Federal Ministry of Health
Ethiopia

NATIONAL CERVICAL CANCER PREVENTION TRAINING PACKAGE

PARTICIPANT MANUAL

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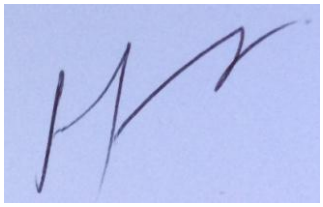
APPROVAL STATEMENT OF THE MINISTRY

The Federal Ministry of health of Ethiopia has been working towards standardization and institutionalization of in-service (IST) trainings at national level. As part of this initiative the ministry developed a national in-service training directive and implementation guide for the health sector. The directive requires all in-service training materials fulfill the standards set in the implementation Guide to ensure the quality of in-service training materials. Accordingly, the ministry reviews and approves existing training materials based on the IST standardization checklist annexed on the IST implementation guide.

As part of the national IST quality control process, this Cervical Cancer prevention IST package has been reviewed based on the standardization checklist and approved by the ministry in July 2015.



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Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ARV	Anti Retroviral
CDC	Center for Disease Control
CIN	Cervical Intraepithelial Neoplasia
CIS	Carcinoma In Situ
ESOG	Ethiopian of Obstetrics and Gynecology
FMOH	Federal Ministry of Health
Gyn/Obs	Gynecology and Obstetrics
HEW	Health Extension Worker
HIV	Human Immunodeficiency Virus
HO	Health Officer
HPV	Human Papilloma Virus
JHPEIGO	John Hopkins Program For International Education In Gynecology And Obstetrics
LBC	Liquid Based Cytology
LEEP	Loop Electrosurgical Excision Procedure
LETZ	Loop Excision of the Transformation Zone
LGSILs	Low-Grade Squamous Intraepithelial Lesions
PHC	Primary Health-Care
PID	Pelvic Inflammatory Disease
PPE	Personal Protective Equipment
RHB	Regional Health Bureau
SCJ	Squamo-columnar Junction
STA	See and Treat Approach
STI	Sexually Transmitted Infection
SVA	Single visit approach
TOT	Training of Trainers
UNAIDS	United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
VIA	Visual Inspection with Acetic Acid
WHO	World Health Organization

FOREWORD

Cervical cancer is one the major reproductive organ cancers affecting women. Cancer of the cervix is the second most common cancer among women worldwide, with about 500,000 new patients' diagnosed and over 250,000 deaths every year. It is a major cause of morbidity and mortality among women in resource-poor settings, especially in Africa. The majority of cancers (over 80%) in sub-Saharan Africa are detected in late stages, predominantly due to lack of information about cervical cancer and prevention services.

However, in low-resource settings there are few organized efforts to ensure that women of eligible age screened and received appropriate treatment. Evidence showed in developing countries, only less than 5% of eligible women undergo cytology-based screening in a 5-year period. This is because there are too few trained and skilled professionals to implement such a programme effectively or healthcare resources are not available to sustain such a programme..

The course is aimed in building health professionals competency on counseling of clients for cervical cancer, VIA screening, identification of screening results, performing cryotherapy, management of complications and referral when needed. Thus the main topics in this training participant manual is organized based on the epidemiology of cervical cancer and the disease burden; pathophysiology of cervical cancer and HPV infection; counseling of women for cervical cancer; infection prevention during VIA and cryotherapy services; client assessment and VIA testing and finally cryotherapy, other alternative treatment and follow up.

The main emphases in this course is the principle of single visit approach of see and treat; that is counseling for cervical cancer, VIA screening and cryotherapy of eligible women on same date. This is a 10-days course designed to offer a skills based training to equip health workers with optimal competency to provide good quality screening and on spot treatment with cryotherapy for those women who are positive for VIA test.

Stringent quality assurance mechanisms are put in place to keep standards in cervical cancer screening and treatment.

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COURSE INTRODUCTION

Course Overview

Cancer of the cervix is the second most common cancer among women worldwide, with about 500,000 new patients' diagnosed and over 250,000 deaths every year. It is a major cause of morbidity and mortality among women in resource-poor settings, especially in Africa. The majority of cancers (over 80%) in sub-Saharan Africaare detected in late stages, predominantly due to lack of information about cervical cancer and prevention services. Late-stage disease is associated with low survival rates after surgery or radiotherapy. In addition, these treatment modalities may be lacking altogether, or too expensive and inaccessible, for many women in low-resource countries. Cervical cancer is potentiallypreventable, and there are effective screening and treatment programmes that can lead to a significant reduction in the morbidity and mortality associated with this cancer.

However, in low-resource settings there are few organized efforts to ensure that women of eligible age screened and received appropriate treatment. Evidence showed in developing countries, only less than 5% of eligible women undergo cytology-based screening in a 5-year period. This is because there are too few trained and skilled professionals to implement such a programme effectively or healthcare resources are not available to sustain such a programme. Moreover, in developing countries, cytology-based services are confined to teaching hospitals or private laboratories in urban areas that are not accessible or affordable to those eligible women.

Fortunately there is now alternative evidence based best buy intervention that can be replicated in low-resource settings. The single visit approach (SVA) screening method of visual inspection with acetic acid (VIA) is an alternative sensitive screening method. It is cheap and non-invasive, and can be done in a low level health facility like a health center. More importantly, VIA provides instant results and those eligible for treatment can receive treatment of the precancerous lesions using cryotherapy on the same day and in the same health facility.

This "see and treat" method ensures adherence to treatment soon after diagnosis, hence stemming the problem of failing to honor patient referrals. Cryotherapy as a method of treatment for precancerous lesions is effective and easier to implement than other treatment modalities such as loop electrosurgical excision procedure (LEEP), loop excision of the transformation zone (LETZ) and cone biopsy. Furthermore, it has additional advantages, including the facts that it is affordable; there is no need for complicated equipment (although a supply of electricity is needed); and it can be done by less specialized personnel and thus can be implemented in a primary health-care (PHC) setting. Evidence showed up to 90% cure rate on those women who received cryotherapy.

The course is aimed in building health professionals competency on counseling of clients for cervical cancer, VIA screening, identification of screening results, performing cryotherapy, management of complications and referral when needed. Thus the main topics in this training participant manual is organized based on the epidemiology of cervical cancer and the disease

burden; pathophysiology of cervical cancer and HPV infection; counseling of women for cervical cancer; infection prevention during VIA and cryotherapy services; client assessment and VIA testing and finally cryotherapy, other alternative treatment and follow up. The main emphases in this course is the principle of single visit approach of see and treat; that is counseling for cervical cancer, VIA screening and cryotherapy of eligible women on same date.

Target Population for VIA Screening and cryotherapy

Provided that cervical cancer develops slowly from precancerous lesions to invasive cancer (>10 years) and that cervical cancer is uncommon in women younger than 30 years of age, it is recommended that the target age group for screening in Ethiopia should start from the age 30 years, unless the woman is HIV-positive. Therefore, women between the age of 30 – 49 shall receive VIA screening and cryotherapy services unless HIV positive (refer the National comprehensive cervical cancer guideline).

Core Competencies

Following successful completion of the course, participants are qualified for competency to provide VIA testing and cryotherapy.

Qualified providers, following a competency-based training, are expected to have the following core competencies:

- ✓ **Competency in Social, Epidemiologicand Cultural Context of Cervical Cancer and Women Health:**The skilled provider should have knowledge about social determinants and epidemiological context of cervical cancer and ethics that form the basis of appropriate care
- ✓ **Competency in Counseling of Women for Cervical Cancer:**The skilled provider should provide high quality, culturally sensitive health education and counseling services for cervical cancer.
- ✓ **Competency in VIA Testing and Appropriate Interpretation of Test Result:**The skilled provider should perform standardized VIA testing and be able to interpret test results.
- ✓ **Competency in Cryotherapy, Referral and Management of Complications:**The skilled provider should perform cryotherapy procedures, be able to manage complications and identify cases of referral and took timely decisions so as to reduce morbidity and mortality from cervical cancer
- ✓ **Competency in Infection Prevention:**The skilled provider should be able to follow and practice standard precaution measures so as to prevent infection during VIA testing and cryotherapy procedures.

Trainer Qualification and Requirement

Training of Trainers (TOTs) should be conducted to develop national and regional pool of trainers. A qualified VIA/cryotherapy trainer must be a proficient clinician with midwifery skills (midwife, doctor, health officer, or nurse) and has taken VIA/cryotherapy TOT course. The qualified VIA/cryotherapy trainer shall possess the following skills and core competencies:

- ✓ Has undergone FMOH approved, competency-based TOT in VIA/cryotherapy
- ✓ Competent service provider of cervical cancer screening services
- ✓ Has good experience in provision of VIA/cryotherapy, LEEP, colposcopy services for which they will be a trainer
- ✓ Has good facilitation skills
- ✓ Coordinates training in collaboration with other staff
- ✓ Documents and reports training activities conducted

Course Syllabus

Course Description

This clinical training course is designed to prepare participants to provide culturally acceptable and scientifically valid counseling services for cervical cancer prevention; provide VIA testing and perform cryotherapy in their own setup. It is a ten days course that is designated as an in-service training module both the off-site and in-site bases and focuses on the development, application and evaluation of knowledge and skills in counseling, VIA testing and cryotherapy. The course comprises of classroom presentations, role-plays, model demonstrations and practical attachments in a healthcare facility.

Course Goals

- ✓ To influence in a positive way the attitudes of the participant towards team work and her/his abilities to manage and provide counseling, VIAscreening and cryotherapy treatment services for cervical cancer prevention.
- ✓ To provide the participant with the decision making skills, knowledge and clinical skills needed for responding appropriately to VIA screening results
- ✓ To provide the participant with the interpersonal communication skills needed to respect the right of women to life, health, privacy and dignity

Participant Chapter Objectives

By the end of the training course, the participant will be able to:

- Describe the magnitude of cervical cancer globally and in Ethiopia.
- Identify basic knowledge on anatomy and physiology of cervix and to address the link of human papilloma virus and cervical cancer
- Explain ways of preventing cervical cancer.

- Perform counseling using proper counseling skill, about cervical cancer screening test and treatment to help client to make informed decision.
- Explain the basic concept of infection prevention during VIA and cryotherapy.
- Demonstrate is client assessment and VIA testing
- Explain patient treatment and follow up.
- Identify tools and formats that are important for monitoring and evaluation of cervical cancer prevention activities

Training/Learning Methods

- ✓ Illustrated lectures and group discussions
- ✓ Case studies
- ✓ Role plays
- ✓ Simulated practice with anatomic models
- ✓ Simulations for clinical decision-making
- ✓ Guided clinical activities (providing care and performing procedures)

Learning Materials

- Flipchart
- Markers
- Laptop computer
- CD-ROM
- Projection screen
- Masking tape
- Small prize or candy
- ZOE pelvic models and instruments
- Checklist for pelvic examinations
- Video of BSE
- VIA equipment and cryotherapy equipment
- Cervical model
- Learning guide for VIA and cryotherapy counseling
- Learning guide for VIA clinical skills
- Learning Guide for cryotherapy clinical skills
- VIA Atlas
- Video camera and film
- Clinical instruments and supplies
- Checklist for VIA counseling and clinical skills'
- Checklist for cryotherapy counseling and clinical skills

Reference manuals:

- National Cervical cancer prevention and control guideline
- Comprehensive cervical cancer prevention and control guide (WHO)

Participant Selection Criteria

- ✓ Participants for this course must be practicing clinicians (doctors, health officers, midwives and nurses) who work in a hospital or health center.
- ✓ Participants preferably should be selected from health facilities capable of providing consistent institutional support for VIA/cryotherapy (i.e., supplies, equipment, supervision, linkages with referral facilities, etc.).
- ✓ Participants should have the support of their supervisors or managers to achieve improved job performance after completing the course. In particular, participants should be prepared to communicate with supervisors or managers about the course and seek endorsement for training, encouragement for attendance and participation, and involvement in the transfer of new knowledge and skills to their job.

