by means of chemicals that have a specific toxic effect upon the disease - producing microorganisms or that selectively destroy cancerous tissue. [EU]

Circumcision: Excision of the prepuce or part of it. [NIH]

Collagen: The protein substance of the white fibres (collagenous fibres) of skin, tendon, bone, cartilage, and all other connective tissue; composed of molecules of tropocollagen (q.v.), it is converted into gelatin by boiling. collagenous pertaining to collagen; forming or producing collagen. [EU]

Cystoscopy: Direct visual examination of the urinary tract with a cystoscope. [EU]

Defecography: Radiographic examination of the process of defecation after the instillation of a contrast media into the rectum. [NIH]

Electromyography: Recording of the changes in electric potential of muscle by means of surface or needle electrodes. [NIH]

Epidural: Situated upon or outside the dura mater. [EU]

Escherichia: A genus of gram-negative, facultatively anaerobic, rod-shaped

bacteria whose organisms occur in the lower part of the intestine of warm-blooded animals. The species are either nonpathogenic or opportunistic pathogens. [NIH]

Filtration: The passage of a liquid through a filter, accomplished by gravity, pressure, or vacuum (suction). [EU]

Glycosaminoglycans: Heteropolysaccharides which contain an N-acetylated hexosamine in a characteristic repeating disaccharide unit. The repeating structure of each disaccharide involves alternate 1,4- and 1,3-linkages consisting of either N-acetylglucosamine or N-acetylgalactosamine. [NIH]

Gynecology: A medical-surgical specialty concerned with the physiology and disorders primarily of the female genital tract, as well as female endocrinology and reproductive physiology. [NIH]

Leuconostoc: A genus of gram-positive, facultatively anaerobic bacteria whose growth is dependent on the presence of a fermentable carbohydrate. It is nonpathogenic to plants and animals, including humans. [NIH]

Ligament: A band of fibrous tissue that connects bones or cartilages, serving to support and strengthen joints. [EU]

Mobility: Capability of movement, of being moved, or of flowing freely. [EU]

Musculature: The muscular apparatus of the body, or of any part of it. [EU]

Nephrology: A subspecialty of internal medicine concerned with the anatomy, physiology, and pathology of the kidney. [NIH]

Nosocomial: Pertaining to or originating in the hospital, said of an infection not present or incubating prior to admittance to the hospital, but generally occurring 72 hours after admittance; the term is usually used to refer to patient disease, but hospital personnel may also acquire nosocomial infection. [EU]

Obstetrics: A medical-surgical specialty concerned with management and care of women during pregnancy, parturition, and the puerperium. [NIH]

Outpatients: Persons who receive ambulatory care at an outpatient department or clinic without room and board being provided. [NIH]

Pessary: 1. an instrument placed in the vagina to support the uterus or rectum or as a contraceptive device. 2. a medicated vaginal suppository. [EU]

Predisposition: A latent susceptibility to disease which may be activated under certain conditions, as by stress. [EU]

Prevalence: The total number of cases of a given disease in a specified population at a designated time. It is differentiated from incidence, which refers to the number of new cases in the population at a given time. [NIH]

Prolapse: 1. the falling down, or sinking, of a part or viscus; procidentia. 2.

to undergo such displacement. [EU]

Prophylaxis: The prevention of disease; preventive treatment. [EU]

Pseudomonas: A genus of gram-negative, aerobic, rod-shaped bacteria widely distributed in nature. Some species are pathogenic for humans, animals, and plants. [NIH]

Radiography: The making of film records (radiographs) of internal structures of the body by passage of x-rays or gamma rays through the body to act on specially sensitized film. [EU]

Radiology: A specialty concerned with the use of x-ray and other forms of radiant energy in the diagnosis and treatment of disease. [NIH]

Species: A taxonomic category subordinate to a genus (or subgenus) and superior to a subspecies or variety, composed of individuals possessing common characters distinguishing them from other categories of individuals of the same taxonomic level. In taxonomic nomenclature, species are designated by the genus name followed by a Latin or Latinized adjective or noun. [EU]

Surgical: Of, pertaining to, or correctable by surgery. [EU]

Symptomatic: 1. pertaining to or of the nature of a symptom. 2. indicative (of a particular disease or disorder). 3. exhibiting the symptoms of a particular disease but having a different cause. 4. directed at the allying of symptoms, as symptomatic treatment. [EU]

Translating: Conversion from one language to another language. [NIH]

Urography: Roentgenography of a part of the urinary tract which has been rendered opaque by some opaque medium. [EU]

CHAPTER 4. BOOKS ON URINARY TRACT INFECTION IN CHILDREN

Overview

This chapter provides bibliographic book references relating to urinary tract infection in children. You have many options to locate books on urinary tract infection in children. The simplest method is to go to your local bookseller and inquire about titles that they have in stock or can special order for you. Some parents, however, prefer online sources (e.g. **www.amazon.com** and **www.bn.com**). In addition to online booksellers, excellent sources for book titles on urinary tract infection in children include the Combined Health Information Database and the National Library of Medicine. Once you have found a title that interests you, visit your local public or medical library to see if it is available for loan.

Book Summaries: Online Booksellers

Commercial Internet-based booksellers, such as Amazon.com and Barnes & Noble.com, offer summaries which have been supplied by each title's publisher. Some summaries also include customer reviews. Your local bookseller may have access to in-house and commercial databases that index all published books (e.g. Books in Print®).

The National Library of Medicine Book Index

The National Library of Medicine at the National Institutes of Health has a massive database of books published on healthcare and biomedicine. Go to the following Internet site, **http://locatorplus.gov/**, and then select "Search LOCATORplus." Once you are in the search area, simply type "urinary tract infection in children" (or synonyms) into the search box, and select "books only." From there, results can be sorted by publication date, author, or relevance. The following was recently catalogued by the National Library of Medicine:[21]

- **11th Biennial Meeting of the International Society for the Upper Urinary Tract: ISDU: Patras (Greece), August 23-25, 1996.** Author: editor, George Barbalias; Year: 1996; Bologna, Italy: Monduzzi Editore, International Proceedings Division, c1996; ISBN: 8832308223
- **Analysis of the use of fluoroquinolones for uncomplicated urinary tract infections, prostatitis, and community-acquired pneumonia: clinical and economic considerations.** Author: Brendan Barrett ... [et al.]; Year: 1997; Ottawa, Ont.: CCOHTA Publications, [1997]; ISBN: 1895561531
- **Clinical and economic considerations in the use of fluroquinolones.** Author: overview prepared by Judith L. Glennie; Year: 1997; Ottawa, Ont.: Canadian Coordinating Office for Health Technology Assessment, [1997]
- **Color atlas of endourology.** Author: David M. Albala, Michael Grasso III; Year: 1999; Philadelphia: Lippincott-Raven, 1999; ISBN: 0397516762 http://www.amazon.com/exec/obidos/ASIN/0397516762/icongroupinterna
- **Complications of urologic surgery: prevention and management.** Author: [edited by] Samir S. Taneja, Robert B. Smith, Richard M. Ehrlich; Year: 2001; Philadelphia: Saunders, c2001; ISBN: 072167688X http://www.amazon.com/exec/obidos/ASIN/072167688X/icongroupinterna

[21] In addition to LOCATORPlus, in collaboration with authors and publishers, the National Center for Biotechnology Information (NCBI) is adapting biomedical books for the Web. The books may be accessed in two ways: (1) by searching directly using any search term or phrase (in the same way as the bibliographic database PubMed), or (2) by following the links to PubMed abstracts. Each PubMed abstract has a "Books" button that displays a facsimile of the abstract in which some phrases are hypertext links. These phrases are also found in the books available at NCBI. Click on hyperlinked results in the list of books in which the phrase is found. Currently, the majority of the links are between the books and PubMed. In the future, more links will be created between the books and other types of information, such as gene and protein sequences and macromolecular structures. See **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Books.**

- **Congenital anomalies of the urinary and genital tracts.** Author: F. Douglas Stephens, E. Durham Smith, John M. Hutson; Year: 1996; Oxford: Isis Medical Media, 1996; ISBN: 1899066330 http://www.amazon.com/exec/obidos/ASIN/1899066330/icongroupinterna
- **Evaluation of the Sensititre LeukoBact urine screen.** Author: M. Stevens ... [et al.]; Year: 1992; London: Department of Health, 1992; ISBN: 1851977112
- **Genes and proteins underlying microbial urinary tract virulence: basic aspects and applications.** Author: edited by Levente Emödy ... [et al.]; Year: 2000; New York: Kluwer Academic/Plenum Publishers, c2000; ISBN: 0306464551 http://www.amazon.com/exec/obidos/ASIN/0306464551/icongroupinterna
- **Handbook of pediatric urology.** Author: editors, Laurence S. Baskin, Barry A. Kogan, John W. Duckett; foreword by Larry Shapiro; illustrations by Paul Stempen; Year: 1997; Philadelphia: Lippincott-Raven, c1997; ISBN: 0316083526 http://www.amazon.com/exec/obidos/ASIN/0316083526/icongroupinterna
- **Improving the efficiency and relevance of health technology assessment: the role of iterative decision analytic modelling.** Author: Elisabeth Fenwick ... [et al.]; Year: 2000; York: University of York, Centre for Health Economics: Dept. of Economic & Related Studies; [Oxford]: Institute of Health Sciences, University of Oxford, [2000]
- **Management of short term indwelling urethral catheters to prevent urinary tract infections.** Author: Sandra Dunn ... [et al.]; Year: 2000; Adelaide, SA: Joanna Briggs Institute for Evidence Based Nursing and Midwifery, 2000; ISBN: 0957779615
- **Pediatric nephrology.** Author: [edited by] T. Martin Barratt, Ellis D. Avner, William E. Harmon; Year: 1999; Baltimore: Lippincott Williams & Wilkins, c1999; ISBN: 0683300555 http://www.amazon.com/exec/obidos/ASIN/0683300555/icongroupinterna
- **Practical urodynamics.** Author: [edited by] Victor W. Nitti; Year: 1998; Philadelphia: W.B. Saunders, c1998; ISBN: 0721638066 http://www.amazon.com/exec/obidos/ASIN/0721638066/icongroupinterna
- **Prevention and management of urinary tract infections in paralyzed persons.** Author: prepared for Agency for Health Care Policy and Research; prepared by Southern California Evidence-Based Practice

Center/Rand; Barbara G. Vickrey, project director ... [et al.]; Year: 1999; Rockville, Md.: U.S. Dept. of Health and Human Services, Public Health Services, Agency for Health Care Policy and Research, [1999]

- **Renal system.** Author: Michael J. Field, Carol A. Pollock, David C. Harris; illustrations by Robert Britton; Year: 2001; Edinburgh; New York: Churchill Livingstone, 2001; ISBN: 0443064784 http://www.amazon.com/exec/obidos/ASIN/0443064784/icongroupinterna
- **Stenting the urinary system.** Author: edited by Daniel Yachia; Year: 1998; Oxford: ISIS Medical Media; St. Louis, MO: Distributed in the USA by Mosby Year Book, 1998; ISBN: 1899066829 http://www.amazon.com/exec/obidos/ASIN/1899066829/icongroupinterna
- **Structure and function of the bladder neck.** Author: W. Dorschner, J.-U. Stolzenburg, J. Neuhaus; Year: 2001; Berlin; New York: Springer, c2001; ISBN: 3540679987 (softcover: alk. paper) http://www.amazon.com/exec/obidos/ASIN/3540679987/icongroupinterna
- **Treatment of urinary tract infections.** Author: International Society for the Upper Urinary Tract. Meeting (11th: 1996: Patrai, Greece); Year: 1990; [Uppsala]: Medical Products Agency, [1990]
- **Urinary incontinence in primary care.** Author: Linda Cardozo, David Staskin, Michael Kirby; with a contribution from Angela Billington; Year: 2000; Oxford: Isis Medical Media, 2000; ISBN: 1901865681 http://www.amazon.com/exec/obidos/ASIN/1901865681/icongroupinterna
- **Urinary tract infection in the female.** Author: edited by Stuart L. Stanton and Peter L. Dwyer; Year: 2000; London: M. Dunitz; Malden, MA: Distributed in the USA, Canada, and Brazil by Blackwell Science, 2000; ISBN: 1853176893 http://www.amazon.com/exec/obidos/ASIN/1853176893/icongroupinterna
- **Urinary tract infection.** Author: [prepared by the American Board of Family Practice]; major contributors ... Johy E. Delzell, Anne Fitzsimmons, Dana Weaver-Osterholtz; Year: 1999; Lexington, Ky. (2228 Young Dr., Lexington 40505-4294): The Board, c1999
- **Urinary tract infections: detection, prevention, and management.** Author: Calvin M. Kunin; Year: 1997; Baltimore: Williams & Wilkins, c1997; ISBN: 0683181025 http://www.amazon.com/exec/obidos/ASIN/0683181025/icongroupinterna

- **Urinary tract infections and infections of the female pelvis.** Author: editor-in-chief, Gerald L. Mandell; editor, Jack D. Sobel; with 15 contributors; Year: 1997; Philadelphia: Churchill Livingstone; Developed by Current Medicine, c1997; ISBN: 0443077703 (hardcover) http://www.amazon.com/exec/obidos/ASIN/0443077703/icongroupinterna
- **Urinary tract infections.** Author: edited by William Brumfitt, Jeremy M.T. Hamilton-Miller, and Ross R. Bailey; Year: 1998; London; New York: Chapman & Hall Medical, 1998; ISBN: 0412630508 (alk. paper) http://www.amazon.com/exec/obidos/ASIN/0412630508/icongroupinterna
- **Urinary tract infections.** Author: volume editor, Tom Bergan; Year: 1997; Basel; New York: Karger, 1997; ISBN: 3805564406 (hardcover: alk. paper) http://www.amazon.com/exec/obidos/ASIN/3805564406/icongroupinterna

Chapters on Urinary Tract Infection in Children

Frequently, urinary tract infection in children will be discussed within a book, perhaps within a specific chapter. In order to find chapters that are specifically dealing with urinary tract infection in children, an excellent source of abstracts is the Combined Health Information Database. You will need to limit your search to book chapters and urinary tract infection in children using the "Detailed Search" option. Go directly to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. To find book chapters, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer, and the format option "Book Chapter." By making these selections and typing in "urinary tract infection in children" (or synonyms) into the "For these words:" box, you will only receive results on chapters in books.

General Home References

In addition to references for urinary tract infection in children, you may want a general home medical guide that spans all aspects of home healthcare. The following list is a recent sample of such guides (sorted alphabetically by title; hyperlinks provide rankings, information, and reviews at Amazon.com):

- **American Academy of Pediatrics Guide to Your Child's Symptoms : The Official, Complete Home Reference, Birth Through Adolescence** by Donald Schiff (Editor), et al; Paperback - 256 pages (January 1997), Villard Books; ISBN: 0375752579; **http://www.amazon.com/exec/obidos/ASIN/0375752579/icongroupinterna**
- **The Children's Hospital Guide to Your Child's Health and Development** by Alan D. Woolf (Editor), et al; Hardcover - 796 pages, 1st edition (January 15, 2001), Perseus Books; ISBN: 073820241X; **http://www.amazon.com/exec/obidos/ASIN/073820241X/icongroupinterna**
- **Helping Your Child in the Hospital: A Practical Guide for Parents** by Nancy Keene, Rachel Prentice; Paperback - 176 pages, 3rd edition (April 15, 2002), O'Reilly & Associates; ISBN: 0596500114; **http://www.amazon.com/exec/obidos/ASIN/0596500114/icongroupinterna**
- **Medical Emergencies & Childhood Illnesses: Includes Your Child's Personal Health Journal (Parent Smart)** by Penny A. Shore, William Sears (Contributor); Paperback - 115 pages (February 2002), Parent Kit Corporation; ISBN: 1896833187; **http://www.amazon.com/exec/obidos/ASIN/1896833187/icongroupinterna**
- **Taking Care of Your Child: A Parent's Guide to Complete Medical Care** by Robert H. Pantell, M.D., et al; Paperback - 524 pages, 6th edition (March 5, 2002), Perseus Press; ISBN: 0738206016; **http://www.amazon.com/exec/obidos/ASIN/0738206016/icongroupinterna**
- **Urodynamics Made Easy** by Christopher R. Chapple, Scott A. MacDiarmid; Paperback -- 2nd edition (April 15, 2000), Churchill Livingstone; ISBN: 0443054630; **http://www.amazon.com/exec/obidos/ASIN/0443054630/icongroupinterna**

Vocabulary Builder

Intermittent: Occurring at separated intervals; having periods of cessation of activity. [EU]

Proteins: Polymers of amino acids linked by peptide bonds. The specific

sequence of amino acids determines the shape and function of the protein. [NIH]

Urodynamics: The mechanical laws of fluid dynamics as they apply to urine transport. [NIH]

Virulence: The degree of pathogenicity within a group or species of microorganisms or viruses as indicated by case fatality rates and/or the ability of the organism to invade the tissues of the host. [NIH]

CHAPTER 5. MULTIMEDIA ON URINARY TRACT INFECTION IN CHILDREN

Overview

Information on urinary tract infection in children can come in a variety of formats. Among multimedia sources, video productions, slides, audiotapes, and computer databases are often available. In this chapter, we show you how to keep current on multimedia sources of information on urinary tract infection in children. We start with sources that have been summarized by federal agencies, and then show you how to find bibliographic information catalogued by the National Library of Medicine. If you see an interesting item, visit your local medical library to check on the availability of the title.

Bibliography: Multimedia on Urinary Tract Infection in Children

The National Library of Medicine is a rich source of information on healthcare-related multimedia productions including slides, computer software, and databases. To access the multimedia database, go to the following Web site: **http://locatorplus.gov/**. Select "Search LOCATORplus." Once in the search area, simply type in urinary tract infection in children (or synonyms). Then, in the option box provided below the search box, select "Audiovisuals and Computer Files." From there, you can choose to sort results by publication date, author, or relevance. The following multimedia has been indexed on urinary tract infection in children. For more information, follow the hyperlink indicated:

- **Breaking the chain of urinary tract infections.** Source: produced by Southern Illinois University School of Medicine, Office of Continuing Education, Division of Biomedical Communications and Division of Infectious Diseases of the Department of M; Year: 1992; Format: Videorecording; Chapel Hill, NC: Health Sciences Consortium, c1992
- **Common problems in family practice: acute dysuria in the nonpregnant female.** Source: Jane Barclay Mandel; written by Richard B. Lewan; sponsored by Medical College of Wisconsin, Dept. of Family Practice; Year: 1984; Format: Videorecording; Carrboro, NC: Health Sciences Consortium, c1984
- **Distal urethral stenosis, difficult urination, and infection.** Source: Children's Medical Center of Northern California, Department of Urology, University of California, San Francisco Medical Center; Year: 1969; Format: Motion picture; United States: Eaton Medical Film Library, [1969]
- **Genitourinary management of the spinal cord injury patient.** Source: produced by Salt Lake City Regional Learning Resources Services for Spinal Cord Injury Service, VA Central Office, in conjunction with Long Beach VA Medical Center; Year: 1988; Format: Videorecording; [Washington, D.C.: Veterans Administration], 1988
- **Genitourinary problems in the neonate.** Source: the Radiological Society of North America; Year: 1990; Format: Videorecording; Oak Brook, Ill.: RSNA, c1990
- **Histology of the respiratory, circulatory, and urinary systems.** Source: by Victor B. Eichler; Year: 1982; Format: Slide; Elmira, NY: Educational Images, c1982

- **Maintaining an infection-free bladder.** Source: presented by American Pharmaseal; Year: 1984; Format: Videorecording; [Los Angeles: Wexler Films, 1984]
- **Outbreak! : case studies in clinical infection: urinary tract infection.** Source: a presentation of Films for the Humanities & Sciences; produced for the Department of Medical Microbiology, University of Sheffield; Sheffield University Televis; Year: 1999; Format: Videorecording; Princeton, N.J.: Films for the Humanities & Sciences, c1999
- **Pathogenesis & management of urinary tract infections : new concepts about an old problem.** Source: University of Washington, Department of Medicine; produced in the facilities of Instructional Media Services, University of Washington; Year: 1990; Format: Videorecording; [Seattle, Wash.]: University of Washington, Dept. of Medicine, c1990
- **Pathogenesis of urinary tract infections.** Source: [presented by] Ortho Pharmaceutical Corporation; developed and produced by Health Learning Systems Inc; Year: 1988; Format: Videorecording; [Lyndhurst, N.J.]: Health Learning Systems, c1988
- **Pediatric genitourinary nuclear medicine.** Source: the Society of Nuclear Medicine; Year: 1990; Format: Slide; [New York, N.Y.]: The Society, 1990
- **Pediatric GU nuclear medicine : renal infections, newborn renal masses, and scrotal disease.** Source: the Radiological Society of North America; Year: 1988; Format: Videorecording; Oak Brook, Ill.: The Society, c1988
- **Repair of recto-urethral fistula.** Source: War Department; Year: 1947; Format: Motion picture; United States: War Dept., 1947
- **Respiratory system : breathing apparatus.** Year: 1918; Format: Motion picture; [United States: Bray Productions, Educational and Social Service, 1918]
- **Urethral catheter : its abuse and use.** Source: [presented by] the U.S. Department of Health, Education, and Welfare; a National Medical Audiovisual Center production; Year: 1969; Format: Motion picture; [United States]: The Center, 1969
- **Urinary system in the pelvis.** Source: [presented by] McMaster University, Health Sciences, Department of Anatomy; Year: 1984; Format: Videorecording; [Hamilton, Ont.]: McMaster Health Sciences, c1984
- **Urinary system.** Source: Mosby Lifeline; Samuel Merritt College, Studio Three Productions; Year: 1995; Format: Videorecording; [St. Louis, Mo.?]: Mosby Lifeline, c1995

- **Urinary system.** Source: Royal College of Surgeons of England; Year: 1986; Format: Slide; [London, Eng.]: Gower Medical Pub., [1986]
- **Urinary tract infections.** Source: [the Telecourse System]; Year: 1981; Format: Videorecording; [United States: s.n., 1981]
- **Urinary tract infections.** Source: Washington Alaska Regional Medical Program; Year: 1971; Format: Videorecording; [United States: s.n.], 1971
- **Urinary tract infections.** Source: Washington Alaska Regional Medical Program; Year: 1971; Format: Videorecording; [United States: s.n.], 1971
- **Urinary tract infections.** Source: University of Washington, School of Medicine; Washington Alaska Regional Medical Program; produced by Information & Education Resource Support Unit; Year: 1971; Format: Videorecording; [Washington, D.C.: National Audiovisual Center], 1971
- **Urinary.** Source: the Ohio Medical Education Network, OMEN; Year: 1991; Format: Slide; [Columbus, Ohio: The Network, 1991]
- **Urologic surgery.** Source: American College of Surgeons; Year: 1989; Format: Sound recording; Chicago, IL: The College, [1989]
- **UT, pelvis, and peritoneum.** Source: [produced and published by Gower Medical Publishing]; Year: 1982; Format: Slide; London, UK: Gower Medical Pub., c1982

Vocabulary Builder

Dysuria: Painful or difficult urination. [EU]

Endoscopy: Visual inspection of any cavity of the body by means of an endoscope. [EU]

Fistula: An abnormal passage or communication, usually between two internal organs, or leading from an internal organ to the surface of the body; frequently designated according to the organs or parts with which it communicates, as anovaginal, brochocutaneous, hepatopleural, pulmonoperitoneal, rectovaginal, urethrovaginal, and the like. Such passages are frequently created experimentally for the purpose of obtaining body secretions for physiologic study. [EU]

Microbiology: The study of microorganisms such as fungi, bacteria, algae, archaea, and viruses. [NIH]

Peritoneum: Endothelial lining of the abdominal cavity, the parietal peritoneum covering the inside of the abdominal wall and the visceral peritoneum covering the bowel, the mesentery, and certain of the organs. The portion that covers the bowel becomes the serosal layer of the bowel wall. [NIH]

Stenosis: Narrowing or stricture of a duct or canal. [EU]

CHAPTER 6. PHYSICIAN GUIDELINES AND DATABASES

Overview

Doctors and medical researchers rely on a number of information sources to help children with urinary tract infection in children. Many will subscribe to journals or newsletters published by their professional associations or refer to specialized textbooks or clinical guides published for the medical profession. In this chapter, we focus on databases and Internet-based guidelines created or written for this professional audience.

NIH Guidelines

For the more common medical conditions, the National Institutes of Health publish guidelines that are frequently consulted by physicians. Publications are typically written by one or more of the various NIH Institutes. For physician guidelines, commonly referred to as "clinical" or "professional" guidelines, you can visit the following Institutes:

- Office of the Director (OD); guidelines consolidated across agencies available at **http://www.nih.gov/health/consumer/conkey.htm**
- National Institute of General Medical Sciences (NIGMS); fact sheets available at **http://www.nigms.nih.gov/news/facts/**
- National Library of Medicine (NLM); extensive encyclopedia (A.D.A.M., Inc.) with guidelines: **http://www.nlm.nih.gov/medlineplus/healthtopics.html**
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK); guidelines available at **http://www.niddk.nih.gov/health/health.htm**

NIH Databases

In addition to the various Institutes of Health that publish professional guidelines, the NIH has designed a number of databases for professionals.[22] Physician-oriented resources provide a wide variety of information related to the biomedical and health sciences, both past and present. The format of these resources varies. Searchable databases, bibliographic citations, full text articles (when available), archival collections, and images are all available. The following are referenced by the National Library of Medicine:[23]

- **Bioethics:** Access to published literature on the ethical, legal and public policy issues surrounding healthcare and biomedical research. This information is provided in conjunction with the Kennedy Institute of Ethics located at Georgetown University, Washington, D.C.: **http://www.nlm.nih.gov/databases/databases_bioethics.html**
- **HIV/AIDS Resources:** Describes various links and databases dedicated to HIV/AIDS research: **http://www.nlm.nih.gov/pubs/factsheets/aidsinfs.html**
- **NLM Online Exhibitions:** Describes "Exhibitions in the History of Medicine": **http://www.nlm.nih.gov/exhibition/exhibition.html**. Additional resources for historical scholarship in medicine: **http://www.nlm.nih.gov/hmd/hmd.html**
- **Biotechnology Information:** Access to public databases. The National Center for Biotechnology Information conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information for the better understanding of molecular processes affecting human health and disease: **http://www.ncbi.nlm.nih.gov/**
- **Population Information:** The National Library of Medicine provides access to worldwide coverage of population, family planning, and related health issues, including family planning technology and programs, fertility, and population law and policy: **http://www.nlm.nih.gov/databases/databases_population.html**
- **Cancer Information:** Access to caner-oriented databases: **http://www.nlm.nih.gov/databases/databases_cancer.html**

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[22] Remember, for the general public, the National Library of Medicine recommends the databases referenced in MEDLINE*plus* (**http://medlineplus.gov/** or **http://www.nlm.nih.gov/medlineplus/databases.html**).

[23] See http://www.nlm.nih.gov/databases/databases.html.

- **Profiles in Science:** Offering the archival collections of prominent twentieth-century biomedical scientists to the public through modern digital technology: **http://www.profiles.nlm.nih.gov/**
- **Chemical Information:** Provides links to various chemical databases and references: **http://sis.nlm.nih.gov/Chem/ChemMain.html**
- **Clinical Alerts:** Reports the release of findings from the NIH-funded clinical trials where such release could significantly affect morbidity and mortality: **http://www.nlm.nih.gov/databases/alerts/clinical_alerts.html**
- **Space Life Sciences:** Provides links and information to space-based research (including NASA): **http://www.nlm.nih.gov/databases/databases_space.html**
- **MEDLINE:** Bibliographic database covering the fields of medicine, nursing, dentistry, veterinary medicine, the healthcare system, and the pre-clinical sciences: **http://www.nlm.nih.gov/databases/databases_medline.html**
- **Toxicology and Environmental Health Information (TOXNET):** Databases covering toxicology and environmental health: **http://sis.nlm.nih.gov/Tox/ToxMain.html**
- **Visible Human Interface:** Anatomically detailed, three-dimensional representations of normal male and female human bodies: **http://www.nlm.nih.gov/research/visible/visible_human.html**

While all of the above references may be of interest to physicians who study and treat urinary tract infection in children, the following are particularly noteworthy.

The NLM Gateway[24]

The NLM (National Library of Medicine) Gateway is a Web-based system that lets users search simultaneously in multiple retrieval systems at the U.S. National Library of Medicine (NLM). It allows users of NLM services to initiate searches from one Web interface, providing "one-stop searching" for many of NLM's information resources or databases.[25] One target audience for the Gateway is the Internet user who is new to NLM's online resources and does not know what information is available or how best to search for it.

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[24] Adapted from NLM: **http://gateway.nlm.nih.gov/gw/Cmd?Overview.x**.

[25] The NLM Gateway is currently being developed by the Lister Hill National Center for Biomedical Communications (LHNCBC) at the National Library of Medicine (NLM) of the National Institutes of Health (NIH).

This audience may include physicians and other healthcare providers, researchers, librarians, students, and, increasingly, parents and the public.[26] To use the NLM Gateway, simply go to the search site at **http://gateway.nlm.nih.gov/gw/Cmd**. Type "urinary tract infection in children" (or synonyms) into the search box and click "Search." The results will be presented in a tabular form, indicating the number of references in each database category.

Results Summary

Category	Items Found
Journal Articles	10003
Books / Periodicals / Audio Visual	24
Consumer Health	143
Meeting Abstracts	7
Other Collections	1
Total	10178

HSTAT[27]

HSTAT is a free, Web-based resource that provides access to full-text documents used in healthcare decision-making.[28] HSTAT's audience includes healthcare providers, health service researchers, policy makers, insurance companies, consumers, and the information professionals who serve these groups. HSTAT provides access to a wide variety of publications, including clinical practice guidelines, quick-reference guides for clinicians, consumer health brochures, evidence reports and technology assessments from the Agency for Healthcare Research and Quality (AHRQ), as well as AHRQ's Put Prevention Into Practice.[29] Simply search by "urinary tract

[26] Other users may find the Gateway useful for an overall search of NLM's information resources. Some searchers may locate what they need immediately, while others will utilize the Gateway as an adjunct tool to other NLM search services such as PubMed® and MEDLINEplus®. The Gateway connects users with multiple NLM retrieval systems while also providing a search interface for its own collections. These collections include various types of information that do not logically belong in PubMed, LOCATORplus, or other established NLM retrieval systems (e.g., meeting announcements and pre-1966 journal citations). The Gateway will provide access to the information found in an increasing number of NLM retrieval systems in several phases.

[27] Adapted from HSTAT: http://www.nlm.nih.gov/pubs/factsheets/hstat.html.

[28] The HSTAT URL is **http://hstat.nlm.nih.gov/**.

[29] Other important documents in HSTAT include: the National Institutes of Health (NIH) Consensus Conference Reports and Technology Assessment Reports; the HIV/AIDS

infection in children" (or synonyms) at the following Web site: **http://text.nlm.nih.gov**.

Coffee Break: Tutorials for Biologists[30]

Some parents may wish to have access to a general healthcare site that takes a scientific view of the news and covers recent breakthroughs in biology that may one day assist physicians in developing treatments. To this end, we recommend "Coffee Break," a collection of short reports on recent biological discoveries. Each report incorporates interactive tutorials that demonstrate how bioinformatics tools are used as a part of the research process. Currently, all Coffee Breaks are written by NCBI staff.[31] Each report is about 400 words and is usually based on a discovery reported in one or more articles from recently published, peer-reviewed literature.[32] This site has new articles every few weeks, so it can be considered an online magazine of sorts, and intended for general background information. Access the Coffee Break Web site at **http://www.ncbi.nlm.nih.gov/Coffeebreak/**.