Cut off point for qualification

Qualification is based on the participant's achievement in two areas:

Knowledge: A score of at least 85 percent on the post-training questionnaire
Skills: Satisfactory performance of recommended VIA and cryotherapy practices during a clinical practice. Responsibility for the participant becoming qualified is shared among the participants and the trainer. Both participants and trainers can keep track of their progress on the selected VIA skills using the Participant Monitoring Sheet.

The evaluation methods used in the training are described briefly in the following:

Post-training test: Post-course Questionnaire and Post-course Image Assessment. The Questionnaire and image assessment will be given at the time in the course when all subject areas have been presented. S score 85% or more correct indicates knowledge- based and image- based , mastery of the material presented in the reference manual. For those scoring less than 85% on their first attempt, the clinical trainer should review the results with the participant individually and guide her/ him on using the reference manual and cervical images to learn the required information.

Participant

- Pre and post-course Knowledge Questionnaires
- Learning Guides and Checklists for emergency obstetric skills/procedures
- Simulations for clinical decision-making

Course

- Course evaluation (to be completed by each participant)

Course Duration

- The course is a ten days session composed of both classroom based sessions andclinical practice in a healthcare facility.

Suggested Course Composition

- Up to 20 health professionals with mixed qualifications (5 doctors and 15 health officers, midwives and/or nurses with midwifery skills)
- Four clinical trainers (two doctors and two midwives/nurses)
- Four clinical practice setting (five trainees per group)

Course schedule: See the 10 days course schedule of the training below

Course Schedule for the national cervical cancer prevention-training package

Date	Time	Activity
Day 1 Monday	8:30 – 9:00 AM	Registration
	9:00 – 9:10 AM	Opening Speech
	9:10 – 9: 30 AM	Facilitator and participant self-introduction
	9:30 – 9:45 AM	Overview of the course and review of course materials
	9:45 – 9:55 AM	Identify participants expectations
	9:55 – 10:25 AM	Pretest
	10:25 – 10:40 AM	Tea break
	10:40 - 10:50 AM	Identify individual and group learning needs
	10:50 AM – 12:20 PM	Introduction: Background, Cervical cancer HPV and HIV, Preventing cervical cancer, Screening precancerous disease, Managing precancerous disease, Links to other reproductive health services, M&E
	12:20 – 12:30 PM	Course summary
	12:30 – 2:00 PM	Lunch break
	2:00 – 3:00 PM	Pre course skills assessment
	3:00 – 3:20 PM	How to perform a pelvic examination,
	3:20 – 3:35 PM	Tea break
	3:35 – 4:35 PM	Practice standard method for performing pelvic examinations in simulated clinical setting
	4:35 - 5:20 PM	Breast examination
	5:20 – 5:30 PM	Review of the day's activities
Day 2	8:30 – 8:45 AM	Recap of previous day
	8:45 – 9:45 AM	Pathophysiology of cervical cancer: Back ground, Anatomy and physiology of the cervix at different ages, Importance of these changes in preventing cervical cancer (lecture)

	9:45 – 10:15 AM	HPV infection and cervical cancer (radial pulse palpation fame – role play)
	10:15 – 10:30AM	Tea break
	10:30– 11:00AM	The virus - how HPV induce cancer (lecture)
	11:00 – 11:30AM	Risk factors for cervical cancer (lecture)
	11:30 – 12:00 AM	Ball-of-knowledge game
	12:00 – 12:30 AM	Review of key points
	12:30 – 2:00 PM	Lunch
	2:00 – 3:00 PM	Small group work: Drawing anatomic features of the cervix
	3:00 – 4:00 PM	Pathophysiology of cervical cancer: The appearance of the cervix in different normal and abnormal situations – slide show
	4:00 – 4:15 PM	Tea break
	4:15 – 5:15 PM	Pathophysiology of cervical cancer: The appearance of the cervix in different normal and abnormal situations
	5:15- 5:30	Review of the day's activity
Day 3	8:30 – 8:45 AM	Recap previous day
	8:45 – 9:30 AM	Prevention of cervical cancer – primary prevention, secondary prevention, key consideration for low-resource setting
	9:30-10:00	Participants practice the pelvic examination, perform VIA screening and perform cryotherapy on anatomic model
	10:00 – 10:15 AM	Tea break
	10:15 – 12:30 PM	Clinical practice: observe and provide services in the clinic
	12:30 – 2:00 PM	Lunch break
	2:00 – 2:30 PM	Review of clinical practice
	2:30 – 3:45PM	Participants practice the pelvic examination, perform VIA screening and perform cryotherapy
	3:45 – 4:00 PM	Tea break
	4:00 – 5:00 PM	The VIA Atlas and identifying cervical conditions
	5:00 – 5:15 PM	Chapter summary
	5:15 – 5:30 PM	Review of the day's activities
Day 4 Chapter	8:30 – 8:45 AM	Recap of previous day
	8:45 – 9:45 AM	Chapter 4: Counseling for cervical cancer prevention : Counseling for cervical cancer prevention screening and treatment, client rights, being a good counselor
	9:45 – 10:30 AM	Role play (provider client simulations)
	10:30 – 10:45	Tea break
	10:45 AM – 12:45 PM	Clinical practice (two groups)):Observe while others counsel clients and also counsel clients in the clinic
	12:45 – 1:45 PM	Lunch Break
	1:45 – 2:30 PM	Review of clinical practice
	2:30 – 3: 10 PM	Counseling prior to VIA testing , Counseling prior to cryotherapy, Counseling following cryotherapy
	3:10 – 3:25 PM	Discussion on questions frequently asked by women during counseling and how to respond
	3:25 – 4:25 PM	Role play
	4:25 – 4:40 PM	Tea Break
	4: 40 – 5:10 PM	Chapter summary
	5:10 – 5:30 PM	Review of the day's activity

Day 5	8:30 – 8:45 AM	Agenda and opening activity
	8:45 – 9:45 AM	Chapter 5: Preventing infection in healthcare worker: Disease transmission cycle, first level- standard precaution: standard precaution-key components (hand washing, personal protective equipment, preventing injuries from sharp items, safe infectious waste disposal, environmental cleanliness, instrument processing), what to do if exposure occur, making infection prevention program work
	9:45 – 10:00 AM	Tea Break
	10:00 AM – 12:30 PM	Clinical practice: observe and provide services in clinic
	12:30 – 1:45 PM	Lunch Break
	1:45 – 4:00 PM	Clinical practice: observe and provide services in clinic also to have observation check list for IP practice
	4:00 – 4:20 PM	Tea Break
	4:20 – 5:00 PM	Review of clinical practice
	5:00 – 5:30 PM	Demonstration in preparation of 0.5% chlorine solution
Day 6	8:30 – 8:45 AM	Recap of previous day
	8:45 – 9:35 AM	Review of the day's activity on chapter 6: Who should be tested; When to perform VIA; Client assessment; Instruments and supplies
	9:35 – 10:15 AM	VIA/Cryotherapy setup
	10:15 10:30 AM	Tea Break
	10:30 AM – 12:30 PM	Clinical Practice: Observe and provide services in clinics
	12:30 – 2:00 PM	Lunch Break
	2:00 – 4:00 PM	Clinical Practice: Observe and provide services in clinics
	4:00 PM-4:15PM	Tea Break
		Image
	4:45 – 5:00Pm PM	Review of clinical practice
	5:00 -5:15PM	Chapter Summary
	5:15 PM-5:30PM	Review of day's activities
Day 7	8:30 – 8:45 AM	Recap previous day lessons
	8:45 – 9:45 AM	Treatment and follow up: Background outpatient treatment procedures; Cryotherapy treatment and referral
	9:45 – 10:00 AM	Steps of cryotherapy
	10:00 – 10:15 AM	Tea Break
	10:15 AM – 12:30 PM	Clinical Practice: Observe and provide services in clinics
	12:30 – 2:00 PM	Lunch Break
	2:00 – 2:30 PM	Review of clinical practice
	2:30 – 4:00 PM	Treatment and follow up: Instruments and equipment; Cryotherapy procedure; Routine procedure
	4:00 -4:15 PM	Tea Break
	4:15 – 5:15 PM	Cryotherapy procedure; Routine procedure continued
	5:15 – 5:30 PM	Chapter Summary
Day 8	8:30 – 8:45 AM	Recap previous day
	8:45 – 9:30 AM	Post course questionnaire
	9:30 – 10:00 AM	Tea break
	10:00– 12:30 PM	Clinical Practice: Observe and provide services in clinics
	12:30 – 2:00 PM	Lunch Break

	2:00 – 3:30 PM	Clinical Practice: Observe and provide services in clinics
	3:30-3:45 PM	Tea break
	3:45 – 4:15 PM	Review of clinical practice
	4:15-4:45PM	Treatment and referral decision making
	4:45 – 5:15 PM	Image test
	5:15 -5:30PM	Chapter summery
Day 9	8:30 – 8:45 AM	Recap previous day
	8:45 – 9:15 AM	Discussion: Preparing clinical site to provide VIA and cryotherapy services
	9:15 – 9:45 AM	Tea break
	9:45 AM – 12:30 PM	Clinical Practice: Evaluate provision of services in clinic
	12: 30 – 2:00 PM	Lunch break
	2:00 – 3:00 PM	Review of clinical practice
	3:00 – 3:30 PM	Discussion: Preparing clinical sites to provide VIA and cryotherapy services (continued)
	3:30-3:45PM	Tea Break
	3:45-5:15PM	Performance Evaluation
Day 10	8:30 – 8:45 AM	Recap of previous day
	8:45 – 9:45 AM	Discussion: Implementation plan
	9:45 – 4:00 AM	Tea break
	4:00 – 12:30 PM	Clinical Practice: Evaluate provision of services in the clinic
	12:30 – 2:00 PM	Lunch break
	2:00 – 2:30 PM	Review of clinical practice /repeat image test/
	2:30 – 2:45 PM	Course summary
	2:45 – 3:45 PM	Course evaluation
	3:45 – 4:15 PM	Closing ceremony

Chapter One

INTRODUCTION

Duration-210 minutes

Chapter Objective:

By the end of this chapter, participants will be able to describe the magnitude of cervical cancer globally and in Ethiopia.

LearningObjective:

- Describe the magnitude and trends of cervical cancer (global, national and regional)
- Mention the risk factors for developing cervical cancer
- Describe the correlation of cervical cancer, HPV infection and risk of HIV/AIDS
- Describe precancerous lesions of the cervix, screening systems and treatment options
- Explain the national strategy and approach for the prevention and control of cervical cancer

Chapter activities:

i. Pre course skills assessment
ii. How to perform a pelvic examination
iii. Review of the day's activities
iv. Practice standard method for performing pelvic examinations in simulated clinical setting

1.1 Background and Magnitude of the Problem

Cervical cancer is the second most common cancer in the world and the third common cause of deaths from cancer in women. Each year, an estimated 530,000 new cases of cervical cancer are diagnosed globally and more than 270,000 women die from it. Of the estimated deaths from cervical cancer, more than 85% occur in developing countries.