Treatment Information Service (ATIS) resource documents; the Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Treatment (SAMHSA/CSAT) Treatment Improvement Protocols (TIP) and Center for Substance Abuse Prevention (SAMHSA/CSAP) Prevention Enhancement Protocols System (PEPS); the Public Health Service (PHS) Preventive Services Task Force's *Guide to Clinical Preventive Services*; the independent, nonfederal Task Force on Community Services *Guide to Community Preventive Services*; and the Health Technology Advisory Committee (HTAC) of the Minnesota Health Care Commission (MHCC) health technology evaluations.

[30] Adapted from http://www.ncbi.nlm.nih.gov/Coffeebreak/Archive/FAQ.html.

[31] The figure that accompanies each article is frequently supplied by an expert external to NCBI, in which case the source of the figure is cited. The result is an interactive tutorial that tells a biological story.

[32] After a brief introduction that sets the work described into a broader context, the report focuses on how a molecular understanding can provide explanations of observed biology and lead to therapies for diseases. Each vignette is accompanied by a figure and hypertext links that lead to a series of pages that interactively show how NCBI tools and resources are used in the research process.

Other Commercial Databases

In addition to resources maintained by official agencies, other databases exist that are commercial ventures addressing medical professionals. Here are a few examples that may interest you:

- **CliniWeb International:** Index and table of contents to selected clinical information on the Internet; see **http://www.ohsu.edu/cliniweb/**.
- **Image Engine:** Multimedia electronic medical record system that integrates a wide range of digitized clinical images with textual data stored in the University of Pittsburgh Medical Center's MARS electronic medical record system; see the following Web site: **http://www.cml.upmc.edu/cml/imageengine/imageEngine.html**.
- **Medical World Search:** Searches full text from thousands of selected medical sites on the Internet; see **http://www.mwsearch.com/**.
- **MedWeaver:** Prototype system that allows users to search differential diagnoses for any list of signs and symptoms, to search medical literature, and to explore relevant Web sites; see **http://www.med.virginia.edu/~wmd4n/medweaver.html**.
- **Metaphrase:** Middleware component intended for use by both caregivers and medical records personnel. It converts the informal language generally used by caregivers into terms from formal, controlled vocabularies; see **http://www.lexical.com/Metaphrase.html**.

The Genome Project and Urinary Tract Infection in Children

With all the discussion in the press about the Human Genome Project, it is only natural that physicians, researchers, and parents want to know about how human genes relate to urinary tract infection in children. In the following section, we will discuss databases and references used by physicians and scientists who work in this area.

Online Mendelian Inheritance in Man (OMIM)

The Online Mendelian Inheritance in Man (OMIM) database is a catalog of human genes and genetic disorders authored and edited by Dr. Victor A. McKusick and his colleagues at Johns Hopkins and elsewhere. OMIM was developed for the World Wide Web by the National Center for

Biotechnology Information (NCBI).[33] The database contains textual information, pictures, and reference information. It also contains copious links to NCBI's Entrez database of MEDLINE articles and sequence information.

Go to **http://www.ncbi.nlm.nih.gov/Omim/searchomim.html** to search the database. Type "urinary tract infection in children" (or synonyms) in the search box, and click "Submit Search." If too many results appear, you can narrow the search by adding the word "clinical." Each report will have additional links to related research and databases. By following these links, especially the link titled "Database Links," you will be exposed to numerous specialized databases that are largely used by the scientific community. These databases are overly technical and seldom used by the general public, but offer an abundance of information. The following is an example of the results you can obtain from the OMIM for urinary tract infection in children:

- **Urinary Tract Infections, Recurrent, Susceptibility**
  Web site: http://www.ncbi.nlm.nih.gov/htbin-post/Omim/dispmim?603806

Genes and Disease (NCBI - Map)

The Genes and Disease database is produced by the National Center for Biotechnology Information of the National Library of Medicine at the National Institutes of Health. Go to **http://www.ncbi.nlm.nih.gov/disease/**, and browse the system pages to have a full view of important conditions linked to human genes. Since this site is regularly updated, you may wish to re-visit it from time to time. The following systems and associated disorders are addressed:

- **Immune System:** Fights invaders.
  Examples: Asthma, autoimmune polyglandular syndrome, Crohn's disease, DiGeorge syndrome, familial Mediterranean fever, immunodeficiency with Hyper-IgM, severe combined immunodeficiency.
  Web site: **http://www.ncbi.nlm.nih.gov/disease/Immune.html**
- **Nervous System:** Mind and body.
  Examples: Alzheimer disease, Amyotrophic lateral sclerosis, Angelman

[33] Adapted from **http://www.ncbi.nlm.nih.gov/**. Established in 1988 as a national resource for molecular biology information, NCBI creates public databases, conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information--all for the better understanding of molecular processes affecting human health and disease.

syndrome, Charcot-Marie-Tooth disease, epilepsy, essential tremor, Fragile X syndrome, Friedreich's ataxia, Huntington disease, Niemann-Pick disease, Parkinson disease, Prader-Willi syndrome, Rett syndrome, Spinocerebellar atrophy, Williams syndrome.
Web site: **http://www.ncbi.nlm.nih.gov/disease/Brain.html**

- **Signals:** Cellular messages.
  Examples: Ataxia telangiectasia, Baldness, Cockayne syndrome, Glaucoma, SRY: sex determination, Tuberous sclerosis, Waardenburg syndrome, Werner syndrome.
  Web site: **http://www.ncbi.nlm.nih.gov/disease/Signals.html**
- **Transporters:** Pumps and channels.
  Examples: Cystic Fibrosis, deafness, diastrophic dysplasia, Hemophilia A, long-QT syndrome, Menkes syndrome, Pendred syndrome, polycystic kidney disease, sickle cell anemia, Wilson's disease, Zellweger syndrome.
  Web site: **http://www.ncbi.nlm.nih.gov/disease/Transporters.html**

Entrez

Entrez is a search and retrieval system that integrates several linked databases at the National Center for Biotechnology Information (NCBI). These databases include nucleotide sequences, protein sequences, macromolecular structures, whole genomes, and MEDLINE through PubMed. Entrez provides access to the following databases:

- **PubMed:** Biomedical literature (PubMed),
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed**
- **Nucleotide Sequence Database (Genbank):**
  Web site:
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Nucleotide
- **Protein Sequence Database:**
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Protein**
- **Structure:** Three-dimensional macromolecular structures,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Structure**
- **Genome:** Complete genome assemblies,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Genome**
- **PopSet:** Population study data sets,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Popset**
- **OMIM:** Online Mendelian Inheritance in Man,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=OMIM**

- **Taxonomy:** Organisms in GenBank,
  Web site:
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Taxonomy
- **Books:** Online books,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=books**
- **ProbeSet:** Gene Expression Omnibus (GEO),
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=geo**
- **3D Domains:** Domains from Entrez Structure,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=geo**
- **NCBI's Protein Sequence Information Survey Results:**
  Web site: **http://www.ncbi.nlm.nih.gov/About/proteinsurvey/**

To access the Entrez system at the National Center for Biotechnology Information, go to **http://www.ncbi.nlm.nih.gov/entrez**, and then select the database that you would like to search. The databases available are listed in the drop box next to "Search." In the box next to "for," enter "urinary tract infection in children" (or synonyms) and click "Go."

Jablonski's Multiple Congenital Anomaly/Mental Retardation (MCA/MR) Syndromes Database[34]

This online resource can be quite useful. It has been developed to facilitate the identification and differentiation of syndromic entities. Special attention is given to the type of information that is usually limited or completely omitted in existing reference sources due to space limitations of the printed form.

At **http://www.nlm.nih.gov/mesh/jablonski/syndrome_toc/toc_a.html** you can also search across syndromes using an alphabetical index**.** You can also search at **http://www.nlm.nih.gov/mesh/jablonski/syndrome_db.html**.

The Genome Database[35]

Established at Johns Hopkins University in Baltimore, Maryland in 1990, the Genome Database (GDB) is the official central repository for genomic

[34] Adapted from the National Library of Medicine:
http://www.nlm.nih.gov/mesh/jablonski/about_syndrome.html.
[35] Adapted from the Genome Database:
http://gdbwww.gdb.org/gdb/aboutGDB.html#mission.

mapping data resulting from the Human Genome Initiative. In the spring of 1999, the Bioinformatics Supercomputing Centre (BiSC) at the Hospital for Sick Children in Toronto, Ontario assumed the management of GDB. The Human Genome Initiative is a worldwide research effort focusing on structural analysis of human DNA to determine the location and sequence of the estimated 100,000 human genes. In support of this project, GDB stores and curates data generated by researchers worldwide who are engaged in the mapping effort of the Human Genome Project (HGP). GDB's mission is to provide scientists with an encyclopedia of the human genome which is continually revised and updated to reflect the current state of scientific knowledge. Although GDB has historically focused on gene mapping, its focus will broaden as the Genome Project moves from mapping to sequence, and finally, to functional analysis.

To access the GDB, simply go to the following hyperlink: **http://www.gdb.org/**. Search "All Biological Data" by "Keyword." Type "urinary tract infection in children" (or synonyms) into the search box, and review the results. If more than one word is used in the search box, then separate each one with the word "and" or "or" (using "or" might be useful when using synonyms). This database is extremely technical as it was created for specialists. The articles are the results which are the most accessible to non-professionals and often listed under the heading "Citations." The contact names are also accessible to non-professionals.

Specialized References

The following books are specialized references written for professionals interested in urinary tract infection in children (sorted alphabetically by title; hyperlinks provide rankings, information, and reviews at Amazon.com):

- **The 5-Minute Pediatric Consult** by M. William Schwartz (Editor); Hardcover - 1050 pages, 2nd edition (January 15, 2000), Lippincott, Williams & Wilkins; ISBN: 0683307444; **http://www.amazon.com/exec/obidos/ASIN/0683307444/icongroupinterna**
- **Adult and Pediatric Urology (3-Volume Set) (Includes a Card to Return to Receive the Free CD-ROM)** by Jay Y. Gillenwater, M.D. (Editor), et al; Hardcover - 2828 pages, 4th edition (January 15, 2002), Lippincott, Williams & Wilkins Publishers; ISBN: 0781732204; **http://www.amazon.com/exec/obidos/ASIN/0781732204/icongroupinterna**
- **Atlas of Pediatric Physical Diagnosis** by Basil J. Zitelli, Holly W. Davis (Editor); Hardcover, 3rd edition (March 1997), Mosby-Year Book; ISBN:

0815199309;
http://www.amazon.com/exec/obidos/ASIN/0815199309/icongroupinterna

- **Campbell's Urology (4-Volume Set)** by Meredith F. Campbell (Editor), et al; Hardcover, 8th edition (May 15, 2002), W B Saunders Co; ISBN: 0721690580;
http://www.amazon.com/exec/obidos/ASIN/0721690580/icongroupinterna
- **Clinical Manual of Urology** by Philip M. Hanno, M.D. (Editor), et al; Paperback - 924 pages, 3rd edition (May 2, 2001), McGraw-Hill Professional Publishing; ISBN: 0071362010;
http://www.amazon.com/exec/obidos/ASIN/0071362010/icongroupinterna
- **Comprehensive Urology** by George Weiss O'Reilly; Hardcover - 724 pages, 1st edition (January 15, 2001), Elsevier Science, Health Science Division; ISBN: 0723429499;
http://www.amazon.com/exec/obidos/ASIN/0723429499/icongroupinterna
- **Manual of Urology: Diagnosis & Therapy** by Mike B. Siroky (Editor), et al; Spiral-bound - 362 pages, 2nd spiral edition (October 15, 1999), Lippincott, Williams & Wilkins Publishers; ISBN: 078171785X;
http://www.amazon.com/exec/obidos/ASIN/078171785X/icongroupinterna
- **Nelson Textbook of Pediatrics** by Richard E. Behrman (Editor), et al; Hardcover - 2414 pages, 16th edition (January 15, 2000), W B Saunders Co; ISBN: 0721677673;
http://www.amazon.com/exec/obidos/ASIN/0721677673/icongroupinterna
- **The Scientific Basis of Urology** by A.R. Mundy (Editor), et al; 531 pages - 1st edition (March 15, 1999), Isis Medical Media; ISBN: 1899066217;
http://www.amazon.com/exec/obidos/ASIN/1899066217/icongroupinterna
- **Smith's General Urology** by Emil A. Tanagho (Editor), et al; Paperback - 888 pages, 15th edition (January 21, 2000), McGraw-Hill Professional Publishing; ISBN: 0838586074;
http://www.amazon.com/exec/obidos/ASIN/0838586074/icongroupinterna
- **Urology (House Officer Series)** by Michael T. MacFarlane, M.D.; Paperback - 3rd edition (January 2001), Lippincott, Williams & Wilkins Publishers; ISBN: 0781731461;
http://www.amazon.com/exec/obidos/ASIN/0781731461/icongroupinterna
- **Urology for Primary Care Physicians** by Unyime O. Nseyo (Editor), et al; Hardcover - 399 pages, 1st edition (July 15, 1999), W B Saunders Co; ISBN: 0721671489;
http://www.amazon.com/exec/obidos/ASIN/0721671489/icongroupinterna

PART III. APPENDICES

ABOUT PART III

Part III is a collection of appendices on general medical topics relating to urinary tract infection in children and related conditions.

APPENDIX A. RESEARCHING YOUR CHILD'S MEDICATIONS

Overview

There are a number of sources available on new or existing medications which could be prescribed to treat urinary tract infection in children. While a number of hard copy or CD-Rom resources are available to parents and physicians for research purposes, a more flexible method is to use Internet-based databases. In this chapter, we will begin with a general overview of medications. We will then proceed to outline official recommendations on how you should view your child's medications. You may also want to research medications that your child is currently taking for other conditions as they may interact with medications for urinary tract infection in children. Research can give you information on the side effects, interactions, and limitations of prescription drugs used in the treatment of urinary tract infection in children. Broadly speaking, there are two sources of information on approved medications: public sources and private sources. We will emphasize free-to-use public sources.

Your Child's Medications: The Basics[36]

The Agency for Health Care Research and Quality has published extremely useful guidelines on the medication aspects of urinary tract infection in children. Giving your child medication can involve many steps and decisions each day. The AHCRQ recommends that parents take part in treatment decisions. Do not be afraid to ask questions and talk about your concerns. By taking a moment to ask questions, your child may be spared from possible problems. Here are some points to cover each time a new medicine is prescribed**:**

- Ask about all parts of your child's treatment, including diet changes, exercise, and medicines.
- Ask about the risks and benefits of each medicine or other treatment your child might receive.
- Ask how often you or your child's doctor will check for side effects from a given medication.

Do not hesitate to tell the doctor about preferences you have for your child's medicines. You may want your child to have a medicine with the fewest side effects, or the fewest doses to take each day. You may care most about cost. Or, you may want the medicine the doctor believes will work the best. Sharing your concerns will help the doctor select the best treatment for your child.

Do not be afraid to "bother" the doctor with your questions about medications for urinary tract infection in children. You can also talk to a nurse or a pharmacist. They can help you better understand your child's treatment plan. Talking over your child's options with someone you trust can help you make better choices. Specifically, ask the doctor the following:

- The name of the medicine and what it is supposed to do.
- How and when to give your child the medicine, how much, and for how long.
- What food, drinks, other medicines, or activities your child should avoid while taking the medicine.
- What side effects your child may experience, and what to do if they occur.
- If there are any refills, and how often.
- About any terms or directions you do not understand.

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[36] This section is adapted from AHCRQ: **http://www.ahcpr.gov/consumer/ncpiebro.htm**.

- What to do if your child misses a dose.
- If there is written information you can take home (most pharmacies have information sheets on prescription medicines; some even offer large-print or Spanish versions).