Fig 1.1 Global epidemiology of female reproductive cancers

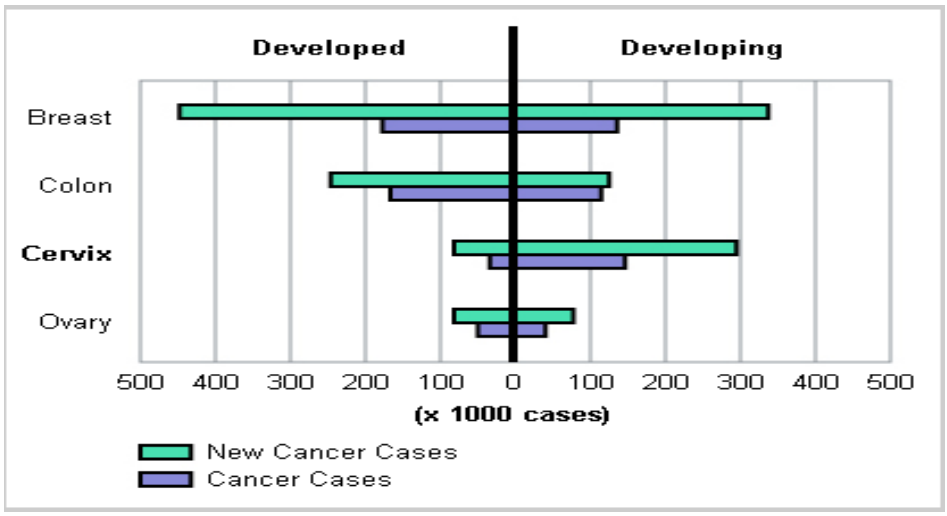


Fig 1.2 Worldwide incidence rates of cervical cancer per 100,000 females (all ages), age-standardized to the WHO standard population (2005)

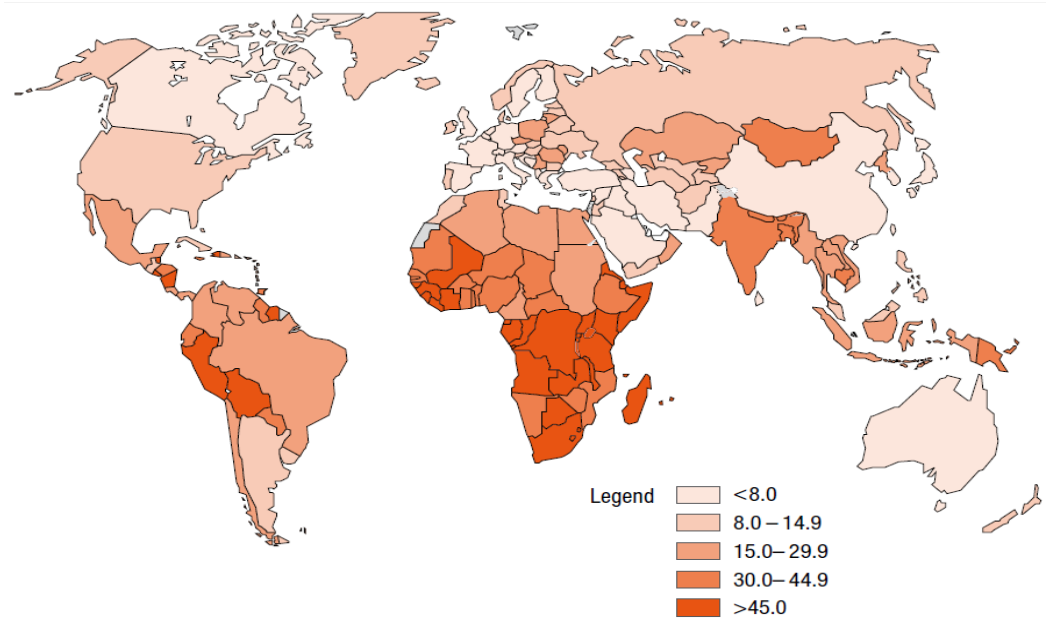
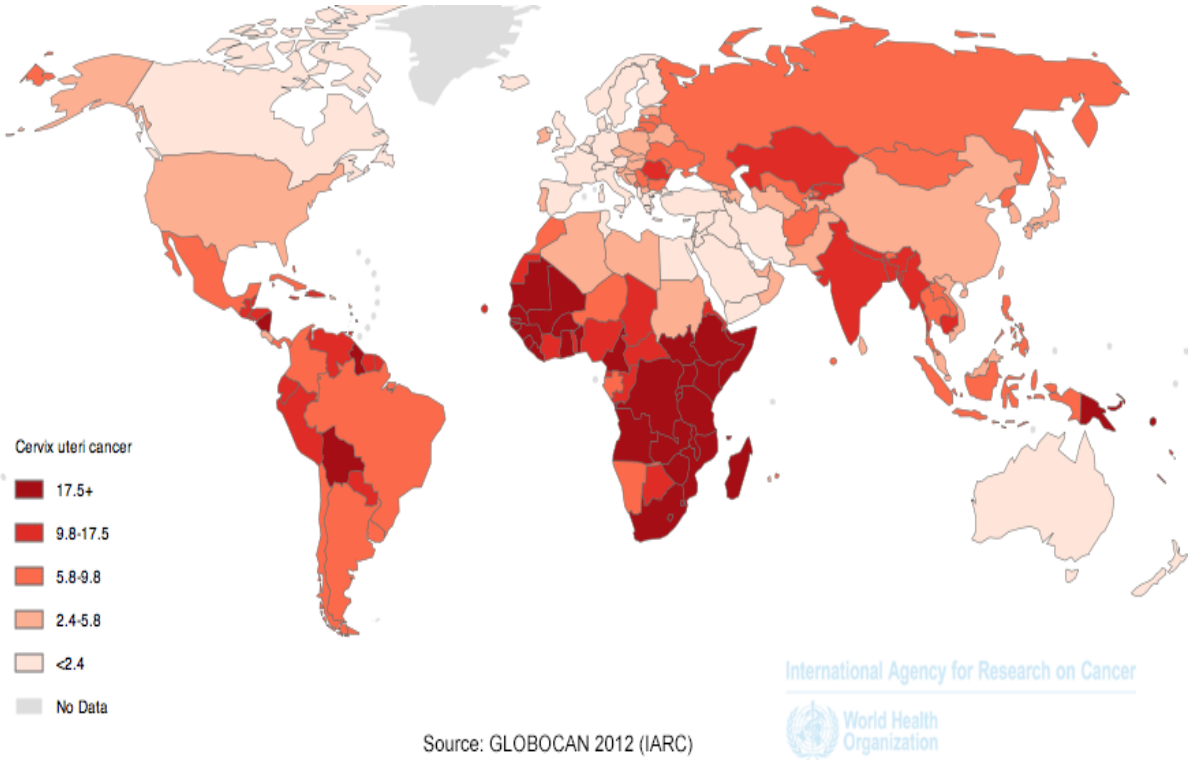


Fig 1.3 Worldwide comparison of cervical cancer mortality rates .ASR(W) – age standardized world mortality rate per 100,000women

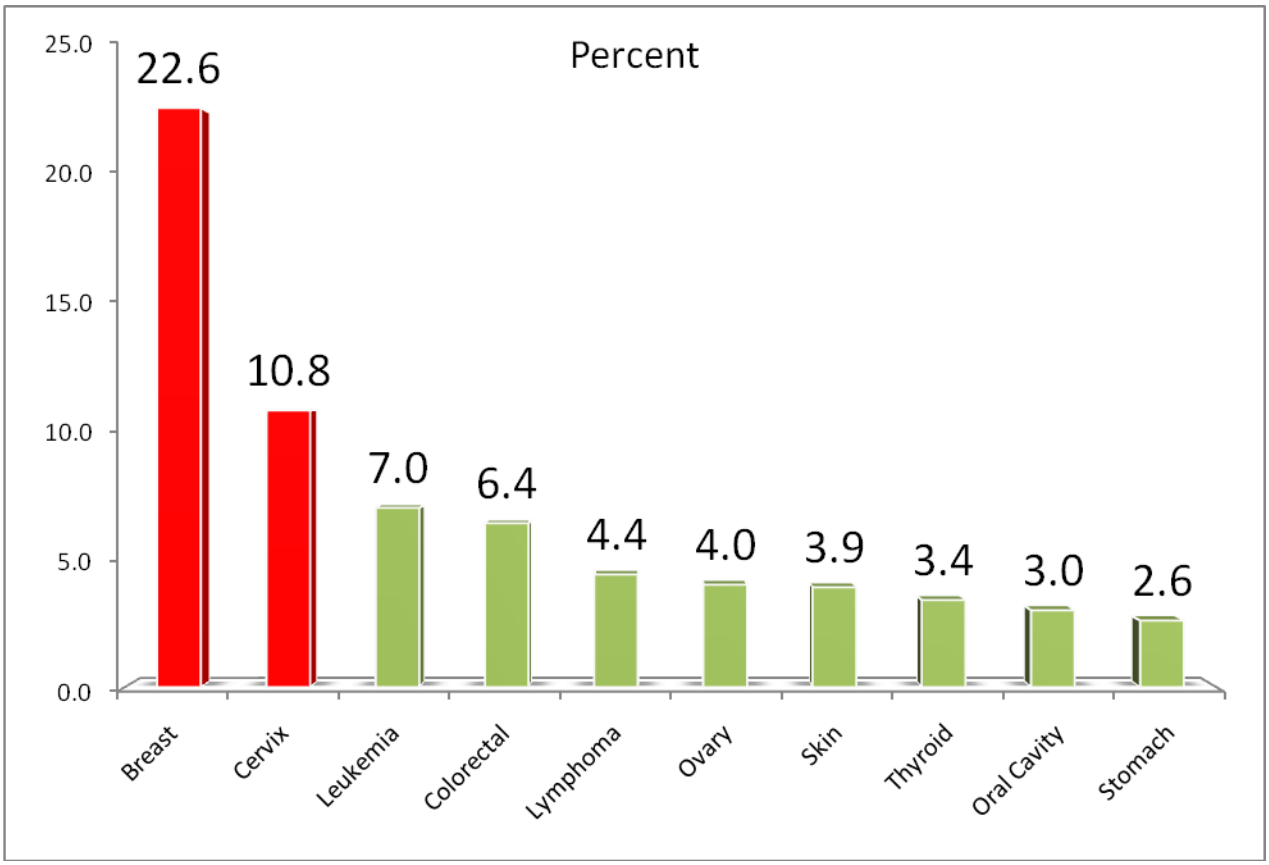


In Ethiopia, cervical cancer is the second most common cancer following breast cancer and the leading cause of death from cancer. Annually, an estimated number of 4648 women develop the cancer and 3,235 die from it.

Table 1. Profile of cancers diagnosed at the Radiotherapy center (Black Lion Hospital, 1996 – 2008)

Serial No.	Topography	Number	Percentage
1	**Cervix**	**3654**	**30.4**
2	**Breast**	**2415**	**20.2**
3	Sarcoma	899	7.5
4	Head & Neck	878	7.4
5	Thyroid	472	4.0
6	Colorectal	411	3.4
7	Others	3254	27.1

Graph showing the Top 10 cancer (Sep 2011 – Aug 2013) in Ethiopia (Addis Ababa City Cancer registry)



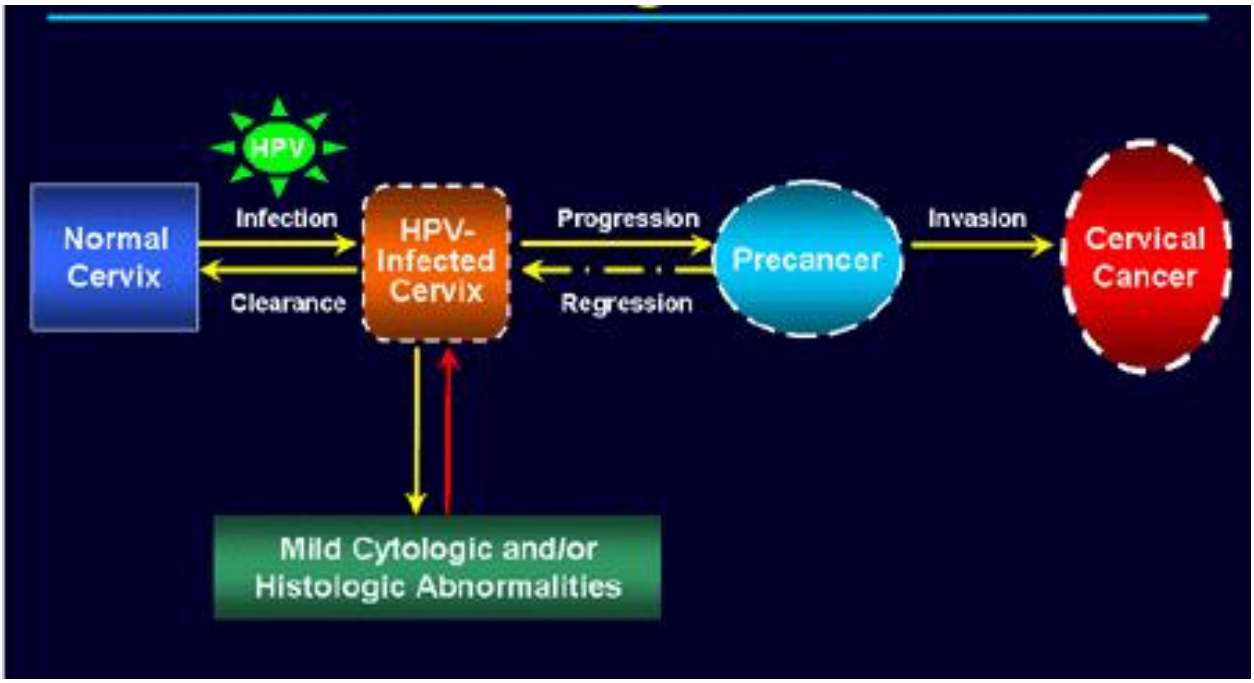
1.2 HPV and precancerous lesions of the cervix

Nearly all-cervical cancers are directly linked to infection with one or more types of human papillomavirus (HPV), one of the most prevalent sexually transmitted infections in the world. Of the more than 100 types of HPV that infect the genital tract, 15 to 20 types are linked to cervical cancer. Two of those types—16 and 18—are most often detected in cervical cancer cases.

HPV infections often do not cause symptoms. The most common signs of infection are small warts that appear in the genital area and itching or burning in the genital area. After a woman becomes infected with HPV, the infection may remain locally stable, may regress spontaneously, or if the cervix is affected, may develop into low-grade squamous intraepithelial lesions (LGSILs), which are also called mild cervical intraepithelial neoplasia (CIN I) or early dysplasia.

Most low-grade(CIN I) lesions disappear without treatment or do not progress, particularly those that occur in younger women. It is estimated that out of women infected with HPV, 10% will develop precancerous changes in their cervical tissue. These precancerous lesions are observed most frequently between age of 30 and 40. About 8% of the women who develop these changes will develop pre-cancer limited to the outer layers of the cervical cells (carcinoma in situ[CIS]), and about 1.6% will develop invasive cancer unless the precancerous lesion or CIS is detected and treated. Progression to cervical cancer from premalignant lesions generally takes place over a period of 10 to 20 years. Although rare, some pre-cancer lesions become cancerous over a year or two.

Fig 1.4 Natural history of cervical carcinogenesis



Although HPV-related lesions (e.g., warts) can be treated, currently there is no cure for HPV infection. Once infected, a person is most likely infected for life. In most cases, an active infection is controlled by the immune system and becomes dormant over time. It is not possible, however, to predict whether or when the virus will become active again.

1.3 Risk Factors for HPV and Cervical Cancer

Epidemiologic studies have identified a number of factors that play a significant role in the development of cervical cancer. The risk factors include the following:

- Sexual activity before age 20
- Multiple sexual partners
- Exposure to sexually transmitted infection (STI)
- Smoking
- Immunosuppression: HIV/AIDS, Chronic corticosteroid use, etc.

The type and pattern of sexual activity, especially in adolescents, are major factors in determining whether a person becomes infected with HPV. The number of sexual partners that adolescents have before age 20 may be quite large, and each of their partners also may have had multiple partners. As a result, this pattern of sexual activity increases the risk of exposure to STIs, including HPV. Suppression of the immune system also is an important risk factor because it makes the cells lining in the lower genital tract (vulva, vagina and cervix) more easily infected by the cancer inducing types of HPV (Stentella et al. 1998). There is substantial evidence that HIV-positive women are at increased risk of developing precancerous lesions.

1.4 Cervical Cancer and HIV/AIDS

Globally, the HIV epidemic continues to take its roll on men and women. The Joint United Nations Programme on HIV/AIDS (UNAIDS) estimates that 35.3 million people were HIV positives in 2012, and almost half of the adults afflicted with the disease are women (UNAIDS 2013). A number of studies have consistently shown that in HIV-seropositive women, HPV infection is detected more frequently and tends to resolve with more difficulty than in HIV-seronegative women—and HPV-associated diseases including genital warts, dysplasias and squamous cell cancers are more difficult to treat. Study highlights the importance of screening programs after finding that one in five HIV-infected women developed dysplasias within three years (Ellerbrock TV et al. 2000).

According to a World Health Organization (WHO) publication, in areas where HIV is endemic, cervical cancer screening results may be positive for precancerous lesions in up to 15–20% of the target population (WHO 2006). Where there is increased access to effective ARVs, high-quality reproductive health care becomes ever more important—including screening for cervical cancer.

1.5. Preventing Cervical Cancer

Invasive cancer of the cervix is considered a preventable disease because;

- it has a long preinvasive state,
- availability of screening programs and
- the presence of effective treatment of the preinvasive lesions

At national level, a comprehensive approach to cervical cancer prevention and control benefits from being multidisciplinary. As this approach is made up of several key components ranging from community education, social mobilization, vaccination, screening, and treatment to palliative care, it is important to involve representatives from various disciplines and national health programmes such as immunization, reproductive health, cancer control and adolescent health. The two approaches to prevention of cervical cancer are primary and secondary.

1.5.1 Primary prevention:

Involves ways of preventing HPV infection. This approach includes: HPV vaccination for Girls 9-13 years, health information and warnings about tobacco use, Sexuality education tailored to age & culture, Condom promotion/provision for those engaged in sexual activity and Male circumcision. Condom use, however, doesn't reduce HPV infection as effectively as reducing the risk of other STIs.

HPV vaccination is the major approach for primary prevention. Currently two vaccines against HPV are licensed in most countries and the vaccines are shown to prevent over 95% of HPV infections caused by HPV types 16 and 18, which cause 70% of cervical cancers worldwide, and

may have some cross-protection against other less common HPV types which cause cervical cancer. One of the vaccines also protects against HPV types, 6 and 11 which cause anogenital warts. The vaccines require 3-doses administered over a period of 6 months(depending on the national vaccination guideline).

1.5.2 Secondary prevention:

Involves screening and treatment of precancerous lesions if they have developed.

Screening for precancerous lesion of the cervix.

Three different types of tests are currently available:

- Cytology-based screening or Conventional (Pap) and liquid based cytology (LBC)
- Visual inspection with Acetic Acid (VIA)
- HPV testing for high risk HPV types

Screening services may be provided either as organized or opportunistic (i.e. taking advantage of a woman's visit to the health facility for another purpose) services or a combination of both. It is generally accepted that organized screening is more cost-effective than opportunistic screening, making better use of available resources and ensuring that the greatest number of women will benefit. At a minimum, screening is recommended for every woman 30–49 years of age at least once in a life time.

VIA

- One of the visual inspection methods for cervical cancer screening
- Easy to perform and can be done by health professionals of all levels
- Performed by application of acetic acid to the cervix
- Looking for the presence of aceto-white reaction to detect precancerous lesions of the cervix
- Results are either positive or negative

CRITERIA FOR AGE AND FREQUENCY OF CERVICAL CANCER SCREENING

1. Priority should be given to women who are between 30–49 years old for screening.
2. The screening interval (frequency) should be every 5 yearsfor women with negative VIA result.
3. For VIA positive women who were treated with cryo or LEEP follow up visit should be scheduled a one year period
4. 3. Priority should be given to maximizing coverage within the at-risk target age group and assuring complete follow-up of those women with abnormal screening test results rather than maximizing the number of tests performed in a woman's lifetime.
5. All women who screen for cervical cancer should be offered HIV testing and counseling.

Managing Precancerous Cervical Disease

There is clear consensus that high-grade (CIN II–III) lesions should be treated because they are more likely than low-grade lesions (CIN I) to progress to cancer. Published studies indicate that most low-grade lesions will regress spontaneously and thus do not require treatment.

For treatment of precancerous lesions, the treatment options are cryotherapy, cold knife conization and loop electrosurgical excision procedure (LEEP). The factors affecting choice of treatment options are;

- Method effectiveness
- Safety and potential side effects
- Who is allowed to provide treatment, and what training they need to become qualified to provide it
- The size, extent, severity and site of the lesion
- Acceptability (to women) of treatment offered
- Equipment and supplies required
- Availability of method
- Cost or affordability of method.

Advantages and Disadvantages of Cryotherapy and LEEP for use in Low-Resource Settings

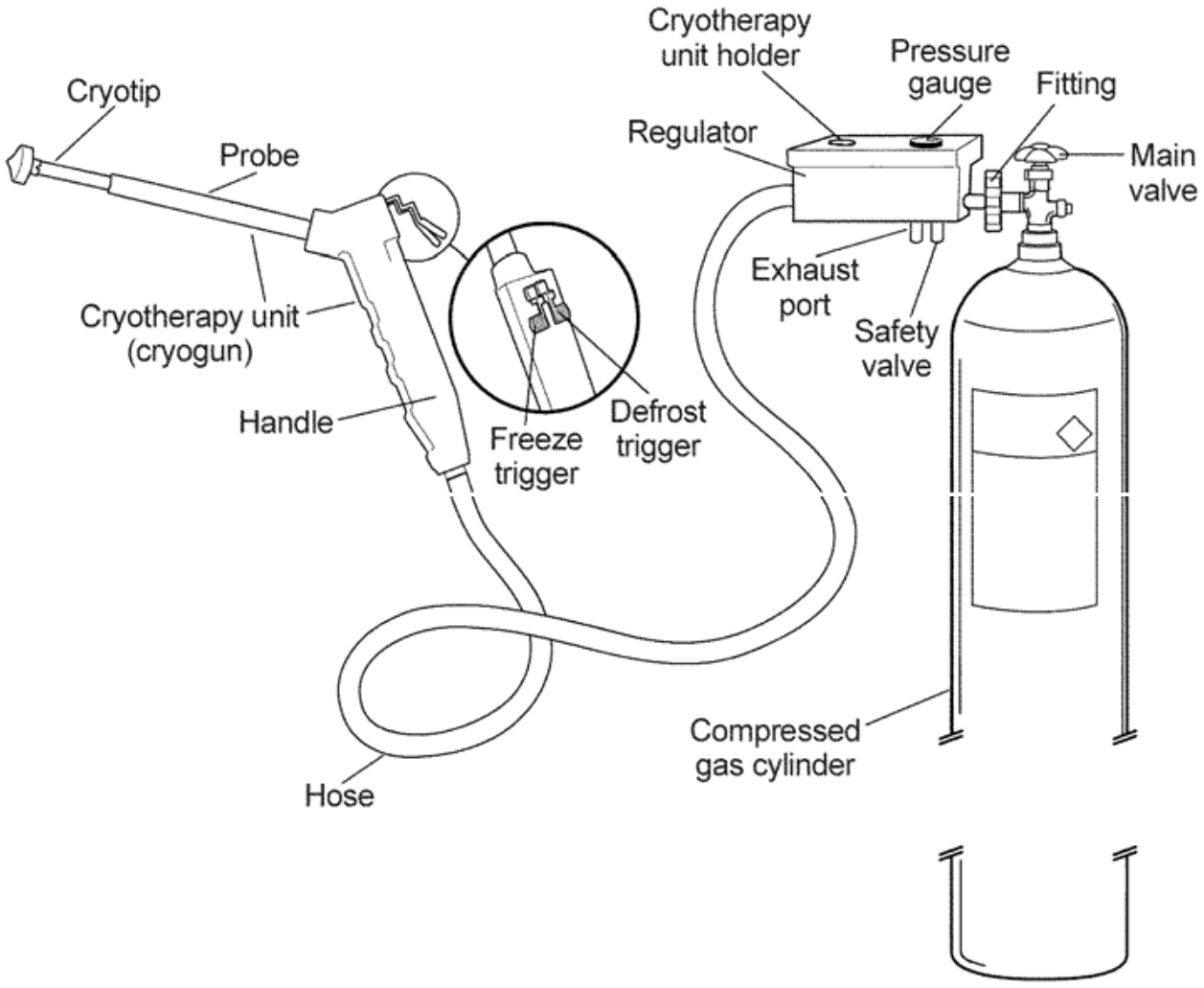
Treatment	Advantage	Disadvantage
Cryotherapy	➢ Effective with mild andmoderate lesions(85–95% cure rate) ➢ Inexpensive ➢ Non-physician can Perform ➢ No local anesthesia required ➢ No electricity required ➢ Associated with fewcomplications/side effects	➢ Variable success rate withlarge, severe lesions(70–90% cure rate) ➢ Leaves notissue sample forconfirmatory diagnosis) ➢ Difficult to determineexact amount of tissuedestroyed ➢ Associated with profusewatery discharge for 4–6weeks followingtreatment ➢ Requires access to andresupply of coolant (CO_2or N_2)
LEEP	➢ Effective (90–96% curerate) ➢ Enables tissue samplingfor diagnosis ➢ Associated with fewcomplications/side effects	➢ More expensive thancryotherapy ➢ Primary side effect isperi-operative bleeding (3–8%) ➢ Physician required toperform ➢ Requires local anesthesia ➢ Requires electricity (butcould be battery powered) ➢ Requires resupply ofloops ➢ Should not be performedduring pregnancy

In low resource settings, recent WHO guidelines recommend cryotherapy as a good alternative treatment for eligible VIA positive lesions.