Do not forget to tell the doctor about all the medicines your child is currently taking (not just those for urinary tract infection in children). This includes prescription medicines and the medicines that you buy over the counter. When talking to the doctor, you may wish to prepare a list of medicines your child is currently taking including why and in what forms. Be sure to include the following information for each:

- Name of medicine
- Reason taken
- Dosage
- Time(s) of day

Also include any over-the-counter medicines, such as:

- Laxatives
- Diet pills
- Vitamins
- Cold medicine
- Aspirin or other pain, headache, or fever medicine
- Cough medicine
- Allergy relief medicine
- Antacids
- Sleeping pills
- Others (include names)

Learning More about Your Child's Medications

Because of historical investments by various organizations and the emergence of the Internet, it has become rather simple to learn about the medications the doctor has recommended for urinary tract infection in children. One such source is the United States Pharmacopeia. In 1820, eleven physicians met in Washington, D.C. to establish the first compendium of standard drugs for the United States. They called this compendium the "U.S. Pharmacopeia (USP)." Today, the USP is a non-profit organization consisting of 800 volunteer scientists, eleven elected officials, and 400 representatives of

state associations and colleges of medicine and pharmacy. The USP is located in Rockville, Maryland, and its home page is located at **www.usp.org**. The USP currently provides standards for over 3,700 medications. The resulting USP DI® Advice for the Patient® can be accessed through the National Library of Medicine of the National Institutes of Health. The database is partially derived from lists of federally approved medications in the Food and Drug Administration's (FDA) Drug Approvals database.[37]

While the FDA database is rather large and difficult to navigate, the Phamacopeia is both user-friendly and free to use. It covers more than 9,000 prescription and over-the-counter medications. To access this database, simply type the following hyperlink into your Web browser: **http://www.nlm.nih.gov/medlineplus/druginformation.html**. To view examples of a given medication (brand names, category, description, preparation, proper use, precautions, side effects, etc.), simply follow the hyperlinks indicated within the United States Pharmacopoeia. It is important to read the disclaimer by the United States Pharmacopoeia (**http://www.nlm.nih.gov/medlineplus/drugdisclaimer.html**) before using the information provided.

Of course, we as editors cannot be certain as to what medications your child is taking. Therefore, we have compiled a list of medications associated with the treatment of urinary tract infection in children. Once again, due to space limitations, we only list a sample of medications and provide hyperlinks to ample documentation (e.g. typical dosage, side effects, drug-interaction risks, etc.). The following drugs have been mentioned in the Pharmacopeia and other sources as being potentially applicable to urinary tract infection in children:

http://www.nlm.nih.gov/medlineplus/druginfo/atropinehyoscyaminemethenamine202075.html

- **Systemic - U.S. Brands:** Atrosept; Dolsed; Hexalol; Prosed/DS; UAA; Urimed; Urised; Uriseptic; Uritab; Uritin; Uro-Ves http://www.nlm.nih.gov/medlineplus/druginfo/atropinehyoscyaminemethenamine202075.html

Cinoxacin

- **Systemic - U.S. Brands:** Cinobac http://www.nlm.nih.gov/medlineplus/druginfo/cinoxacinsystemic202141.html

[37] Though cumbersome, the FDA database can be freely browsed at the following site: **www.fda.gov/cder/da/da.htm**.

Fluoroquinolones

- **Systemic - U.S. Brands:** Avelox; Cipro; Cipro I.V.; Floxin; Floxin I.V.; Levaquin; Maxaquin; Noroxin; Penetrex; Tequin; Zagam
  http://www.nlm.nih.gov/medlineplus/druginfo/fluoroquinolonessystemic202656.html

Fosfomycin

- **Systemic - U.S. Brands:** Monurol
  http://www.nlm.nih.gov/medlineplus/druginfo/fosfomycinsystemic203522.html

Loracarbef

- **Systemic - U.S. Brands:** Lorabid
  http://www.nlm.nih.gov/medlineplus/druginfo/loracarbefsystemic202680.html

Methenamine

- **Systemic - U.S. Brands:** Hiprex; Mandelamine; Urex
  http://www.nlm.nih.gov/medlineplus/druginfo/methenaminesystemic202354.html

Nitrofurantoin

- **Systemic - U.S. Brands:** Furadantin; Macrobid; Macrodantin
  http://www.nlm.nih.gov/medlineplus/druginfo/nitrofurantoinsystemic202414.html

Phosphates

- **Systemic - U.S. Brands:** K-Phos M. F.; K-Phos Neutral; K-Phos No. 2; K-Phos Original; Neutra-Phos; Neutra-Phos-K; Uro-KP-Neutral
  http://www.nlm.nih.gov/medlineplus/druginfo/phosphatessystemic202463.html

Sulfonamides and Trimethoprim

- **Systemic - U.S. Brands:** Bactrim; Bactrim DS; Bactrim I.V.; Bactrim Pediatric; Cofatrim Forte; Cotrim; Cotrim DS; Cotrim Pediatric; Septra; Septra DS; Septra Grape Suspension; Septra I.V.; Septra Suspension; Sulfatrim; Sulfatrim Pediatric; Sulfatrim S/S; Sulfatrim Suspension; S
  http://www.nlm.nih.gov/medlineplus/druginfo/sulfonamidesandtrimethoprimsys202781.html

Trimethoprim

- **Systemic - U.S. Brands:** Proloprim; Trimpex
  http://www.nlm.nih.gov/medlineplus/druginfo/trimethoprimsystemic202579.html

Commercial Databases

In addition to the medications listed in the USP above, a number of commercial sites are available by subscription to physicians and their institutions. You may be able to access these sources from your local medical library or your child's doctor's office.

Reuters Health Drug Database

The Reuters Health Drug Database can be searched by keyword at the hyperlink: **http://www.reutershealth.com/frame2/drug.html**. The following medications are listed in the Reuters' database as associated with urinary tract infection in children (including those with contraindications):[38]

- **Gatifloxacin**
  http://www.reutershealth.com/atoz/html/Gatifloxacin.htm
- **Levofloxacin**
  http://www.reutershealth.com/atoz/html/Levofloxacin.htm

Mosby's GenRx

Mosby's GenRx database (also available on CD-Rom and book format) covers 45,000 drug products including generics and international brands. It provides information on prescribing and drug interactions. Information in Mosby's GenRx database can be obtained at the following hyperlink: **http://www.genrx.com/Mosby/PhyGenRx/group.html**.

Physicians Desk Reference

The Physicians Desk Reference database (also available in CD-Rom and book format) is a full-text drug database. The database is searchable by brand name, generic name or by indication. It features multiple drug interactions

[38] Adapted from *A to Z Drug Facts* by Facts and Comparisons.

reports. Information can be obtained at the following hyperlink: **http://physician.pdr.net/physician/templates/en/acl/psuser_t.htm**.

Other Web Sites

A number of additional Web sites discuss drug information. As an example, you may like to look at **www.drugs.com** which reproduces the information in the Pharmacopeia as well as commercial information. You may also want to consider the Web site of the Medical Letter, Inc. which allows users to download articles on various drugs and therapeutics for a nominal fee: **http://www.medletter.com/**.

Contraindications and Interactions (Hidden Dangers)

Some of the medications mentioned in the previous discussions can be problematic for children with urinary tract infection in children--not because they are used in the treatment process, but because of contraindications, or side effects. Medications with contraindications are those that could react with drugs used to treat urinary tract infection in children or potentially create deleterious side effects in patients with urinary tract infection in children. You should ask the physician about any contraindications, especially as these might apply to other medications that your child may be taking for common ailments.

Drug-drug interactions occur when two or more drugs react with each other. This drug-drug interaction may cause your child to experience an unexpected side effect. Drug interactions may make medications less effective, cause unexpected side effects, or increase the action of a particular drug. Some drug interactions can even be harmful to your child.

Be sure to read the label every time you give your child a nonprescription or prescription drug, and take the time to learn about drug interactions. These precautions may be critical to your child's health. You can reduce the risk of potentially harmful drug interactions and side effects with a little bit of knowledge and common sense.

Drug labels contain important information about ingredients, uses, warnings, and directions which you should take the time to read and understand. Labels also include warnings about possible drug interactions. Further, drug labels may change as new information becomes avaiable. This is why it's especially important to read the label every time you give your

child a medication. When the doctor prescribes a new drug, discuss all over-the-counter and prescription medications, dietary supplements, vitamins, botanicals, minerals and herbals your child takes. Ask your pharmacist for the package insert for each drug prescribed. The package insert provides more information about potential drug interactions.

A Final Warning

At some point, you may hear of alternative medications from friends, relatives, or in the news media. Advertisements may suggest that certain alternative drugs can produce positive results for urinary tract infection in children. Exercise caution--some of these drugs may have fraudulent claims, and others may actually hurt your child. The Food and Drug Administration (FDA) is the official U.S. agency charged with discovering which medications are likely to improve the health of patients with urinary tract infection in children. The FDA warns to watch out for[39]:

- Secret formulas (real scientists share what they know)
- Amazing breakthroughs or miracle cures (real breakthroughs don't happen very often; when they do, real scientists do not call them amazing or miracles)
- Quick, painless, or guaranteed cures
- If it sounds too good to be true, it probably isn't true.

If you have any questions about any kind of medical treatment, the FDA may have an office near you. Look for their number in the blue pages of the phone book. You can also contact the FDA through its toll-free number, 1-888-INFO-FDA (1-888-463-6332), or on the World Wide Web at **www.fda.gov**.

General References

In addition to the resources provided earlier in this chapter, the following general references describe medications (sorted alphabetically by title; hyperlinks provide rankings, information and reviews at Amazon.com):

- **Complete Guide to Prescription and Nonprescription Drugs 2001 (Complete Guide to Prescription and Nonprescription Drugs, 2001)** by H. Winter Griffith, Paperback 16th edition (2001), Medical Surveillance; ISBN:

[39] This section has been adapted from http://www.fda.gov/opacom/lowlit/medfraud.html.

0942447417;
http://www.amazon.com/exec/obidos/ASIN/039952634X/icongroupinterna

- **The Essential Guide to Prescription Drugs, 2001** by James J. Rybacki, James W. Long; Paperback - 1274 pages (2001), Harper Resource; ISBN: 0060958162;
http://www.amazon.com/exec/obidos/ASIN/0060958162/icongroupinterna
- **Handbook of Commonly Prescribed Drugs** by G. John Digregorio, Edward J. Barbieri; Paperback 16th edition (2001), Medical Surveillance; ISBN: 0942447417;
http://www.amazon.com/exec/obidos/ASIN/0942447417/icongroupinterna
- **Johns Hopkins Complete Home Encyclopedia of Drugs 2nd ed.** by Simeon Margolis (Ed.), Johns Hopkins; Hardcover - 835 pages (2000), Rebus; ISBN: 0929661583;
http://www.amazon.com/exec/obidos/ASIN/0929661583/icongroupinterna
- **Medical Pocket Reference: Drugs 2002** by Springhouse Paperback 1st edition (2001), Lippincott Williams & Wilkins Publishers; ISBN: 1582550964;
http://www.amazon.com/exec/obidos/ASIN/1582550964/icongroupinterna
- **PDR** by Medical Economics Staff, Medical Economics Staff Hardcover - 3506 pages 55th edition (2000), Medical Economics Company; ISBN: 1563633752;
http://www.amazon.com/exec/obidos/ASIN/1563633752/icongroupinterna
- **Pharmacy Simplified: A Glossary of Terms** by James Grogan; Paperback - 432 pages, 1st edition (2001), Delmar Publishers; ISBN: 0766828581;
http://www.amazon.com/exec/obidos/ASIN/0766828581/icongroupinterna
- **Physician Federal Desk Reference** by Christine B. Fraizer; Paperback 2nd edition (2001), Medicode Inc; ISBN: 1563373971;
http://www.amazon.com/exec/obidos/ASIN/1563373971/icongroupinterna
- **Physician's Desk Reference Supplements** Paperback - 300 pages, 53 edition (1999), ISBN: 1563632950;
http://www.amazon.com/exec/obidos/ASIN/1563632950/icongroupinterna

Vocabulary Builder

The following vocabulary builder gives definitions of words used in this chapter that have not been defined in previous chapters:

Cinoxacin: Synthetic antimicrobial related to oxolinic and nalidixic acids and used in urinary tract infections. [NIH]

Fosfomycin: An antibiotic produced by Streptomyces fradiae. [NIH]

Nitrofurantoin: A urinary anti-infective agent effective against most gram-positive and gram-negative organisms. Although sulfonamides and antibiotics are usually the agents of choice for urinary tract infections, nitrofurantoin is widely used for prophylaxis and long-term suppression. [NIH]

Phosphates: Inorganic salts of phosphoric acid. [NIH]

APPENDIX B. RESEARCHING ALTERNATIVE MEDICINE

Overview

Complementary and alternative medicine (CAM) is one of the most contentious aspects of modern medical practice. You may have heard of these treatments on the radio or on television. Maybe you have seen articles written about these treatments in magazines, newspapers, or books. Perhaps your child's doctor or your friends have mentioned alternatives.

In this chapter, we will begin by giving you a broad perspective on complementary and alternative therapies. Next, we will introduce you to official information sources on CAM relating to urinary tract infection in children. Finally, at the conclusion of this chapter, we will provide a list of readings on urinary tract infection in children from various authors. We will begin, however, with the National Center for Complementary and Alternative Medicine's (NCCAM) overview of complementary and alternative medicine.

What Is CAM?[40]

Complementary and alternative medicine (CAM) covers a broad range of healing philosophies, approaches, and therapies. Generally, it is defined as those treatments and healthcare practices which are not taught in medical schools, used in hospitals, or reimbursed by medical insurance companies. Many CAM therapies are termed "holistic," which generally means that the healthcare practitioner considers the whole person, including physical, mental, emotional, and spiritual health. Some of these therapies are also

[40] Adapted from the NCCAM: **http://nccam.nih.gov/nccam/fcp/faq/index.html#what-is**.

known as "preventive," which means that the practitioner educates and treats the person to prevent health problems from arising, rather than treating symptoms after problems have occurred.

People use CAM treatments and therapies in a variety of ways. Therapies are used alone (often referred to as alternative), in combination with other alternative therapies, or in addition to conventional treatment (sometimes referred to as complementary). Complementary and alternative medicine, or "integrative medicine," includes a broad range of healing philosophies, approaches, and therapies. Some approaches are consistent with physiological principles of Western medicine, while others constitute healing systems with non-Western origins. While some therapies are far outside the realm of accepted Western medical theory and practice, others are becoming established in mainstream medicine.

Complementary and alternative therapies are used in an effort to prevent illness, reduce stress, prevent or reduce side effects and symptoms, or control or cure disease. Some commonly used methods of complementary or alternative therapy include mind/body control interventions such as visualization and relaxation, manual healing including acupressure and massage, homeopathy, vitamins or herbal products, and acupuncture.

What Are the Domains of Alternative Medicine?[41]

The list of CAM practices changes continually. The reason being is that these new practices and therapies are often proved to be safe and effective, and therefore become generally accepted as "mainstream" healthcare practices. Today, CAM practices may be grouped within five major domains: (1) alternative medical systems, (2) mind-body interventions, (3) biologically-based treatments, (4) manipulative and body-based methods, and (5) energy therapies. The individual systems and treatments comprising these categories are too numerous to list in this sourcebook. Thus, only limited examples are provided within each.

Alternative Medical Systems

Alternative medical systems involve complete systems of theory and practice that have evolved independent of, and often prior to, conventional biomedical approaches. Many are traditional systems of medicine that are

[41] Adapted from the NCCAM: http://nccam.nih.gov/nccam/fcp/classify/index.html.

practiced by individual cultures throughout the world, including a number of venerable Asian approaches.

Traditional oriental medicine emphasizes the balance or disturbances of qi (pronounced chi) or vital energy in health and illness, respectively. Traditional oriental medicine consists of a group of techniques and methods including acupuncture, herbal medicine, oriental massage, and qi gong (a form of energy therapy). Acupuncture involves stimulating specific anatomic points in the body for therapeutic purposes, usually by puncturing the skin with a thin needle.