Cryotherapy

- a procedure that eliminates precancerous lesions on the cervix by freezing them.
- a simple and inexpensive procedure, that can be completed in less than 30 minutes.
- Uses carbon dioxide gas or nitrous oxide gas as the coolant
- Works by applying a highly cooled metal disc (cryotip or cryoprobe) to the cervix and freezing its surface
- Using the "double-freeze" technique and does not require anesthesia.
- The cooled surface of the cervix becomes fragile and the abnormal cells fall of the cervix and new healthy cells grow back

Figure 1.5 Cryotherapy system



The national strategy to prevent cervical cancer

In Ethiopia the Screen and treat' approach– using a screening test that gives immediate results (like visual methods, VIA) followed by "on the spot" treatment (e.g. using cryotherapy) of detected lesions, without any further tests unless a suspected cancer is a preferred approach. This is because it:

- Can effectively identify most precancerous lesions,
- Is noninvasive, easy to perform and inexpensive,
- Can be performed by all levels of healthcare workers in almost any setting,
- Provides immediate results that can be used to inform decisions and actions regarding treatment,
- Requires supplies and equipment that are readily available locally.

To reduce the number of times a woman needs to visit the clinic "Single visit" approach "see-and-treat" approach is preferred to managing precancerous cervical lesions. "Single visit" approach links VIA with treatment using cryotherapy. Using this approach, women with VIA-positive results and for whom cryotherapy is indicated are offered treatment. The main advantage of this approach is that it reduces the number of women who are lost to follow-up. This loss often occurs when women have to return to the clinic for the screening test results, diagnostic follow-up and possible treatment.

1.6 Links to Other Reproductive Health Services

It is advantageous to integrate cervical cancer prevention services to all other reproductive health services such as family planning, HIV care and treatment and STIs treatment.

Monitoring and Evaluation

Monitoring and evaluation is very important to look at how effective the strategy is being undertaken. Data recording and reporting helps to analyze data which gives information on human resource, supply and equipment requirement of the facility. Facility-level data recording should be used to monitor and evaluate the specific services provided at the facility. In the context of cervical cancer screening and prevention programme it focuses on introducing the tools and formats that are important in follow up of the activities. The data recorded and reported using these tools is used for decision making at different levels of ministry of health structure, which helps, for quality improvement of the activities in prevention of cervical cancer. A facility-level system relies largely on registers to collect and trained VIA/cryotherapy providers should do aggregate data collection at the service delivery point on a daily basis. Information gathered from the registers will be used to calculate monthly statistics based on the indicators. The health facility in-charge using the trained service providers will be responsible for compiling data on a monthly basis. (See details on chapter 8)

Chapter Two

Pathophysiology Of Cervical Cancer

Duration: 420 minutes

Chapter Objective:

By the end of this chapter, participants will be able to identify basic knowledge on anatomy and physiology of cervix and to address the link of human papilloma virus and cervical cancer

Learning Objectives:

- Identify the anatomy and physiology of the cervix at different ages
- Describe the appearance of the cervix in different normal and abnormal situations
- Explain the natural course of cervical HPV infection
- Describe /the oncogenic potential of different types of HPV
- Explain what transformation zone, metaplasia and dysplasia mean
- Spot the cellular changes that occur in HPV infected cervical cells
- Enumerate the risk factors for developing HPV infection and cervical cancer

Chapter activities:

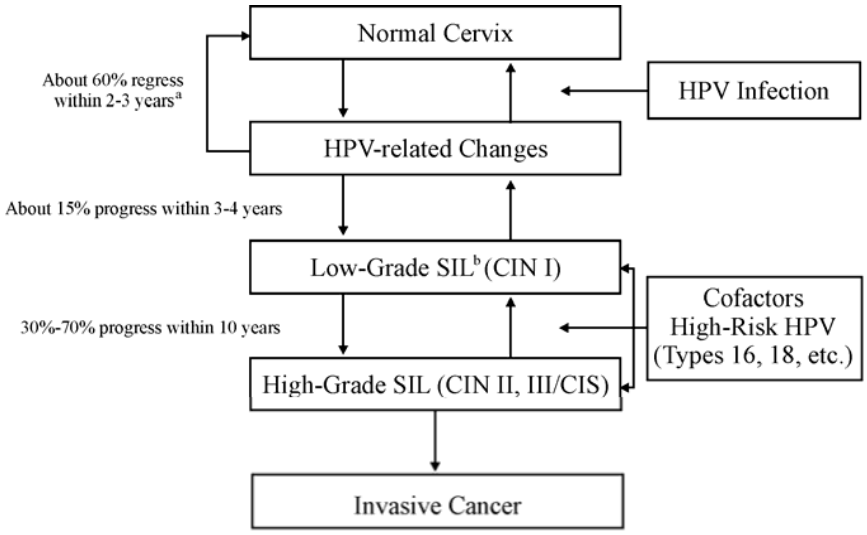
i. Wrist joint scratch fame
ii. The virus
iii. How HPV induces cancer
iv. Small group works: flipchart
v. Chapter summary

2.2 Background

A clear understanding of the natural history of cervical cancer is key to planning and implementing a rational and cost-effective cervical cancer prevention program.

When programs to prevent or control cervical cancer were first developed, it was assumed that cervical cancer developed from precancerous lesions (broadly known as dysplasia), progressing steadily from mild to moderate to severe dysplasia and then to early cancer (CIS) before invasive cancer develops. In fact, it now appears that the direct precursor to cervical cancer is high-grade dysplasia (CIN II or III), which can progress to cervical cancer over a period of up to 10 years or

more (**Figure 2.1**). Most low-grade dysplasia (CINI) disappears without treatment or does not progress, particularly those changes seen in younger women. Persistent lesions however are less likely to regress. There are different techniques used to detect and treat the precancerous lesion effectively.



[a] Prevalent cases will have a lower regression rate.
[b] For definitions of SIL, CIN and CIS, see Glossary. For an illustration of the cellular changes with each, see page 3-8.

Figure: 2.1 Natural History of Cervical Cancer—Current Understanding

2.3 Anatomy and Physiology of the Normal Cervix

The cervix is the lower part of the uterus extending from the isthmus above to the vaginal below. (**Figure 2.2**) It has two portions The portion of cervix exposed to the vagina is the exocervix or portiovaginalis. It has a convex round surface with a circular or slit like opening (the external os) into the endocervical canal (**Figure 2.3**). The endocervical canal is about 2 to 3 cm in length and opens proximally into the endometrial cavity at the internal os.

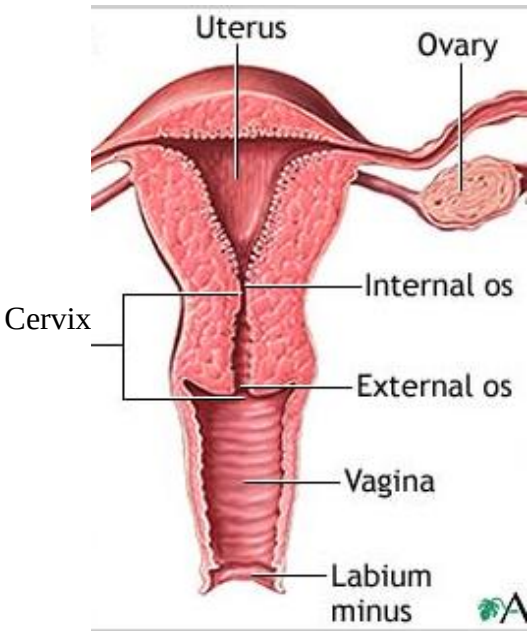
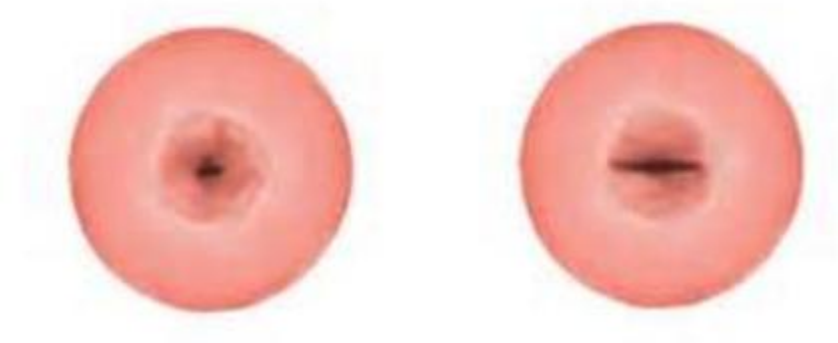


Figure 2.1 Anatomy of female genital structures



Nulliparous Parous

Figure 2.3 Appearance of the external cervical os

2.4 Age related changes in the cervical epithelial lining

During the first 18 to 20 weeks of embryonic life, the original tall (columnar) cells that line the vagina and cervix are gradually replaced by flat (squamous) cells. As shown in **Figure 2.4**, throughout early childhood and until puberty, the squamous cells meet the remaining columnar cells at the squamo-columnar junction (SCJ), a thin line well out on the face of the cervix and no transformation zone. **(Figure 2.5)**

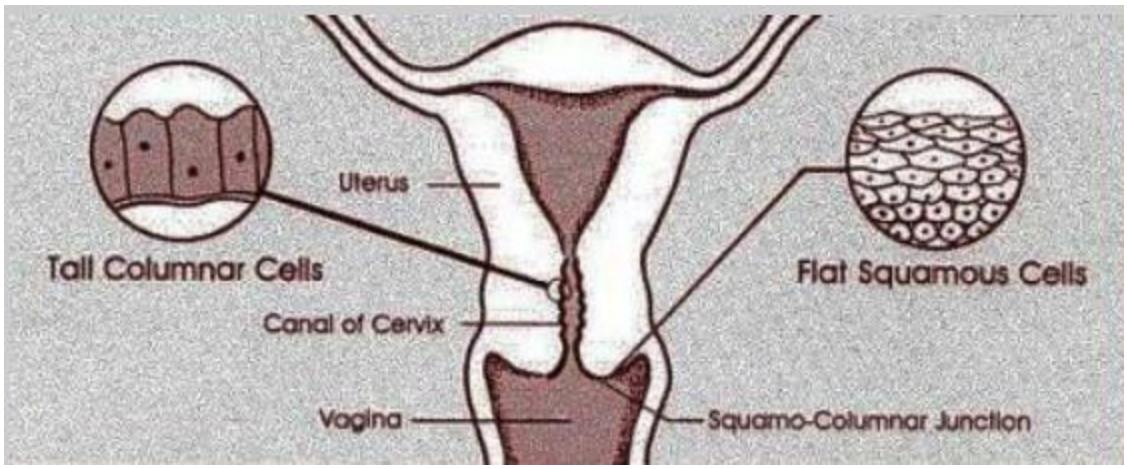


Figure 2.4 Appearances of cells lining of the cervix (the squamous and columnar epitheliums)

Figure 2.5 Location of the SCJ at prepubertalage(Notice the absence of transformation zone)

With the onset of puberty, which is marked by increasing levels of the female hormones (estrogen and progesterone), the vaginal environment will be changed to acidic (lower PH) and this will continue throughout the reproductive years. The subcolumnar reserve cells will undergo squamous metaplasia as they are exposed to the acidic PH; then the columnar cells inside the SCJ are gradually replaced by newly developing squamous cells. The portion of the cervix between the new and original SCJ where squamous metaplasia has occurred is called transformation zone (T-Zone). **(figure 2.6)**

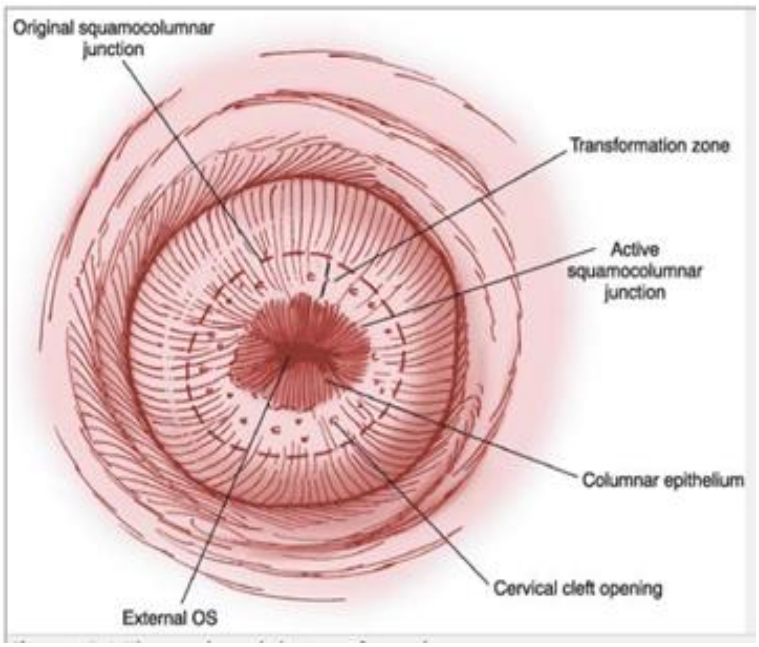


Figure 2.6 Appearance of the transformation zone after puberty

The T-zone maybe either a wide or a narrow area on the surface of the cervix, depending on several factors, such as age, parity, prior infections and exposure to female hormones. Abnormal changes of the cervix, such as dysplasia (CIN) and cancer, almost always develop in this portion of the cervix. Thus, screening measures such as VIA, cervicography and colposcopy are directed at examining the T-zone and, especially, the SCJ.

Finally, by the time menopause is reached, mature squamous cells now cover nearly the whole face of the cervix, including the entire T-zone, and the SCJ, if visible, is located at or inside the cervical os (**Figure 2.4**).

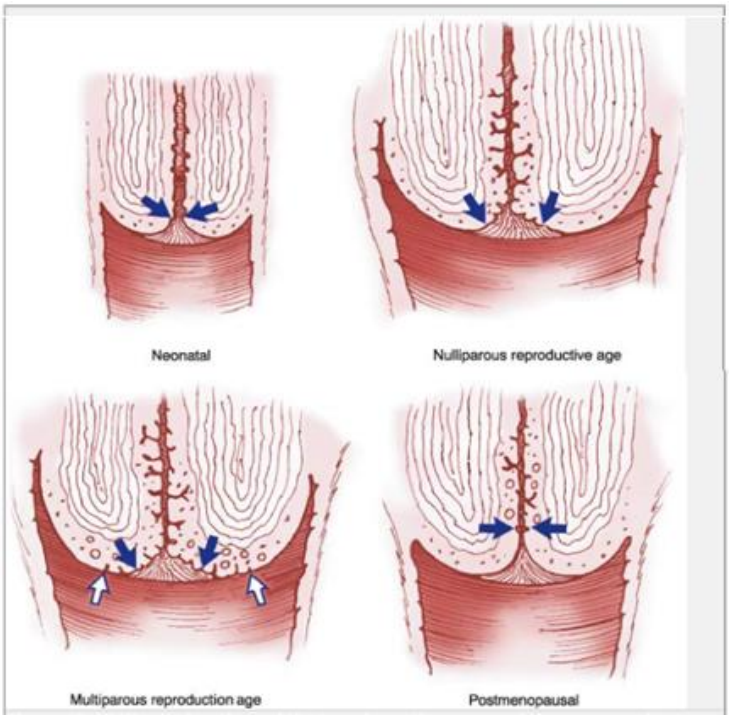


Figure 2.7 Appearance of SCJ and TZ at different age

2.5 Importance of age related changes in the pathogenesis of cervical cancer

In the early years following puberty, most of cells within the T-zone are columnar cells. Replacement of these cells with newly developing squamous cells is just beginning. It is during this time period that the cells within the T-zone, and especially those at the SCJ, are most vulnerable to the cancer-related changes induced by certain types of HPV and other cofactors (Geng et al. 1999).

Most adolescent girls are not made aware that the younger they are when they become sexually active, the more chance they exposed to one or more of the cancer-inducing types of HPV, they will develop precancerous changes that ultimately could result in cancer as they get older. Using condoms (either male or female) helps protect these delicate cells, but delaying sexual intercourse until nearly age 20 is even more protective.

2.6 Appearance of the Cervix in Normal and Abnormal States

Nulliparous They have smooth and round opening (os) of the cervix. The trauma associated with the passage of a fetus through the cervix during birth (or late abortion) usually results in a less

symmetrical “worn” cervix. The SCJ is visible. **(figure 2.3)**

As a faint, thin white line just at the entrance to the cervical canal. Note the difference in color of the glandular (columnar) epithelium, which is red due to the blood vessels beneath the single layer of cells. The squamous epithelium is less red (pink) because it is several layers thick.

There is a small amount of glare visible, mainly on the squamous epithelium, which is an artifact caused by the photo graphic flash or light source. Clinically, glare can be differentiated from potential pathology by either moving the light source or changing position while viewing the cervix. Although the artifact due to glare will move with the change in light source or viewing angle, color changes indicative of diseased tissue will not.

ParousThe cervical os is uneven, with a worn appearance. Such a cervix is often described as having a “fish mouth” appearance. **(figure 2.3)** For examiners, the many contours and surfaces of such a cervix may require that they manipulate the cervix with a swab in order to get as thorough a view of the SCJ as possible.

In the cervix seen here, in order to get a complete view of the SCJ, the lower lip of the cervix needs to be manipulated down ward. This is perhaps best accomplished by using a swab either on the cervix itself or by placing a swab in the cul-de-sac and pushing upward, thus bringing the cervix down ward and in to view. In large and patulous cervices, it may be necessary to open the bivalve speculum wider to better expose the SCJ. There is also an area of squamous metaplasia occurring in a patulous portion of the cervix. This patulous area is probably the result of obstetrical trauma with subsequent carrying and healing.

Squamous Metaplasia Squamous metaplasia is a physiologic process through which the glandular cells lining the cervical canal near the SCJ are gradually replaced with squamous cells. This process is a result of the cervix’s exposure to noxious agents in the environment, such as bacteria, viruses and unclean foreign bodies.

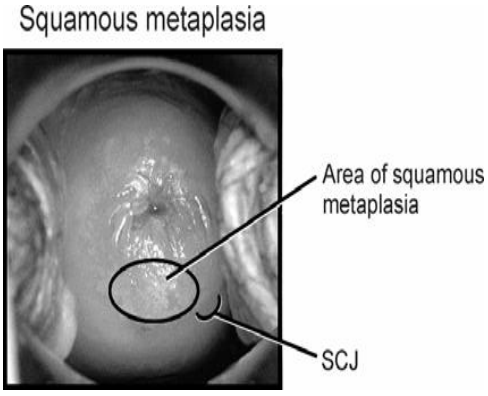


Figure 2.8: appearance of squamous metaplasia

In the cervix shown here, there is a visible area of squamous metaplasia on the lower lip of the cervix, close to the SCJ. It has a faint white, translucent appearance, almost as if a thin white veil were laid on to the cervix. Unlike mucus, it will not wipe away.

Ectopy/Ectropion - Exposure to hormones such as estrogen and progesterone may affect the appearance of the cervix. This effect is typified by the increased presence of glandular tissue on the outer surface of the cervix. This finding, often called ectropion or ectopy, is not a pathological condition, but rather a variant of cervical appearance.

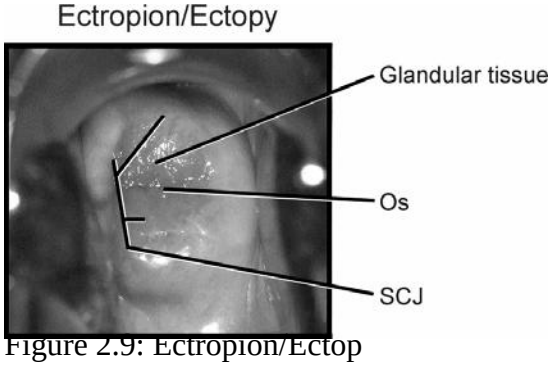


Figure 2.9: Ectropion/Ectop

The cause of ectopy is unclear, but may relate to exposure to internal hormonal sources (such as may occur during periods of an ovulation, normal menstruation or pregnancy). It may also result from exposure to synthetic hormones, when patients use hormonal methods of contraception such as combined estrogen/progestin pills and progestin-only methods. In this photo, there are neither areas of obvious aceto-white change (see below), nor is this cervix particularly likely to bleed easily when touched (friable), both of which indicate a normal cervix.

Inflammation An inflamed cervix will appear red and swollen and look as if it has a "beefy" consistency. The areas of ectro pion noted in this cervix also look somewhat reddened and swollen. Sometimes inflamed areas may bleed on contact.

Certain infections can cause the cervix to have a distinctive appearance. Most notably, infection with the Trichomonas organism produces what is sometimes called a "strawberry" cervix, with alternating areas of red epithelium and pale dots on the surface of the cervix (reminiscent of a strawberry) and a generally inflamed appearance. Because of the inflammatory process, the SCJ may be somewhat blurry or indistinct but, after staining with acetic acid, should be identifiable.

In the cervix pictured here, the SCJ is visible upon close inspection, but will require manipulation of the cervix to see around the inflamed glandular tissue.

Nabothian Cysts Nabothian cysts are formed when glandular tissue is folded over and covered by squamous epithelium, which often occurs as part of the metaplastic process. They are not pathological. In such cases glandular,

Mucus-secreting cells are trapped beneath the surface of the squamous epithelium. As the glandular cells continue to secrete mucus, small cysts develop under the surface and often protrude outward. These cysts may appear bluish or, as seen here, have a distinctly white appearance. They usually occur at some distance away from the SCJ and are only rarely seen in the glandular tissue. Unlike mucus, they cannot be wiped away, but it is usually possible to differentiate these defects from pathological lesions due to their marked, pimple-like appearance. In fact, that is exactly what Nabothian cysts are cervical pimples. In this photo, there are numerous small cysts on the posterior lip, and a larger one at 10o'clock. The larger cyst has both blue and white components, and has a visibly tense, protruding appearance. The normal SCJ is well seen on the anterior lip, and after cervical manipulation, may also be seen on the lower lip.

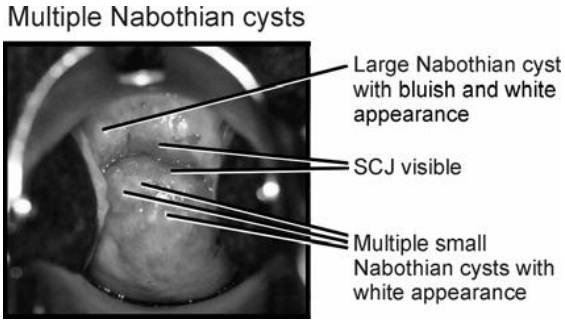


Figure 2.10: Multiple Nabothian cysts

Polyp Polyps are found fairly often and represent small segments of glandular tissue that have grown away from the lining of the cervix or endometrium and become a finger-like projection in to the cervical Canal and/or vagina.