Ayurveda is India's traditional system of medicine. Ayurvedic medicine (meaning "science of life") is a comprehensive system of medicine that places equal emphasis on body, mind, and spirit. Ayurveda strives to restore the innate harmony of the individual. Some of the primary Ayurvedic treatments include diet, exercise, meditation, herbs, massage, exposure to sunlight, and controlled breathing.

Other traditional healing systems have been developed by the world's indigenous populations. These populations include Native American, Aboriginal, African, Middle Eastern, Tibetan, and Central and South American cultures. Homeopathy and naturopathy are also examples of complete alternative medicine systems.

Homeopathic medicine is an unconventional Western system that is based on the principle that "like cures like," i.e., that the same substance that in large doses produces the symptoms of an illness, in very minute doses cures it. Homeopathic health practitioners believe that the more dilute the remedy, the greater its potency. Therefore, they use small doses of specially prepared plant extracts and minerals to stimulate the body's defense mechanisms and healing processes in order to treat illness.

Naturopathic medicine is based on the theory that a medical condition is the manifestation of alterations in the processes by which the body naturally heals itself and emphasizes health restoration rather than treatment for the condition itself. Naturopathic physicians employ an array of healing practices, including the following: diet and clinical nutrition, homeopathy, acupuncture, herbal medicine, hydrotherapy (the use of water in a range of temperatures and methods of applications), spinal and soft-tissue manipulation, physical therapies (such as those involving electrical currents, ultrasound, and light), therapeutic counseling, and pharmacology.

Mind-Body Interventions

Mind-body interventions employ a variety of techniques designed to facilitate the mind's capacity to affect bodily function and symptoms. Only a select group of mind-body interventions having well-documented theoretical foundations are considered CAM. For example, patient education and cognitive-behavioral approaches are now considered "mainstream." On the other hand, complementary and alternative medicine includes meditation, certain uses of hypnosis, dance, music, and art therapy, as well as prayer and mental healing.

Biological-Based Therapies

This category of CAM includes natural and biological-based practices, interventions, and products, many of which overlap with conventional medicine's use of dietary supplements. This category includes herbal, special dietary, orthomolecular, and individual biological therapies.

Herbal therapy employs an individual herb or a mixture of herbs for healing purposes. An herb is a plant or plant part that produces and contains chemical substances that act upon the body. Special diet therapies, such as those proposed by Drs. Atkins, Ornish, Pritikin, and Weil, are believed to prevent and/or control illness as well as promote health. Orthomolecular therapies aim to treat medical conditions with varying concentrations of chemicals such as magnesium, melatonin, and mega-doses of vitamins. Biological therapies include, for example, the use of laetrile and shark cartilage to treat cancer and the use of bee pollen to treat autoimmune and inflammatory conditions.

Manipulative and Body-Based Methods

This category includes methods that are based on manipulation and/or movement of the body. For example, chiropractors focus on the relationship between structure and function, primarily pertaining to the spine, and how that relationship affects the preservation and restoration of health. Chiropractors use manipulative therapy as an integral treatment tool.

In contrast, osteopaths place particular emphasis on the musculoskeletal system and practice osteopathic manipulation. Osteopaths believe that all of the body's systems work together and that disturbances in one system may

have an impact upon function elsewhere in the body. Massage therapists manipulate the soft tissues of the body to normalize those tissues.

Energy Therapies

Energy therapies focus on energy fields originating within the body (biofields) or those from other sources (electromagnetic fields). Biofield therapies are intended to affect energy fields (the existence of which is not yet experimentally proven) that surround and penetrate the human body. Some forms of energy therapy manipulate biofields by applying pressure and/or manipulating the body by placing the hands in or through these fields. Examples include Qi gong, Reiki and Therapeutic Touch.

Qi gong is a component of traditional oriental medicine that combines movement, meditation, and regulation of breathing to enhance the flow of vital energy (qi) in the body, improve blood circulation, and enhance immune function. Reiki, the Japanese word representing Universal Life Energy, is based on the belief that, by channeling spiritual energy through the practitioner, the spirit is healed and, in turn, heals the physical body. Therapeutic Touch is derived from the ancient technique of "laying-on of hands." It is based on the premises that the therapist's healing force affects recovery and that healing is promoted when the body's energies are in balance. By passing their hands over the patient, these healers identify energy imbalances.

Bioelectromagnetic-based therapies involve the unconventional use of electromagnetic fields to treat illnesses or manage pain. These therapies are often used to treat asthma, cancer, and migraine headaches. Types of electromagnetic fields which are manipulated in these therapies include pulsed fields, magnetic fields, and alternating current or direct current fields.

Can Alternatives Affect My Child's Treatment?

A critical issue in pursuing complementary alternatives mentioned thus far is the risk that these might have undesirable interactions with your child's medical treatment. It becomes all the more important to speak with the doctor who can offer advice on the use of alternatives. Official sources confirm this view. Though written for women, we find that the National

Women's Health Information Center's advice on pursuing alternative medicine is appropriate for everyone.[42]

Is It Okay to Want Both Traditional and Alternative Medicine?

Should you wish to explore non-traditional types of treatment, be sure to discuss all issues concerning treatments and therapies with your child's healthcare provider, whether a physician or practitioner of complementary and alternative medicine. Competent healthcare management requires that the practitioner know of all conventional and alternative therapies that your child is taking.

The decision to use complementary and alternative treatments is an important one. Consider before selecting an alternative therapy, the safety and effectiveness of the therapy or treatment, the expertise and qualifications of the healthcare practitioner, and the quality of delivery. These topics should be considered when selecting any practitioner or therapy.

Finding CAM References on Urinary Tract Infection in Children

Having read the previous discussion, you may be wondering which complementary or alternative treatments might be appropriate for urinary tract infection in children. For the remainder of this chapter, we will direct you to a number of official sources which can assist you in researching studies and publications. Some of these articles are rather technical, so some patience may be required.

National Center for Complementary and Alternative Medicine

The National Center for Complementary and Alternative Medicine (NCCAM) of the National Institutes of Health (**http://nccam.nih.gov**) has created a link to the National Library of Medicine's databases to allow parents to search for articles that specifically relate to urinary tract infection in children and complementary medicine. To search the database, go to the following Web site: **www.nlm.nih.gov/nccam/camonpubmed.html**. Select "CAM on PubMed." Enter "urinary tract infection in children" (or synonyms) into the search box. Click "Go." The following references provide

[42] Adapted from **http://www.4woman.gov/faq/alternative.htm**.

information on particular aspects of complementary and alternative medicine (CAM) that are related to urinary tract infection in children:

- **Autoantibodies to Tamm-Horsfall glycoprotein in children with renal damage associated with urinary tract infections.**
  Author(s): Fasth A, Bjure J, Hellstrom M, Jacobsson B, Jodal U.
  Source: Acta Paediatr Scand. 1980 November; 69(6): 709-15.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7211355&dopt=Abstract

- **Biofeedback methodology: does it matter how we teach children how to relax the pelvic floor during voiding?**
  Author(s): Schulman SL, Von Zuben FC, Plachter N, Kodman-Jones C.
  Source: The Journal of Urology. 2001 December; 166(6): 2423-6.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11696803&dopt=Abstract

- **Biofeedback training for children with bladder sphincter incoordination.**
  Author(s): Jerkins GR, Noe HN, Vaughn WR, Roberts E.
  Source: The Journal of Urology. 1987 October; 138(4 Pt 2): 1113-5.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3656570&dopt=Abstract

- **Bladder instillations of trisdine compared with catheter introducer for reduction of bacteriuria during intermittent catheterisation of patients with acute spinal cord trauma.**
  Author(s): Pearman JW, Bailey M, Riley LP.
  Source: Br J Urol. 1991 May; 67(5): 483-90.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1903999&dopt=Abstract

- **Clinical efficacy of cefotaxime in serious infections.**
  Author(s): Karakusis PH, Feczko JM, Goodman LJ, Hanlon DM, Harris AA, Levin S, Trenholme GM.
  Source: Antimicrobial Agents and Chemotherapy. 1982 January; 21(1): 119-24.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6282202&dopt=Abstract

- **Comparison of the efficacy of "Trisdine" and kanamycin-colistin bladder instillations in reducing bacteriuria during intermittent**

catheterisation of patients with acute spinal cord trauma.
Author(s): Pearman JW, Bailey M, Harper WE.
Source: Br J Urol. 1988 August; 62(2): 140-4.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3136820&dopt=Abstract

- **Comprehensive management of dysfunctional voiding.**
  Author(s): Schulman SL, Quinn CK, Plachter N, Kodman-Jones C.
  Source: Pediatrics. 1999 March; 103(3): E31.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10049987&dopt=Abstract

- **Cranberries for preventing urinary tract infections.**
  Author(s): Jepson RG, Mihaljevic L, Craig J.
  Source: Cochrane Database Syst Rev. 2000; (2): Cd001321. Review.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10796774&dopt=Abstract

- **Cranberries for treating urinary tract infections.**
  Author(s): Jepson RG, Mihaljevic L, Craig J.
  Source: Cochrane Database Syst Rev. 2000; (2): Cd001322. Review.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10796775&dopt=Abstract

- **Day wetting.**
  Author(s): Meadow SR.
  Source: Pediatric Nephrology (Berlin, Germany). 1990 March; 4(2): 178-84. Review.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2204411&dopt=Abstract

- **Effect of cranberry juice on bacteriuria in children with neurogenic bladder receiving intermittent catheterization.**
  Author(s): Schlager TA, Anderson S, Trudell J, Hendley JO.
  Source: The Journal of Pediatrics. 1999 December; 135(6): 698-702.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10586171&dopt=Abstract

- **Estimation of normal chromium-51 ethylene diamine tetra-acetic acid clearance in children.**
  Author(s): Piepsz A, Pintelon H, Ham HR.

Source: European Journal of Nuclear Medicine. 1994 January; 21(1): 12-6.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8088280&dopt=Abstract

- **Evaluation of renal function and morphology in children by 99mTc-DTPA gamma camera renography.**
  Author(s): Rehling M, Jensen JJ, Scherling B, Egeblad M, Lonborg-Jensen H, Kanstrup I, Dige-Petersen H.
  Source: Acta Paediatr Scand. 1989 July; 78(4): 601-7.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2506729&dopt=Abstract

- **Evolution of single kidney glomerular filtration rate in urinary tract infection.**
  Author(s): Arnello F, Ham HR, Tondeur M, Piepsz A.
  Source: Pediatric Nephrology (Berlin, Germany). 1999 February; 13(2): 121-4.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10228997&dopt=Abstract

- **Functional daytime incontinence: non-pharmacological treatment.**
  Author(s): van Gool JD, Vijverberg MA, Messer AP, Elzinga-Plomp A, de Jong TP.
  Source: Scand J Urol Nephrol Suppl. 1992; 141: 93-103; Discussion 104-5.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1609257&dopt=Abstract

- **Guide to the history in enuretic children.**
  Author(s): Maizels M, Firlit CF.
  Source: American Family Physician. 1986 April; 33(4): 205-9.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3962838&dopt=Abstract

- **Interactive computer games for treatment of pelvic floor dysfunction.**
  Author(s): Herndon CD, Decambre M, McKenna PH.
  Source: The Journal of Urology. 2001 November; 166(5): 1893-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11586256&dopt=Abstract

- **Long-term efficacy of simple behavioral therapy for daytime wetting in children.**
  Author(s): Wiener JS, Scales MT, Hampton J, King LR, Surwit R, Edwards CL.
  Source: The Journal of Urology. 2000 September; 164(3 Pt 1): 786-90.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10953156&dopt=Abstract

- **Overall and single-kidney clearance in children with urinary tract infection and damaged kidneys.**
  Author(s): Arnello F, Ham HR, Tondeur M, Piepsz A.
  Source: Journal of Nuclear Medicine : Official Publication, Society of Nuclear Medicine. 1999 January; 40(1): 52-5.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9935056&dopt=Abstract

- **Pelvic-floor therapy in girls with recurrent urinary tract infections and dysfunctional voiding.**
  Author(s): De Paepe H, Hoebeke P, Renson C, Van Laecke E, Raes A, Van Hoecke E, Van Daele J, Vande Walle J.
  Source: Br J Urol. 1998 May; 81 Suppl 3: 109-13.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9634033&dopt=Abstract

- **Renal function 16 to 26 years after the first urinary tract infection in childhood.**
  Author(s): Wennerstrom M, Hansson S, Jodal U, Sixt R, Stokland E.
  Source: Archives of Pediatrics & Adolescent Medicine. 2000 April; 154(4): 339-45.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10768669&dopt=Abstract

- **Urinary tract infection following ritual Jewish circumcision.**
  Author(s): Goldman M, Barr J, Bistritzer T, Aladjem M.
  Source: Isr J Med Sci. 1996 November; 32(11): 1098-102.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8960080&dopt=Abstract

Additional Web Resources

A number of additional Web sites offer encyclopedic information covering CAM and related topics. The following is a representative sample:

- Alternative Medicine Foundation, Inc.: **http://www.herbmed.org/**
- AOL: **http://search.aol.com/cat.adp?id=169&layer=&from=subcats**
- Chinese Medicine: **http://www.newcenturynutrition.com/**
- drkoop.com®: **http://www.drkoop.com/InteractiveMedicine/IndexC.html**
- Family Village: **http://www.familyvillage.wisc.edu/med_altn.htm**
- Google: **http://directory.google.com/Top/Health/Alternative/**
- Healthnotes: **http://www.thedacare.org/healthnotes/**
- Open Directory Project: **http://dmoz.org/Health/Alternative/**
- TPN.com: **http://www.tnp.com/**
- Yahoo.com: **http://dir.yahoo.com/Health/Alternative_Medicine/**
- WebMD®Health: **http://my.webmd.com/drugs_and_herbs**
- WellNet: **http://www.wellnet.ca/herbsa-c.htm**
- WholeHealthMD.com: **http://www.wholehealthmd.com/reflib/0,1529,,00.html**

General References

A good place to find general background information on CAM is the National Library of Medicine. It has prepared within the MEDLINEplus system an information topic page dedicated to complementary and alternative medicine. To access this page, go to the MEDLINEplus site at: **www.nlm.nih.gov/medlineplus/alternativemedicine.html.** This Web site provides a general overview of various topics and can lead to a number of general sources. The following additional references describe, in broad terms, alternative and complementary medicine (sorted alphabetically by title; hyperlinks provide rankings, information, and reviews at Amazon.com):

- **Healthy Child, Whole Child: Integrating the Best of Conventional and Alternative Medicine to Keep Your Kids Healthy** by Stuart H. Ditchek, M.D. and Russell H. Greenfield; Paperback - 464 pages (June 2002), Harper Resource; ISBN: 0062737465; **http://www.amazon.com/exec/obidos/ASIN/0062737465/icongroupinterna**

- **Herbs for the Urinary Tract: Herbal Relief for Kidney Stones, Bladder Infections and Other Problems of the Urinary Tract** by Michael Moore; Paperback - 96 pages (June 1998), McGraw Hill - NTC; ISBN: 0879838159; **http://www.amazon.com/exec/obidos/ASIN/0879838159/icongroupinterna**

For additional information on complementary and alternative medicine, ask your child's doctor or write to:

National Institutes of Health
National Center for Complementary and Alternative Medicine Clearinghouse
P. O. Box 8218
Silver Spring, MD 20907-8218

APPENDIX C. FINDING MEDICAL LIBRARIES

Overview

At a medical library you can find medical texts and reference books, consumer health publications, specialty newspapers and magazines, as well as medical journals. In this Appendix, we show you how to quickly find a medical library in your area.