Patients with polyps may often present with prolonged or heavy menstrual bleeding or, quite commonly, post-coital bleeding. As in this picture, polyps are often very mobile and can be pushed indifferent directions in order to reveal the SCJ. The presence of a polyp sometimes obscures a view of the SCJ, making screening by visual inspection impossible. Because polyps are composed entirely of glandular tissue, they do not become aceto white when stained with acetic acid and should not be confused with cervical cancer or its precursors. Prolapsed fibroid

tumors (leiomyoma) can sometimes look like polyps.

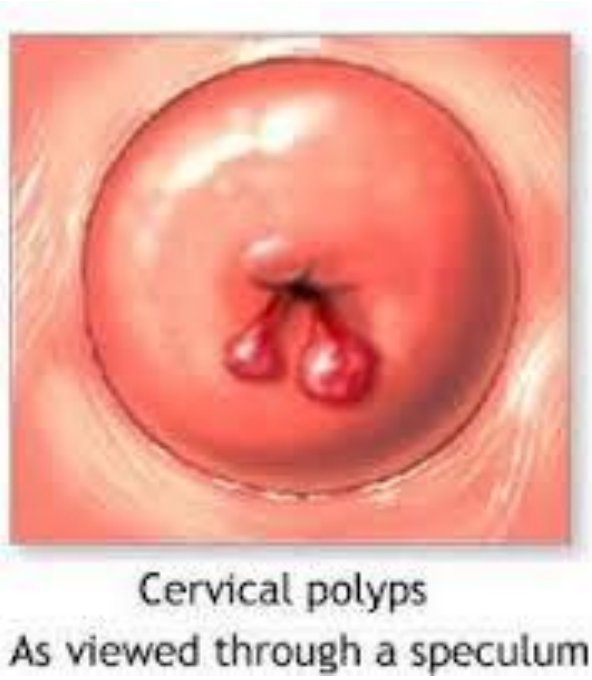


Figure 2.11: Cervical polyp

Discharge In some situations, a discharge may be present at the cervix. The color of such discharges is a purulent-appearing mix of green, yellow and gray, or as shown here, cheesy and white. Any discharge should be wiped off the Cervix before VIA because discharge can obscure the SCJ or be confused with a lesion. The cervix itself is normal and the SCJ can be seen.

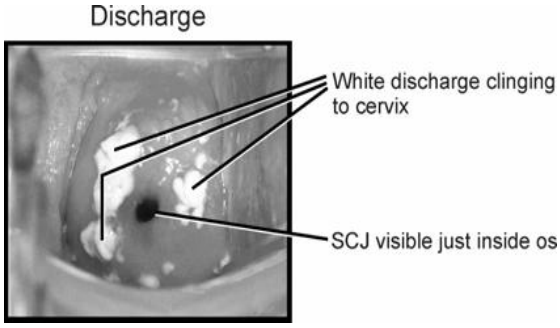


Figure 2.12: Cervical discharge

Warts Cervical condylomata (warts) are caused by HPV. This virus is at the root of the pathological process that results in cervical problems such as dysplasia and cancer. Warts are often quite notice able when they occur on the external genitalia, but when they infect the cervix can also cause clearly visible lesions such as the one shown here.

Once stained with acetic acid, the warty tissue will become bright white with a marked thickening of the cervical or vaginal mucosa. If on close inspection, it is often possible to note a distinctly lumpy, irregular contour to the surface of the affected area. In this cervix, the entire SCJ appears to be occupied by the warty tissue that also appears to be extending in to the cervical canal.

Warts by themselves are usually low-grade lesions. Extensive warts, as seen in this case, however, may mask higher-grade lesions in the deeper tissue. Studies indicate that such lesions often regress spontaneously and that treatment is not always successful in the long run. If treatment is desired, a variety of techniques can be provided, including cryotherapy or LEEP. It is important to note that warts are transmitted by sexual contact. In order to avoid transmission to a partner, patients should be advised to use condoms during sexual intercourse.

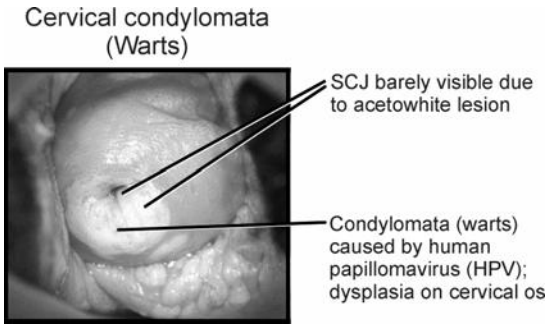


Figure 2.13: Cervical condyloma (Warts)

Squamous Intraepithelial Lesions

The face (exocervix) of the normal cervix is largely covered with squamous epithelium. The endocervix, which consists of glandular columnar epithelium, lines the cervical canal and is visible at the cervical os.

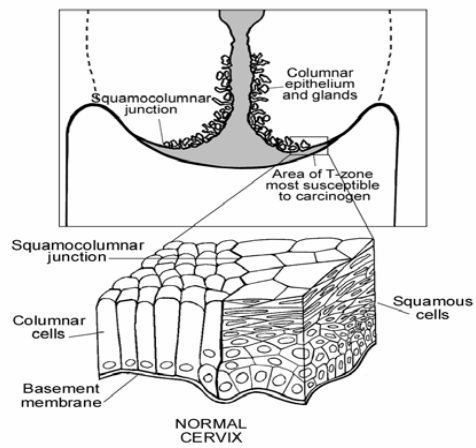


Figure 2.14: The normal cervix

Low-grade squamous intra- epithelial lesions (LGSIL), or CINI, are ones in which up to a third of the epithelium is occupied by dysplastic cells (**Figure2.6**); such lesions are also often visible during VIA. High-grade squamous intra epithelial lesions (HGSIL), or CINII and CIN III/CIS, are ones in which more than one third of the depth of the cervical epithelium is occupied by dysplastic cells, as shown in **Figure2-6**. Therefore, when acetic acid is applied to the cervix, it is more thoroughly absorbed than in low-grade lesions, thereby resulting in more clearly visible aceto-white lesions.

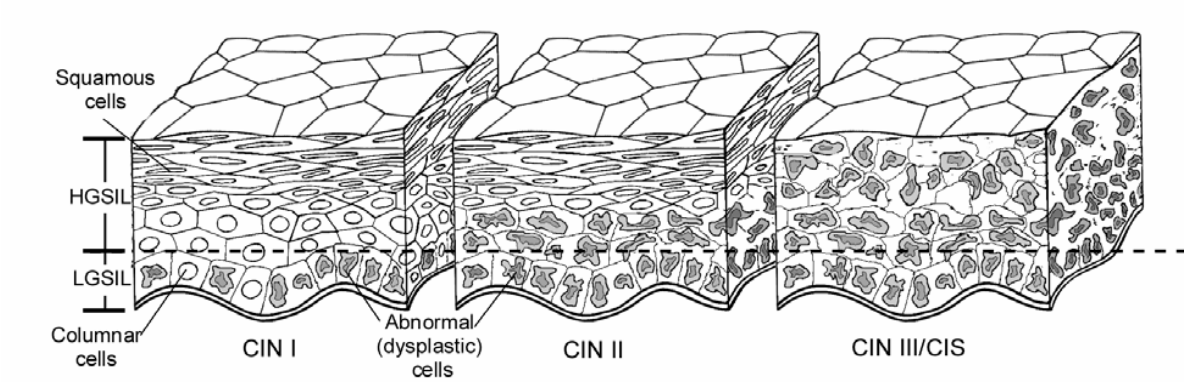


Figure: 2.15: Microanatomy of Dysplasia

In the cervixes shown below, there are noticeable areas of "white" epithelium at various locations on the cervix. One can also see that in some cases, some manipulation may be required to ensure that the entire exocervix is visible. If the entire lesion is clearly seen, and its limits do not exceed the area that could be covered with a cryotherapy probe (< 75% of the cervix), cryotherapy is an excellent treatment choice. With good technique, cure rates of 90% can be achieved.

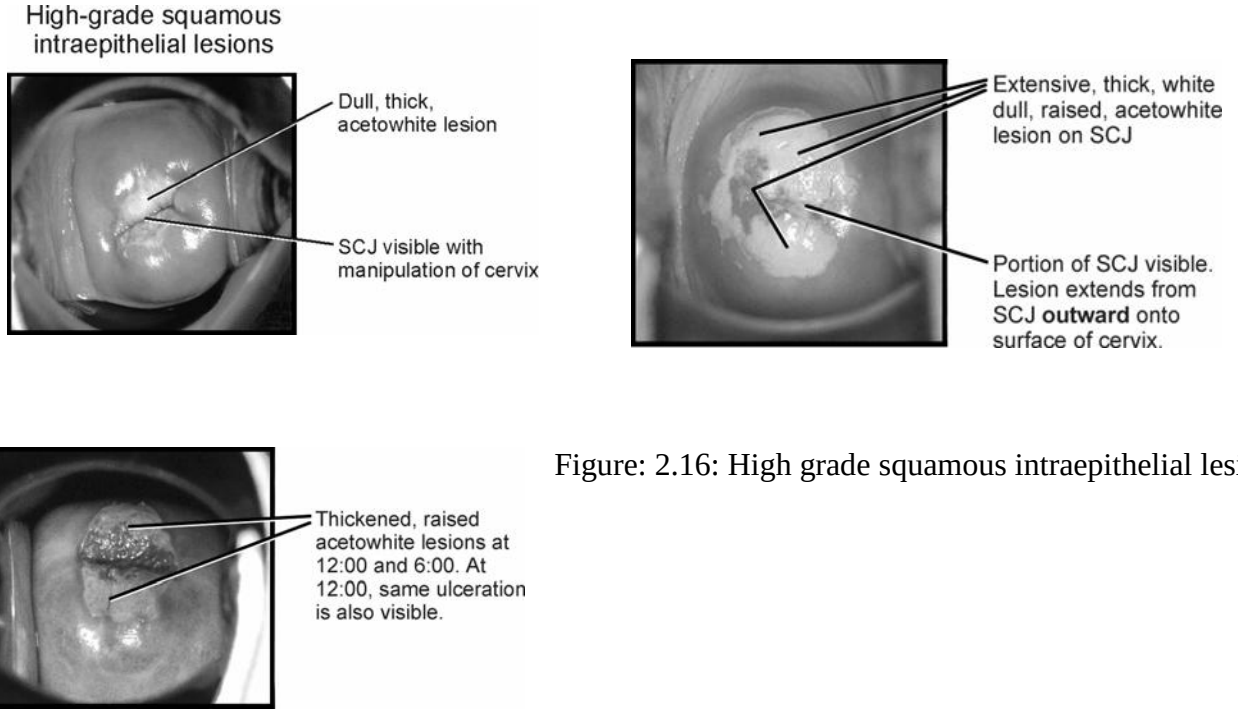


Figure: 2.16: High grade squamous intraepithelial lesions

Cancer Visibly invasive cancer can have a variety of appearances. Most commonly, if the cancer is early, the cervix will appear densely white, with a thick, knob by mass extruding from some portion of the cervix. Such masses may have a "cauliflower"-like appearance and will bleed easily with contact. Sometimes contact will cause fragments of the mass to break off, which can also cause bleeding. A bimanual exam will confirm the presence of an enlarged, hard cervix which, depending on the stage of progression, may or may not be mobile. In the photographs shown here, the visibly apparent qualities described above are both present. In the top photo, a fungating, white growth is seen. Abnormal vessels in the form of deep grooves on the cervix are also visible. In the bottom photo, a hemorrhagic, cauliflower-like mass is seen protruding into the vagina. The mass is so large that the cervix itself cannot even be seen. Patients with cervices such as these should be referred to a center where treatment such as radical surgery, radiation therapy or, in some cases, palliative measures can be undertaken.