Preparation

Before going to the library, highlight the references mentioned in this sourcebook that you find interesting. Focus on those items that are not available via the Internet, and ask the reference librarian for help with your search. He or she may know of additional resources that could be helpful to you. Most importantly, your local public library and medical libraries have Interlibrary Loan programs with the National Library of Medicine (NLM), one of the largest medical collections in the world. According to the NLM, most of the literature in the general and historical collections of the National Library of Medicine is available on interlibrary loan to any library. NLM's interlibrary loan services are only available to libraries. If you would like to access NLM medical literature, then visit a library in your area that can request the publications for you.[43]

[43] Adapted from the NLM: http://www.nlm.nih.gov/psd/cas/interlibrary.html.

Finding a Local Medical Library

The quickest method to locate medical libraries is to use the Internet-based directory published by the National Network of Libraries of Medicine (NN/LM). This network includes 4626 members and affiliates that provide many services to librarians, health professionals, and the public. To find a library in your area, simply visit **http://nnlm.gov/members/adv.html** or call 1-800-338-7657.

Medical Libraries Open to the Public

In addition to the NN/LM, the National Library of Medicine (NLM) lists a number of libraries that are generally open to the public and have reference facilities. The following is the NLM's list plus hyperlinks to each library Web site. These Web pages can provide information on hours of operation and other restrictions. The list below is a small sample of libraries recommended by the National Library of Medicine (sorted alphabetically by name of the U.S. state or Canadian province where the library is located):[44]

- **Alabama:** Health InfoNet of Jefferson County (Jefferson County Library Cooperative, Lister Hill Library of the Health Sciences), **http://www.uab.edu/infonet/**
- **Alabama:** Richard M. Scrushy Library (American Sports Medicine Institute), **http://www.asmi.org/LIBRARY.HTM**
- **Arizona:** Samaritan Regional Medical Center: The Learning Center (Samaritan Health System, Phoenix, Arizona), **http://www.samaritan.edu/library/bannerlibs.htm**
- **California:** Kris Kelly Health Information Center (St. Joseph Health System), **http://www.humboldt1.com/~kkhic/index.html**
- **California:** Community Health Library of Los Gatos (Community Health Library of Los Gatos), **http://www.healthlib.org/orgresources.html**
- **California:** Consumer Health Program and Services (CHIPS) (County of Los Angeles Public Library, Los Angeles County Harbor-UCLA Medical Center Library) - Carson, CA, **http://www.colapublib.org/services/chips.html**
- **California:** Gateway Health Library (Sutter Gould Medical Foundation)
- **California:** Health Library (Stanford University Medical Center), **http://www-med.stanford.edu/healthlibrary/**

[44] Abstracted from **http://www.nlm.nih.gov/medlineplus/libraries.html**.

- **California:** Patient Education Resource Center - Health Information and Resources (University of California, San Francisco), **http://sfghdean.ucsf.edu/barnett/PERC/default.asp**
- **California:** Redwood Health Library (Petaluma Health Care District), **http://www.phcd.org/rdwdlib.html**
- **California:** San José PlaneTree Health Library, **http://planetreesanjose.org/**
- **California:** Sutter Resource Library (Sutter Hospitals Foundation), **http://go.sutterhealth.org/comm/resc-library/sac-resources.html**
- **California:** University of California, Davis. Health Sciences Libraries
- **California:** ValleyCare Health Library & Ryan Comer Cancer Resource Center (ValleyCare Health System), **http://www.valleycare.com/library.html**
- **California:** Washington Community Health Resource Library (Washington Community Health Resource Library), **http://www.healthlibrary.org/**
- **Colorado:** William V. Gervasini Memorial Library (Exempla Healthcare), **http://www.exempla.org/conslib.htm**
- **Connecticut:** Hartford Hospital Health Science Libraries (Hartford Hospital), **http://www.harthosp.org/library/**
- **Connecticut:** Healthnet: Connecticut Consumer Health Information Center (University of Connecticut Health Center, Lyman Maynard Stowe Library), **http://library.uchc.edu/departm/hnet/**
- **Connecticut:** Waterbury Hospital Health Center Library (Waterbury Hospital), **http://www.waterburyhospital.com/library/consumer.shtml**
- **Delaware:** Consumer Health Library (Christiana Care Health System, Eugene du Pont Preventive Medicine & Rehabilitation Institute), **http://www.christianacare.org/health_guide/health_guide_pmri_health_info.cfm**
- **Delaware:** Lewis B. Flinn Library (Delaware Academy of Medicine), **http://www.delamed.org/chls.html**
- **Georgia:** Family Resource Library (Medical College of Georgia), **http://cmc.mcg.edu/kids_families/fam_resources/fam_res_lib/frl.htm**
- **Georgia:** Health Resource Center (Medical Center of Central Georgia), **http://www.mccg.org/hrc/hrchome.asp**
- **Hawaii:** Hawaii Medical Library: Consumer Health Information Service (Hawaii Medical Library), **http://hml.org/CHIS/**

- **Idaho:** DeArmond Consumer Health Library (Kootenai Medical Center), **http://www.nicon.org/DeArmond/index.htm**
- **Illinois:** Health Learning Center of Northwestern Memorial Hospital (Northwestern Memorial Hospital, Health Learning Center), **http://www.nmh.org/health_info/hlc.html**
- **Illinois:** Medical Library (OSF Saint Francis Medical Center), **http://www.osfsaintfrancis.org/general/library/**
- **Kentucky:** Medical Library - Services for Patients, Families, Students & the Public (Central Baptist Hospital), **http://www.centralbap.com/education/community/library.htm**
- **Kentucky:** University of Kentucky - Health Information Library (University of Kentucky, Chandler Medical Center, Health Information Library), **http://www.mc.uky.edu/PatientEd/**
- **Louisiana:** Alton Ochsner Medical Foundation Library (Alton Ochsner Medical Foundation), **http://www.ochsner.org/library/**
- **Louisiana:** Louisiana State University Health Sciences Center Medical Library-Shreveport, **http://lib-sh.lsuhsc.edu/**
- **Maine:** Franklin Memorial Hospital Medical Library (Franklin Memorial Hospital), **http://www.fchn.org/fmh/lib.htm**
- **Maine:** Gerrish-True Health Sciences Library (Central Maine Medical Center), **http://www.cmmc.org/library/library.html**
- **Maine:** Hadley Parrot Health Science Library (Eastern Maine Healthcare), **http://www.emh.org/hll/hpl/guide.htm**
- **Maine:** Maine Medical Center Library (Maine Medical Center), **http://www.mmc.org/library/**
- **Maine:** Parkview Hospital, **http://www.parkviewhospital.org/communit.htm#Library**
- **Maine:** Southern Maine Medical Center Health Sciences Library (Southern Maine Medical Center), **http://www.smmc.org/services/service.php3?choice=10**
- **Maine:** Stephens Memorial Hospital Health Information Library (Western Maine Health), **http://www.wmhcc.com/hil_frame.html**
- **Manitoba, Canada:** Consumer & Patient Health Information Service (University of Manitoba Libraries), **http://www.umanitoba.ca/libraries/units/health/reference/chis.html**
- **Manitoba, Canada:** J.W. Crane Memorial Library (Deer Lodge Centre), **http://www.deerlodge.mb.ca/library/libraryservices.shtml**

- **Maryland:** Health Information Center at the Wheaton Regional Library (Montgomery County, Md., Dept. of Public Libraries, Wheaton Regional Library), **http://www.mont.lib.md.us/healthinfo/hic.asp**
- **Massachusetts:** Baystate Medical Center Library (Baystate Health System), **http://www.baystatehealth.com/1024/**
- **Massachusetts:** Boston University Medical Center Alumni Medical Library (Boston University Medical Center), **http://med-libwww.bu.edu/library/lib.html**
- **Massachusetts:** Lowell General Hospital Health Sciences Library (Lowell General Hospital), **http://www.lowellgeneral.org/library/HomePageLinks/WWW.htm**
- **Massachusetts:** Paul E. Woodard Health Sciences Library (New England Baptist Hospital), **http://www.nebh.org/health_lib.asp**
- **Massachusetts:** St. Luke's Hospital Health Sciences Library (St. Luke's Hospital), **http://www.southcoast.org/library/**
- **Massachusetts:** Treadwell Library Consumer Health Reference Center (Massachusetts General Hospital), **http://www.mgh.harvard.edu/library/chrcindex.html**
- **Massachusetts:** UMass HealthNet (University of Massachusetts Medical School), **http://healthnet.umassmed.edu/**
- **Michigan:** Botsford General Hospital Library - Consumer Health (Botsford General Hospital, Library & Internet Services), **http://www.botsfordlibrary.org/consumer.htm**
- **Michigan:** Helen DeRoy Medical Library (Providence Hospital and Medical Centers), **http://www.providence-hospital.org/library/**
- **Michigan:** Marquette General Hospital - Consumer Health Library (Marquette General Hospital, Health Information Center), **http://www.mgh.org/center.html**
- **Michigan:** Patient Education Resouce Center - University of Michigan Cancer Center (University of Michigan Comprehensive Cancer Center), **http://www.cancer.med.umich.edu/learn/leares.htm**
- **Michigan:** Sladen Library & Center for Health Information Resources - Consumer Health Information, **http://www.sladen.hfhs.org/library/consumer/index.html**
- **Montana:** Center for Health Information (St. Patrick Hospital and Health Sciences Center), **http://www.saintpatrick.org/chi/librarydetail.php3?ID=41**

- **National:** Consumer Health Library Directory (Medical Library Association, Consumer and Patient Health Information Section), **http://caphis.mlanet.org/directory/index.html**
- **National:** National Network of Libraries of Medicine (National Library of Medicine) - provides library services for health professionals in the United States who do not have access to a medical library, **http://nnlm.gov/**
- **National:** NN/LM List of Libraries Serving the Public (National Network of Libraries of Medicine), **http://nnlm.gov/members/**
- **Nevada:** Health Science Library, West Charleston Library (Las Vegas Clark County Library District), **http://www.lvccld.org/special_collections/medical/index.htm**
- **New Hampshire:** Dartmouth Biomedical Libraries (Dartmouth College Library), **http://www.dartmouth.edu/~biomed/resources.htmld/conshealth.htmld/**
- **New Jersey:** Consumer Health Library (Rahway Hospital), **http://www.rahwayhospital.com/library.htm**
- **New Jersey:** Dr. Walter Phillips Health Sciences Library (Englewood Hospital and Medical Center), **http://www.englewoodhospital.com/links/index.htm**
- **New Jersey:** Meland Foundation (Englewood Hospital and Medical Center), **http://www.geocities.com/ResearchTriangle/9360/**
- **New York:** Choices in Health Information (New York Public Library) - NLM Consumer Pilot Project participant, **http://www.nypl.org/branch/health/links.html**
- **New York:** Health Information Center (Upstate Medical University, State University of New York), **http://www.upstate.edu/library/hic/**
- **New York:** Health Sciences Library (Long Island Jewish Medical Center), **http://www.lij.edu/library/library.html**
- **New York:** ViaHealth Medical Library (Rochester General Hospital), **http://www.nyam.org/library/**
- **Ohio:** Consumer Health Library (Akron General Medical Center, Medical & Consumer Health Library), **http://www.akrongeneral.org/hwlibrary.htm**
- **Oklahoma:** Saint Francis Health System Patient/Family Resource Center (Saint Francis Health System), **http://www.sfh-tulsa.com/patientfamilycenter/default.asp**

- **Oregon:** Planetree Health Resource Center (Mid-Columbia Medical Center), **http://www.mcmc.net/phrc/**
- **Pennsylvania:** Community Health Information Library (Milton S. Hershey Medical Center), **http://www.hmc.psu.edu/commhealth/**
- **Pennsylvania:** Community Health Resource Library (Geisinger Medical Center), **http://www.geisinger.edu/education/commlib.shtml**
- **Pennsylvania:** HealthInfo Library (Moses Taylor Hospital), **http://www.mth.org/healthwellness.html**
- **Pennsylvania:** Hopwood Library (University of Pittsburgh, Health Sciences Library System), **http://www.hsls.pitt.edu/chi/hhrcinfo.html**
- **Pennsylvania:** Koop Community Health Information Center (College of Physicians of Philadelphia), **http://www.collphyphil.org/kooppg1.shtml**
- **Pennsylvania:** Learning Resources Center - Medical Library (Susquehanna Health System), **http://www.shscares.org/services/lrc/index.asp**
- **Pennsylvania:** Medical Library (UPMC Health System), **http://www.upmc.edu/passavant/library.htm**
- **Quebec, Canada:** Medical Library (Montreal General Hospital), **http://ww2.mcgill.ca/mghlib/**
- **South Dakota:** Rapid City Regional Hospital - Health Information Center (Rapid City Regional Hospital, Health Information Center), **http://www.rcrh.org/education/LibraryResourcesConsumers.htm**
- **Texas:** Houston HealthWays (Houston Academy of Medicine-Texas Medical Center Library), **http://hhw.library.tmc.edu/**
- **Texas:** Matustik Family Resource Center (Cook Children's Health Care System), **http://www.cookchildrens.com/Matustik_Library.html**
- **Washington:** Community Health Library (Kittitas Valley Community Hospital), **http://www.kvch.com/**
- **Washington:** Southwest Washington Medical Center Library (Southwest Washington Medical Center), **http://www.swmedctr.com/Home/**

APPENDIX D. YOUR CHILD'S RIGHTS AND INSURANCE

Overview

Parents face a series of issues related more to the healthcare industry than to their children's medical conditions. This appendix covers two important topics in this regard: your responsibilities and your child's rights as a patient, and how to get the most out of your child's medical insurance plan.

Your Child's Rights as a Patient

The President's Advisory Commission on Consumer Protection and Quality in the Healthcare Industry has created the following summary of your child's rights as a patient.[45]

[45]Adapted from Consumer Bill of Rights and Responsibilities: **http://www.hcqualitycommission.gov/press/cbor.html#head1**.

Information Disclosure

Consumers have the right to receive accurate, easily understood information. Some consumers require assistance in making informed decisions about health plans, health professionals, and healthcare facilities. Such information includes:

- ***Health plans.*** Covered benefits, cost-sharing, and procedures for resolving complaints, licensure, certification, and accreditation status, comparable measures of quality and consumer satisfaction, provider network composition, the procedures that govern access to specialists and emergency services, and care management information.
- ***Health professionals.*** Education, board certification, and recertification, years of practice, experience performing certain procedures, and comparable measures of quality and consumer satisfaction.
- ***Healthcare facilities.*** Experience in performing certain procedures and services, accreditation status, comparable measures of quality, worker, and consumer satisfaction, and procedures for resolving complaints.
- ***Consumer assistance programs.*** Programs must be carefully structured to promote consumer confidence and to work cooperatively with health plans, providers, payers, and regulators. Desirable characteristics of such programs are sponsorship that ensures accountability to the interests of consumers and stable, adequate funding.

Choice of Providers and Plans

Consumers have the right to a choice of healthcare providers that is sufficient to ensure access to appropriate high-quality healthcare. To ensure such choice, the Commission recommends the following:

- ***Provider network adequacy.*** All health plan networks should provide access to sufficient numbers and types of providers to assure that all covered services will be accessible without unreasonable delay -- including access to emergency services 24 hours a day and 7 days a week. If a health plan has an insufficient number or type of providers to provide a covered benefit with the appropriate degree of specialization, the plan should ensure that the consumer obtains the benefit outside the network at no greater cost than if the benefit were obtained from participating providers.
- ***Access to specialists.*** Consumers with complex or serious medical conditions who require frequent specialty care should have direct access

to a qualified specialist of their choice within a plan's network of providers. Authorizations, when required, should be for an adequate number of direct access visits under an approved treatment plan.

- ***Transitional care.*** Consumers who are undergoing a course of treatment for a chronic or disabling condition at the time they involuntarily change health plans or at a time when a provider is terminated by a plan for other than cause should be able to continue seeing their current specialty providers for up to 90 days to allow for transition of care.
- ***Choice of health plans.*** Public and private group purchasers should, wherever feasible, offer consumers a choice of high-quality health insurance plans.

Access to Emergency Services

Consumers have the right to access emergency healthcare services when and where the need arises. Health plans should provide payment when a consumer presents to an emergency department with acute symptoms of sufficient severity--including severe pain--such that a "prudent layperson" could reasonably expect the absence of medical attention to result in placing that consumer's health in serious jeopardy, serious impairment to bodily functions, or serious dysfunction of any bodily organ or part.

Participation in Treatment Decisions

Consumers have the right and responsibility to fully participate in all decisions related to their healthcare. Consumers who are unable to fully participate in treatment decisions have the right to be represented by parents, guardians, family members, or other conservators. Physicians and other health professionals should:

- Provide parents with sufficient information and opportunity to decide among treatment options consistent with the informed consent process.
- Discuss all treatment options with a parent in a culturally competent manner, including the option of no treatment at all.
- Ensure that persons with disabilities have effective communications with members of the health system in making such decisions.
- Discuss all current treatments a consumer may be undergoing.
- Discuss all risks, benefits, and consequences to treatment or nontreatment.

- Give parents the opportunity to refuse treatment for their children and to express preferences about future treatment decisions.
- Discuss the use of advance directives -- both living wills and durable powers of attorney for healthcare -- with parents.
- Abide by the decisions made by parents consistent with the informed consent process.

Health plans, health providers, and healthcare facilities should:

- Disclose to consumers factors -- such as methods of compensation, ownership of or interest in healthcare facilities, or matters of conscience -- that could influence advice or treatment decisions.
- Assure that provider contracts do not contain any so-called "gag clauses" or other contractual mechanisms that restrict healthcare providers' ability to communicate with and advise parents about medically necessary treatment options for their children.
- Be prohibited from penalizing or seeking retribution against healthcare professionals or other health workers for advocating on behalf of their patients.

Respect and Nondiscrimination

Consumers have the right to considerate, respectful care from all members of the healthcare industry at all times and under all circumstances. An environment of mutual respect is essential to maintain a quality healthcare system. To assure that right, the Commission recommends the following:

- Consumers must not be discriminated against in the delivery of healthcare services consistent with the benefits covered in their policy, or as required by law, based on race, ethnicity, national origin, religion, sex, age, mental or physical disability, sexual orientation, genetic information, or source of payment.
- Consumers eligible for coverage under the terms and conditions of a health plan or program, or as required by law, must not be discriminated against in marketing and enrollment practices based on race, ethnicity, national origin, religion, sex, age, mental or physical disability, sexual orientation, genetic information, or source of payment.

Confidentiality of Health Information

Consumers have the right to communicate with healthcare providers in confidence and to have the confidentiality of their individually identifiable healthcare information protected. Consumers also have the right to review and copy their own medical records and request amendments to their records.

Complaints and Appeals

Consumers have the right to a fair and efficient process for resolving differences with their health plans, healthcare providers, and the institutions that serve them, including a rigorous system of internal review and an independent system of external review. A free copy of the Patient's Bill of Rights is available from the American Hospital Association.[46]

Parent Responsibilities

To underscore the importance of finance in modern healthcare as well as your responsibility for the financial aspects of your child's care, the President's Advisory Commission on Consumer Protection and Quality in the Healthcare Industry has proposed that parents understand the following "Consumer Responsibilities."[47] In a healthcare system that protects consumers' rights, it is reasonable to expect and encourage consumers to assume certain responsibilities. Greater involvement by parents in their children's care increases the likelihood of achieving the best outcome and helps support a quality-oriented, cost-conscious environment. Such responsibilities include:

- Take responsibility for maximizing your child's healthy habits.
- Work collaboratively with healthcare providers in developing and carrying out your child's agreed-upon treatment plans.
- Disclose relevant information and clearly communicate wants and needs.

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[46] To order your free copy of the Patient's Bill of Rights, telephone 312-422-3000 or visit the American Hospital Association's Web site: http://www.aha.org. Click on "Resource Center," go to "Search" at bottom of page, and then type in "Patient's Bill of Rights." The Patient's Bill of Rights is also available from Fax on Demand, at 312-422-2020, document number 471124.

[47] Adapted from http://www.hcqualitycommission.gov/press/cbor.html#head1.

- Use the insurance company's internal complaint and appeal processes to address your concerns.
- Recognize the reality of risks, the limits of the medical science, and the human fallibility of the healthcare professional.
- Be aware of a healthcare provider's obligation to be reasonably efficient and equitable in providing care to the community.
- Become knowledgeable about health plan coverage and options (when available) including all covered benefits, limitations, and exclusions, rules regarding use of network providers, coverage and referral rules, appropriate processes to secure additional information, and the process to appeal coverage decisions.
- Make a good-faith effort to meet financial obligations.
- Abide by administrative and operational procedures of health plans, healthcare providers, and Government health benefit programs.

Choosing an Insurance Plan

There are a number of official government agencies that help consumers understand their healthcare insurance choices.[48] The U.S. Department of Labor, in particular, recommends ten ways to make your health benefits choices work best for your family.[49]

1. Your options are important. There are many different types of health benefit plans. Find out which one your employer offers, then check out the plan, or plans, offered. Your employer's human resource office, the health plan administrator, or your union can provide information to help you match your family's needs and preferences with the available plans. The more information you have, the better your healthcare decisions will be.

2. Reviewing the benefits available. Do the plans offered cover preventive care, well-baby care, vision or dental care? Are there deductibles? Answers to these questions can help determine the out-of-pocket expenses you may face. Cheapest may not always be best. Your goal is high quality health benefits.

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[48] More information about quality across programs is provided at the following AHRQ Web site:
http://www.ahrq.gov/consumer/qntascii/qnthplan.htm.

[49] Adapted from the Department of Labor:
http://www.dol.gov/dol/pwba/public/pubs/health/top10-text.html.

3. Look for quality. The quality of healthcare services varies, but quality can be measured. You should consider the quality of healthcare in deciding among the healthcare plans or options available to your family. Not all health plans, doctors, hospitals and other providers give the highest quality care. Fortunately, there is quality information you can use right now to help you compare your healthcare choices. Find out how you can measure quality. Consult the U.S. Department of Health and Human Services publication "Your Guide to Choosing Quality Health Care" on the Internet at **www.ahcpr.gov/consumer**.

4. Your plan's summary plan description (SPD) provides a wealth of information. Your health plan administrator can provide you with a copy of your plan's SPD. It outlines your family's benefits and your legal rights under the Employee Retirement Income Security Act (ERISA), the federal law that protects your family's health benefits. It should contain information about the coverage of dependents, what services will require a co-pay, and the circumstances under which your employer can change or terminate a health benefits plan. Save the SPD and all other health plan brochures and documents, along with memos or correspondence from your employer relating to health benefits.

5. Assess your benefit coverage as your family status changes. Marriage, divorce, childbirth or adoption, and the death of a spouse are all life events that may signal a need to change your health benefits. You, your spouse and dependent children may be eligible for a special enrollment period under provisions of the Health Insurance Portability and Accountability Act (HIPAA). Even without life-changing events, the information provided by your employer should tell you how you can change benefits or switch plans, if more than one plan is offered. If your spouse's employer also offers a health benefits package, consider coordinating both plans for maximum coverage.

6. Changing jobs and other life events can affect your family's health benefits. Under the Consolidated Omnibus Budget Reconciliation Act (COBRA), you, your covered spouse, and your dependent children may be eligible to purchase extended health coverage under your employer's plan if you lose your job, change employers, get divorced, or upon occurrence of certain other events. Coverage can range from 18 to 36 months depending on your situation. COBRA applies to most employers with 20 or more workers and requires your plan to notify you of your rights. Most plans require eligible individuals to make their COBRA election within 60 days of the plan's notice. Be sure to follow up with your plan sponsor if you don't receive notice, and make sure you respond within the allotted time.

7. HIPAA can also help if you are changing jobs, particularly if you have a medical condition. HIPAA generally limits pre-existing condition exclusions to a maximum of 12 months (18 months for late enrollees). HIPAA also requires this maximum period to be reduced by the length of time you had prior "creditable coverage." You should receive a certificate documenting your prior creditable coverage from your old plan when coverage ends.

8. Plan for retirement. Before you retire, find out what health benefits, if any, extend to you and your spouse during your retirement years. Consult with your employer's human resources office, your union, the plan administrator, and check your SPD. Make sure there is no conflicting information among these sources about the benefits your family will receive or the circumstances under which they can change or be eliminated. With this information in hand, you can make other important choices, like finding out if you are eligible for Medicare and Medigap insurance coverage.

9. Know how to file an appeal if a health benefits claim is denied. Understand how your plan handles grievances and where to make appeals of the plan's decisions. Keep records and copies of correspondence. Check your health benefits package and your SPD to determine who is responsible for handling problems with benefit claims. Contact PWBA for customer service assistance if you are unable to obtain a response to your complaint.

10. You can take steps to improve the quality of the healthcare and the health benefits your family receives. Look for and use things like Quality Reports and Accreditation Reports whenever you can. Quality reports may contain consumer ratings -- how satisfied consumers are with the doctors in their plan, for instance-- and clinical performance measures -- how well a healthcare organization prevents and treats illness. Accreditation reports provide information on how accredited organizations meet national standards, and often include clinical performance measures. Look for these quality measures whenever possible. Consult "Your Guide to Choosing Quality Health Care" on the Internet at **www.ahcpr.gov/consumer**.

Medicaid

Illness strikes both rich and poor families. For low-income families, Medicaid is available to defer the costs of treatment. In the following pages, you will learn the basics about Medicaid as well as useful contact information on how to find more in-depth information.

Medicaid is a joint federal and state program that helps pay medical costs for some people with low incomes and limited resources. Medicaid programs vary from state to state. You can find more information about Medicaid on the HCFA.gov Web site at **http://www.hcfa.gov/medicaid/medicaid.htm**.

NORD's Medication Assistance Programs

Finally, the National Organization for Rare Disorders, Inc. (NORD) administers medication programs sponsored by humanitarian-minded pharmaceutical and biotechnology companies to help uninsured or under-insured individuals secure life-saving or life-sustaining drugs.[50] NORD programs ensure that certain vital drugs are available "to those families whose income is too high to qualify for Medicaid but too low to pay for their prescribed medications." The program has standards for fairness, equity, and unbiased eligibility. It currently covers some 14 programs for nine pharmaceutical companies. NORD also offers early access programs for investigational new drugs (IND) under the approved "Treatment INDs" programs of the Food and Drug Administration (FDA). In these programs, a limited number of individuals can receive investigational drugs that have yet to be approved by the FDA. These programs are generally designed for rare medical conditions. For more information, visit **www.rarediseases.org**.

Additional Resources

In addition to the references already listed in this chapter, you may need more information on health insurance, hospitals, or the healthcare system in general. The NIH has set up an excellent guidance Web site that addresses these and other issues. Topics include:[51]

- Health Insurance: **http://www.nlm.nih.gov/medlineplus/healthinsurance.html**
- Health Statistics: **http://www.nlm.nih.gov/medlineplus/healthstatistics.html**
- HMO and Managed Care: **http://www.nlm.nih.gov/medlineplus/managedcare.html**
- Hospice Care: **http://www.nlm.nih.gov/medlineplus/hospicecare.html**

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[50] Adapted from NORD: **http://www.rarediseases.org/cgi-bin/nord/progserv#patient?id=rPIzL9oD&mv_pc=30**.

[51] You can access this information at: **http://www.nlm.nih.gov/medlineplus/healthsystem.html**.

- Medicaid: **http://www.nlm.nih.gov/medlineplus/medicaid.html**
- Medicare: **http://www.nlm.nih.gov/medlineplus/medicare.html**
- Nursing Homes and Long-term Care: **http://www.nlm.nih.gov/medlineplus/nursinghomes.html**
- Patient's Rights, Confidentiality, Informed Consent, Ombudsman Programs, Privacy and Patient Issues: **http://www.nlm.nih.gov/medlineplus/patientissues.html**
- Veteran's Health, Persian Gulf War, Gulf War Syndrome, Agent Orange: **http://www.nlm.nih.gov/medlineplus/veteranshealth.html**

Vocabulary Builder

Cefotaxime: Semisynthetic broad-spectrum cephalosporin. [NIH]

Constipation: Infrequent or difficult evacuation of the faeces. [EU]

Kanamycin: Antibiotic complex produced by Streptomyces kanamyceticus from Japanese soil. Comprises 3 components: kanamycin A, the major component, and kanamycins B and C, the minor components. [NIH]

Micturition: The passage of urine; urination. [EU]

Psychosomatic: Pertaining to the mind-body relationship; having bodily symptoms of psychic, emotional, or mental origin; called also psychophysiologic. [EU]

Psychotherapy: A generic term for the treatment of mental illness or emotional disturbances primarily by verbal or nonverbal communication. [NIH]

Sarcoma: A tumour made up of a substance like the embryonic connective tissue; tissue composed of closely packed cells embedded in a fibrillar or homogeneous substance. Sarcomas are often highly malignant. [EU]

Schistosoma: A genus of trematode flukes belonging to the family Schistosomatidae. There are over a dozen species. These parasites are found in man and other mammals. Snails are the intermediate hosts. [NIH]

Spermatozoa: Mature male germ cells that develop in the seminiferous tubules of the testes. Each consists of a head, a body, and a tail that provides propulsion. The head consists mainly of chromatin. [NIH]

Sphincter: A ringlike band of muscle fibres that constricts a passage or closes a natural orifice; called also musculus sphincter. [EU]

ONLINE GLOSSARIES

The Internet provides access to a number of free-to-use medical dictionaries and glossaries. The National Library of Medicine has compiled the following list of online dictionaries:

- ADAM Medical Encyclopedia (A.D.A.M., Inc.), comprehensive medical reference: **http://www.nlm.nih.gov/medlineplus/encyclopedia.html**
- MedicineNet.com Medical Dictionary (MedicineNet, Inc.): **http://www.medterms.com/Script/Main/hp.asp**
- Merriam-Webster Medical Dictionary (Inteli-Health, Inc.): **http://www.intelihealth.com/IH/**
- Multilingual Glossary of Technical and Popular Medical Terms in Eight European Languages (European Commission) - Danish, Dutch, English, French, German, Italian, Portuguese, and Spanish: **http://allserv.rug.ac.be/~rvdstich/eugloss/welcome.html**
- On-line Medical Dictionary (CancerWEB): **http://www.graylab.ac.uk/omd/**
- Technology Glossary (National Library of Medicine) - Health Care Technology: **http://www.nlm.nih.gov/nichsr/ta101/ta10108.htm**
- Terms and Definitions (Office of Rare Diseases): **http://rarediseases.info.nih.gov/ord/glossary_a-e.html**

Beyond these, MEDLINEplus contains a very user-friendly encyclopedia covering every aspect of medicine (licensed from A.D.A.M., Inc.). The ADAM Medical Encyclopedia Web site address is **http://www.nlm.nih.gov/medlineplus/encyclopedia.html**. ADAM is also available on commercial Web sites such as Web MD (**http://my.webmd.com/adam/asset/adam_disease_articles/a_to_z/a)** and drkoop.com (**http://www.drkoop.com/**). Topics of interest can be researched by using keywords before continuing elsewhere, as these basic definitions and concepts will be useful in more advanced areas of research. You may choose to print various pages specifically relating to urinary tract infection in children and keep them on file.

Online Dictionary Directories

The following are additional online directories compiled by the National Library of Medicine, including a number of specialized medical dictionaries and glossaries:

- Medical Dictionaries: Medical & Biological (World Health Organization): **http://www.who.int/hlt/virtuallibrary/English/diction.htm#Medical**
- MEL-Michigan Electronic Library List of Online Health and Medical Dictionaries (Michigan Electronic Library): **http://mel.lib.mi.us/health/health-dictionaries.html**
- Patient Education: Glossaries (DMOZ Open Directory Project): **http://dmoz.org/Health/Education/Patient_Education/Glossaries/**
- Web of Online Dictionaries (Bucknell University): **http://www.yourdictionary.com/diction5.html#medicine**

URINARY TRACT INFECTION IN CHILDREN GLOSSARY

The following is a complete glossary of terms used in this sourcebook. The definitions are derived from official public sources including the National Institutes of Health [NIH] and the European Union [EU]. After this glossary, we list a number of additional hardbound and electronic glossaries and dictionaries that you may wish to consult.

Abdomen: That portion of the body that lies between the thorax and the pelvis. [NIH]

Adjuvant: A substance which aids another, such as an auxiliary remedy; in immunology, nonspecific stimulator (e.g., BCG vaccine) of the immune response. [EU]

Antibiotic: A chemical substance produced by a microorganism which has the capacity, in dilute solutions, to inhibit the growth of or to kill other microorganisms. Antibiotics that are sufficiently nontoxic to the host are used as chemotherapeutic agents in the treatment of infectious diseases of man, animals and plants. [EU]

Antimicrobial: Killing microorganisms, or suppressing their multiplication or growth. [EU]

Asymptomatic: Showing or causing no symptoms. [EU]

Bacteria: Unicellular prokaryotic microorganisms which generally possess rigid cell walls, multiply by cell division, and exhibit three principal forms: round or coccal, rodlike or bacillary, and spiral or spirochetal. [NIH]

Bacteriuria: The presence of bacteria in the urine with or without consequent urinary tract infection. Since bacteriuria is a clinical entity, the term does not preclude the use of urine/microbiology for technical discussions on the isolation and segregation of bacteria in the urine. [NIH]

Catheter: A tubular, flexible, surgical instrument for withdrawing fluids from (or introducing fluids into) a cavity of the body, especially one for introduction into the bladder through the urethra for the withdraw of urine. [EU]

Chemotherapy: The treatment of disease by means of chemicals that have a specific toxic effect upon the disease - producing microorganisms or that selectively destroy cancerous tissue. [EU]

Cinoxacin: Synthetic antimicrobial related to oxolinic and nalidixic acids and used in urinary tract infections. [NIH]

Circumcision: Excision of the prepuce or part of it. [NIH]

Collagen: The protein substance of the white fibres (collagenous fibres) of skin, tendon, bone, cartilage, and all other connective tissue; composed of molecules of tropocollagen (q.v.), it is converted into gelatin by boiling. collagenous pertaining to collagen; forming or producing collagen. [EU]

Constipation: Infrequent or difficult evacuation of the faeces. [EU]

Cystitis: Inflammation of the urinary bladder. [EU]

Cystoscopy: Direct visual examination of the urinary tract with a cystoscope. [EU]

Defecography: Radiographic examination of the process of defecation after the instillation of a contrast media into the rectum. [NIH]

Dysuria: Painful or difficult urination. [EU]

Electromyography: Recording of the changes in electric potential of muscle by means of surface or needle electrodes. [NIH]

Endocrinology: A subspecialty of internal medicine concerned with the metabolism, physiology, and disorders of the endocrine system. [NIH]

Endoscopy: Visual inspection of any cavity of the body by means of an endoscope. [EU]

Epidural: Situated upon or outside the dura mater. [EU]

Escherichia: A genus of gram-negative, facultatively anaerobic, rod-shaped bacteria whose organisms occur in the lower part of the intestine of warm-blooded animals. The species are either nonpathogenic or opportunistic pathogens. [NIH]

Extracellular: Outside a cell or cells. [EU]

Faecal: Pertaining to or of the nature of feces. [EU]

Febrile: Pertaining to or characterized by fever. [EU]

Filtration: The passage of a liquid through a filter, accomplished by gravity, pressure, or vacuum (suction). [EU]

Fistula: An abnormal passage or communication, usually between two internal organs, or leading from an internal organ to the surface of the body; frequently designated according to the organs or parts with which it communicates, as anovaginal, brochocutaneous, hepatopleural, pulmonoperitoneal, rectovaginal, urethrovaginal, and the like. Such passages are frequently created experimentally for the purpose of obtaining body secretions for physiologic study. [EU]

Fosfomycin: An antibiotic produced by Streptomyces fradiae. [NIH]

Glomerular: Pertaining to or of the nature of a glomerulus, especially a renal glomerulus. [EU]

Glycosaminoglycans: Heteropolysaccharides which contain an N-acetylated hexosamine in a characteristic repeating disaccharide unit. The repeating structure of each disaccharide involves alternate 1,4- and 1,3-linkages consisting of either N-acetylglucosamine or N-acetylgalactosamine. [NIH]

Gynecology: A medical-surgical specialty concerned with the physiology and disorders primarily of the female genital tract, as well as female endocrinology and reproductive physiology. [NIH]

Hematology: A subspecialty of internal medicine concerned with morphology, physiology, and pathology of the blood and blood-forming tissues. [NIH]

Immunity: The condition of being immune; the protection against infectious disease conferred either by the immune response generated by immunization or previous infection or by other nonimmunologic factors (innate i.). [EU]

Intermittent: Occurring at separated intervals; having periods of cessation of activity. [EU]

Intravenous: Within a vein or veins. [EU]

Kanamycin: Antibiotic complex produced by Streptomyces kanamyceticus from Japanese soil. Comprises 3 components: kanamycin A, the major component, and kanamycins B and C, the minor components. [NIH]

Leuconostoc: A genus of gram-positive, facultatively anaerobic bacteria whose growth is dependent on the presence of a fermentable carbohydrate. It is nonpathogenic to plants and animals, including humans. [NIH]

Ligament: A band of fibrous tissue that connects bones or cartilages, serving to support and strengthen joints. [EU]

Microbiology: The study of microorganisms such as fungi, bacteria, algae, archaea, and viruses. [NIH]

Micturition: The passage of urine; urination. [EU]

Midwifery: The practice of assisting women in childbirth. [NIH]

Mobility: Capability of movement, of being moved, or of flowing freely. [EU]

Molecular: Of, pertaining to, or composed of molecules : a very small mass of matter. [EU]

Musculature: The muscular apparatus of the body, or of any part of it. [EU]

Nausea: An unpleasant sensation, vaguely referred to the epigastrium and abdomen, and often culminating in vomiting. [EU]

Neonatal: Pertaining to the first four weeks after birth. [EU]

Nephrology: A subspecialty of internal medicine concerned with the anatomy, physiology, and pathology of the kidney. [NIH]

Neuromuscular: Pertaining to muscles and nerves. [EU]

Nitrofurantoin: A urinary anti-infective agent effective against most gram-positive and gram-negative organisms. Although sulfonamides and antibiotics are usually the agents of choice for urinary tract infections, nitrofurantoin is widely used for prophylaxis and long-term suppression. [NIH]

Nosocomial: Pertaining to or originating in the hospital, said of an infection not present or incubating prior to admittance to the hospital, but generally occurring 72 hours after admittance; the term is usually used to refer to patient disease, but hospital personnel may also acquire nosocomial infection. [EU]

Nulliparous: Having never given birth to a viable infant. [EU]

Obstetrics: A medical-surgical specialty concerned with management and care of women during pregnancy, parturition, and the puerperium. [NIH]

Outpatients: Persons who receive ambulatory care at an outpatient department or clinic without room and board being provided. [NIH]

Pediatrics: A medical specialty concerned with maintaining health and providing medical care to children from birth to adolescence. [NIH]

Pelvic: Pertaining to the pelvis. [EU]

Penis: The male organ of copulation and of urinary excretion, comprising a root, body, and extremity, or glans penis. The root is attached to the descending portions of the pubic bone by the crura, the latter being the extremities of the corpora cavernosa, and beneath them the corpus spongiosum, through which the urethra passes. The glans is covered with mucous membrane and ensheathed by the prepuce, or foreskin. The penis is homologous with the clitoris in the female. [EU]

Perineal: Pertaining to the perineum. [EU]

Peritoneum: Endothelial lining of the abdominal cavity, the parietal peritoneum covering the inside of the abdominal wall and the visceral peritoneum covering the bowel, the mesentery, and certain of the organs. The portion that covers the bowel becomes the serosal layer of the bowel wall. [NIH]

Pessary: 1. an instrument placed in the vagina to support the uterus or rectum or as a contraceptive device. 2. a medicated vaginal suppository. [EU]

Pharmacologic: Pertaining to pharmacology or to the properties and reactions of drugs. [EU]

Phosphates: Inorganic salts of phosphoric acid. [NIH]

Pneumonia: Inflammation of the lungs with consolidation. [EU]

Postmenopausal: Occurring after the menopause. [EU]

Postoperative: Occurring after a surgical operation. [EU]

Predisposition: A latent susceptibility to disease which may be activated under certain conditions, as by stress. [EU]

Preoperative: Preceding an operation. [EU]

Prevalence: The total number of cases of a given disease in a specified population at a designated time. It is differentiated from incidence, which refers to the number of new cases in the population at a given time. [NIH]

Prolapse: 1. the falling down, or sinking, of a part or viscus; procidentia. 2. to undergo such displacement. [EU]

Prophylaxis: The prevention of disease; preventive treatment. [EU]

Prostatitis: Inflammation of the prostate. [EU]

Proteins: Polymers of amino acids linked by peptide bonds. The specific sequence of amino acids determines the shape and function of the protein. [NIH]

Pseudomonas: A genus of gram-negative, aerobic, rod-shaped bacteria widely distributed in nature. Some species are pathogenic for humans, animals, and plants. [NIH]

Psychosomatic: Pertaining to the mind-body relationship; having bodily symptoms of psychic, emotional, or mental origin; called also psychophysiologic. [EU]

Psychotherapy: A generic term for the treatment of mental illness or emotional disturbances primarily by verbal or nonverbal communication. [NIH]

Pyelonephritis: Inflammation of the kidney and its pelvis, beginning in the interstitium and rapidly extending to involve the tubules, glomeruli, and blood vessels; due to bacterial infection. [EU]

Radiography: The making of film records (radiographs) of internal structures of the body by passage of x-rays or gamma rays through the body to act on specially sensitized film. [EU]

Radiology: A specialty concerned with the use of x-ray and other forms of radiant energy in the diagnosis and treatment of disease. [NIH]

Rectal: Pertaining to the rectum (= distal portion of the large intestine). [EU]

Reflux: A backward or return flow. [EU]

Sarcoma: A tumour made up of a substance like the embryonic connective tissue; tissue composed of closely packed cells embedded in a fibrillar or homogeneous substance. Sarcomas are often highly malignant. [EU]

Schistosoma: A genus of trematode flukes belonging to the family Schistosomatidae. There are over a dozen species. These parasites are found in man and other mammals. Snails are the intermediate hosts. [NIH]

Species: A taxonomic category subordinate to a genus (or subgenus) and superior to a subspecies or variety, composed of individuals possessing common characters distinguishing them from other categories of individuals of the same taxonomic level. In taxonomic nomenclature, species are designated by the genus name followed by a Latin or Latinized adjective or noun. [EU]

Spectrum: A charted band of wavelengths of electromagnetic vibrations obtained by refraction and diffraction. By extension, a measurable range of activity, such as the range of bacteria affected by an antibiotic (antibacterial s.) or the complete range of manifestations of a disease. [EU]

Spermatozoa: Mature male germ cells that develop in the seminiferous tubules of the testes. Each consists of a head, a body, and a tail that provides propulsion. The head consists mainly of chromatin. [NIH]

Sphincter: A ringlike band of muscle fibres that constricts a passage or closes a natural orifice; called also musculus sphincter. [EU]

Stenosis: Narrowing or stricture of a duct or canal. [EU]

Surgical: Of, pertaining to, or correctable by surgery. [EU]

Symptomatic: 1. pertaining to or of the nature of a symptom. 2. indicative (of a particular disease or disorder). 3. exhibiting the symptoms of a particular disease but having a different cause. 4. directed at the allying of symptoms, as symptomatic treatment. [EU]

Systemic: Pertaining to or affecting the body as a whole. [EU]

Toxicology: The science concerned with the detection, chemical composition, and pharmacologic action of toxic substances or poisons and the treatment and prevention of toxic manifestations. [NIH]

Translating: Conversion from one language to another language. [NIH]

Ureter: One of a pair of thick-walled tubes that transports urine from the kidney pelvis to the bladder. [NIH]

Urodynamics: The mechanical laws of fluid dynamics as they apply to urine transport. [NIH]

Urography: Roentgenography of a part of the urinary tract which has been rendered opaque by some opaque medium. [EU]

Urology: A surgical specialty concerned with the study, diagnosis, and treatment of diseases of the urinary tract in both sexes and the genital tract in the male. It includes the specialty of andrology which addresses both male genital diseases and male infertility. [NIH]

Virulence: The degree of pathogenicity within a group or species of microorganisms or viruses as indicated by case fatality rates and/or the ability of the organism to invade the tissues of the host. [NIH]

General Dictionaries and Glossaries

While the above glossary is essentially complete, the dictionaries listed here cover virtually all aspects of medicine, from basic words and phrases to more advanced terms (sorted alphabetically by title; hyperlinks provide rankings, information and reviews at Amazon.com):

- **Dictionary of Medical Acronymns & Abbreviations** by Stanley Jablonski (Editor), Paperback, 4th edition (2001), Lippincott Williams & Wilkins Publishers, ISBN: 1560534605, **http://www.amazon.com/exec/obidos/ASIN/1560534605/icongroupinterna**
- **Dictionary of Medical Terms : For the Nonmedical Person (Dictionary of Medical Terms for the Nonmedical Person, Ed 4)** by Mikel A. Rothenberg, M.D, et al, Paperback - 544 pages, 4th edition (2000), Barrons Educational Series, ISBN: 0764112015, **http://www.amazon.com/exec/obidos/ASIN/0764112015/icongroupinterna**
- **A Dictionary of the History of Medicine** by A. Sebastian, CD-Rom edition (2001), CRC Press-Parthenon Publishers, ISBN: 185070368X, **http://www.amazon.com/exec/obidos/ASIN/185070368X/icongroupinterna**
- **Dorland's Illustrated Medical Dictionary (Standard Version)** by Dorland, et al, Hardcover - 2088 pages, 29th edition (2000), W B Saunders Co, ISBN: 0721662544, **http://www.amazon.com/exec/obidos/ASIN/0721662544/icongroupinterna**
- **Dorland's Electronic Medical Dictionary** by Dorland, et al, Software, 29th Book & CD-Rom edition (2000), Harcourt Health Sciences, ISBN: 0721694934, **http://www.amazon.com/exec/obidos/ASIN/0721694934/icongroupinterna**
- **Dorland's Pocket Medical Dictionary (Dorland's Pocket Medical Dictionary, 26th Ed)** Hardcover - 912 pages, 26th edition (2001), W B Saunders Co, ISBN: 0721682812, **http://www.amazon.com/exec/obidos/ASIN/0721682812/icongroupinterna/103-4193558-7304618**
- **Melloni's Illustrated Medical Dictionary (Melloni's Illustrated Medical Dictionary, 4th Ed)** by Melloni, Hardcover, 4th edition (2001), CRC Press-Parthenon Publishers, ISBN: 85070094X, **http://www.amazon.com/exec/obidos/ASIN/85070094X/icongroupinterna**
- **Stedman's Electronic Medical Dictionary Version 5.0 (CD-ROM for Windows and Macintosh, Individual)** by Stedmans, CD-ROM edition (2000), Lippincott Williams & Wilkins Publishers, ISBN: 0781726328, **http://www.amazon.com/exec/obidos/ASIN/0781726328/icongroupinterna**

- **Stedman's Medical Dictionary** by Thomas Lathrop Stedman, Hardcover - 2098 pages, 27th edition (2000), Lippincott, Williams & Wilkins, ISBN: 068340007X, **http://www.amazon.com/exec/obidos/ASIN/068340007X/icongroupinterna**
- **Tabers Cyclopedic Medical Dictionary (Thumb Index)** by Donald Venes (Editor), et al, Hardcover - 2439 pages, 19th edition (2001), F A Davis Co, ISBN: 0803606540, **http://www.amazon.com/exec/obidos/ASIN/0803606540/icongroupinterna**

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