Post Cryotherapy: Cryotherapy creates an "ice ball" on the cervix. Immediately after cryotherapy, almost the entire cervix will appear frozen and white. It will gradually thaw, producing a watery discharge that may last for several weeks. As soon as one hour after treatment, the tissue will begin to thaw. Some of the color will return to the tissue, but the tissue will be fragile and will require a few weeks to heal.

2.7 Human Papilloma Virus and cervical Cancer

2.7.1 Background

HPV is the most prevalent sexually transmitted infection in the world, occurring at some point in up to 75% of sexually active women (Groopman 1999). Although HPV infection is widespread, few people know that they are infected because they seldom have symptoms. In men, for example, when the virus infects the cells of the urethra, there is rarely a discharge or visible lesions on the penis. Nearly all cervical cancers (99.7%) are directly linked to infection with one or more of the oncogenic (cancer-inducing) types of HPV (Judson1992; Walboomersetal.1999). Although women usually are infected shortly after they become sexually active in their teens, 20s or 30s progression to cervical cancer generally takes place over a period of 10 to 20 years.

In addition to the link between HPV and cervical disease, there is growing evidence that people with HPV who engage in anal intercourse may be at high risk for precancerous anal lesions as well as squamous cell cancer. According to a study of homo sexual men, about 60% of those who are

HIV negative carry the HPV virus, whereas, nearly 95% of HIV positive men have HPV (Moscickietal.1999). Moreover, these men have been found to carry the same types of papilloma viruses (e.g. types 16 and18) that cause cervical cancer. Finally, women with active infection can transfer the virus to their newborns (vertical transmission) during delivery, which may cause papilloma virus infection in newborns and possible subsequent laryngeal papillomatosis (Cason, Rice and Best 1998) and genital warts as well.

2.7.2 THE VIRUS

Papilloma viruses were first recognized as the cause of warts on the hands and feet or condylomaaccuminata on the pubic area (penis and urethra in men or vulva and vagina in women).

The papilloma virus is a double stranded of DNA virus contained in a round shell, or envelope that looks like a golf ball when enlarged under an electron microscope (**Figure 2.17**).

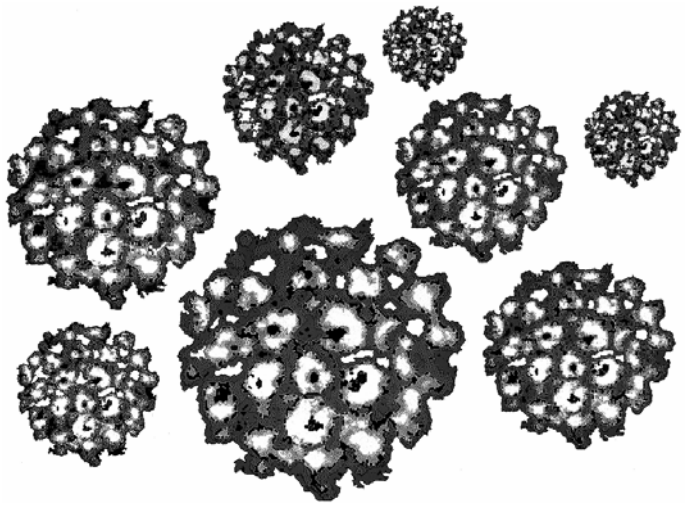


Figure: 2.17 Electron Photomicrograph of Human Papillomavirus

Source: Stannard/Photo Researchers1998.

HPV can be detected using DNA testing even though this test is beyond what many developing countries can afford. Nearly 100 types of papilloma virus are identified and more than 40 of which preferentially infect the genital area (Wright et al. 2006).

A link between HPV infection and cervical cancer was first demonstrated in the early1980s.The 40 papilloma virus types that preferentially infect the genital area infect primarily the cervix, vulva and vagina in women; the penis in men; and the urethra and anus in both sexes. Of these types, only four are most often found with in cervical cancer cells (so-called “high-risk” types).

2.7.3 How HPV Induces Cancer

In the early stages, virus infected cervical cells may show only small changes in size and shape when examined microscopically. With time, however, not only do the cells expand and become more distorted, but their neat arrangement in rows or columns on the surface of the cervix is destroyed. These changes are consistent with those of cervical dysplasia or CIN of varying degrees of severity, as seen by the pathologist when examining a biopsy specimen of cervical tissue. In some women these premalignant cells, if left untreated, will slowly replace the normal cells on the surface of the cervix and CIS will develop. Finally, when the cells begin to grow through the normal surface layer into the muscle and deeper tissues, full-blown cancer is present.

How dose these changes happen (**Molecular mechanism**) - HPV is epitheliotropic; once the epithelium is infected, the virus can either persist in the cytoplasm or integrate into the host genome. When HPV remains in an episomal nonintegrated state, the result is a low grade lesion. When the virus becomes integrated into the human genome, high grade lesions and cancer may develop.

All HPVs contain at least seven early genes (E1-E7) and two late genes (L1 and L2) E6 and

E7 are the only viral factors necessary for immortalization of human genital epithelial cells. These two oncoproteins form complexes with host regulatory proteins (p53 and pRB)and facilitate the way to cancer in different ways. integration of E6 with p53 will impair the normal function of DNA repair by degrading the p53 protein. Integration of E7 with pRB push cell to S phase. Cells being pushed to synthesis phase and programmed cell death and repair being impaired will go to uncontrolled cell growth- cancer. But different co-factors play a role in this process and HPV is a must but not sufficient to develop cervical cancer.

2.7.4 RISK FACTORS FOR CERVICAL CANCER

Epidemiologic studies have identified a number of factors that play a significant role in the development of CIN, a precursor to cervical cancer (Palank1998). As shown in

Table 2-1, both the type and the pattern of sexual activity, especially in teenagers, are major factors in determining whether a person becomes infected with HPV. As a result of relaxed attitudes about sexuality among adolescents in many cultures, the number of sexual partners that teenagers have before age 20 can be quite large, and each of their partners also may have had

multiple partners. As a consequence, this pattern of sexual activity increases their risk of exposure to STIs including HPV.

Table2-1.RiskFactors for Cervical Cancer

RISKFACTORS
▪ Sexual activity (<20years)
▪ Multiple sexual partners
▪ Exposure to STIs
▪ Smoking
▪ Immunosuppression
▪ HIV/AIDS
▪ Chronic corticosteroid use (for example for asthma, lupus etc)

Suppression of the immune system due to HIV infection also is an important risk factor because it makes the cells lining the lower genital tract (vulva, vagina and cervix) more easily infected by the cancer- inducing types of HPV (Stentella et al. 1998). There is substantial evidence that HIV-positive women are at increased risk of developing cervical cancer as well (Judson1992). Because the number of adolescents, as well as adults, with HIV is rising in most countries where cervical cancer is largely untreated, cervical cancer rates are expected to continue increasing, especially in areas where STI and HIV/AIDS rates are high. Other less common conditions that cause immunosuppression include those requiring chronic corticosteroid treatments, such as asthma or lupus (McDonald 1999). Women also increase their risk for CIN by engaging in other behaviors known to suppress the immune system. These include the use of recreational drugs, alcohol and cigarettes. The latter is particularly important because while a decrease in smoking among men has occurred, the number of women who smoke has increased dramatically in recent years—especially in teenage girls (McDonald 1999). Nicotine and the byproducts of smoking are thought to increase a woman's relative risk for cervical cancer by concentrating in the cervical mucus and decreasing the immune capability of Langerhan's cells to protect cervical tissue from invading oncogenic factors, such as HPV infection (Ylitaloetal.1999).

An association between cigarette smoking and cervical cancer has been recognized for decades. More recently, it has been determined that the mutagens in cigarette smoke are selectively concentrated in cervical mucus. It has been hypothesized that exposure of the proliferating

epithelial cells of the transformation zone to cigarette smoke mutagens may increase the likelihood of DNA damage and subsequent cellular transformation.

In many developing countries, including Ethiopia, women who have abnormal Pap smears frequently do not receive treatment at an early stage when cervical cancer could be prevented because:

- There are long delays in reading and reporting the results;
- It is difficult to locate the patient once their report becomes available;
- The cost of treatment is not affordable for many women, even when simple outpatient procedures are used; and
- There is a lack of equipment as well as health care provider strained to use and maintain it.

As a consequence, even in countries where Pap smears are available, many women may not get the treatment they need it.

Chapter Three

Prevention of Cervical Cancer

Duration: 450 minutes

Chapter objective

By the end of this chapter, participants will be able to explain ways of preventing cervical cancer.

LearningObjectives:

1. *Define what is meant by prevention in public health and cervical cancer in particular*
2. *Explain the different types of cervical cancer prevention methods*

Chapter activities:

i. Participants practice the pelvic examination, perform VIA screening and perform cryotherapy
ii. Review of clinical practice
iii. The VIA Atlas and identifying cervical conditions
iv. Review of the day's activities

3.1 Preventing Cervical Cancer

Disease prevention means to interrupt or slow the progression of disease. HPV is one of the most prevalent sexually transmitted infections in the world. Although condoms and other safe-sex practices protect against many STIs, including HIV/AIDS, they are not nearly as effective in preventing HPV infection. This is because the papilloma virus lives in the skin (squamous) cells covering the pubic area (vulva and shaft of the penis) as well as the interior cells lining the vagina and cervix in women, and urethra and anus in both sexes. Condoms do not cover the entire shaft of the penis, nor do they block contact with pubic skin. Therefore, during intercourse, even with a condom, skin cells containing HPV can come in contact with a woman's vulva or vagina, enabling the virus ultimately to reach the cervix. In addition, the friction of sexual intercourse is believed to cause tiny, microscopic tears in the vaginal wall making transmission far more likely. Moreover, even dead cells shed during intercourse can contain the virus and remain infective for days (Roden, Lowy and Schiller 1997).

3.2 Primary Prevention

Primary prevention keeps the disease process from becoming established by eliminating causes of disease or increasing resistance to disease.

Primary prevention has three components. These are health promotion, prevention of exposure, and prevention of disease.

A**. Health promotion**: - consists of general non-specific interventions that enhance health and the body's ability to resist disease

B. **Prevention of exposure**: - is avoidance of factors which may cause disease if an individual is exposed to them

Examples include delayed initiation of sexual intercourse, monogamous relationship among uninfected individuals.

C**. Prevention of disease**: - is the prevention of development of precancerous lesion after the individual has become exposed to the pathogen. Immunization is an example of prevention of disease. Immunization does not prevent an infectious organism from invading the immunized host, but does prevent it from establishing an infection.

From primary prevention methods available, the most effective way to prevent cervical and other genital cancers would be a vaccine. Individuals would need to be immunized at an early age before they are sexually active. The benefits of such a vaccine would be particularly significant in developing countries, where women's health care services are minimal.

Currently, at least two vaccines are available that can protect women from cancer-linked papilloma viruses (HPVtypes16and18): bivalent (Cevarix®) and quadrivalent (Gardasil®) vaccines. Both are considered prophylactic vaccines and preferably given prior to natural exposure to HPV types 16 and 18 (Wrightetal.2006).

Until a protective vaccine is widely available and accessible, primary prevention must focus on continuing to change sexual practices and other behaviors that increase a person's risk of becoming infected, and secondary prevention programs must continue to screen and manage women with pre-cancer cervical lesion.

3.3 Secondary Prevention

Women who are already infected with HPV should be screened to determine whether they have early, easily treatable precancerous lesions. If lesions are found, they should be treated before they progress to cancer. Methods for cervical cancer screening include: Pap smear – cytology-based screening, visual inspection with acetic acid wash or VIA, HPV tests and automated cytology screening.

Screening: cervical cancer screening is the systematic application of a test to identify cervical abnormalities in an asymptomatic population for screening programs to have an impact on the incidence of cervical cancer they need to screen as many women as possible. Ideally, the programs should screen 80% of the population at risk. Then, those women who are identified as having precancerous lesions need to have those lesions treated before they progress to cancer. When coverage is high, it is not necessary to screen women annually to have an impact on disease incidence. For example, if all women ages 35–64 who have had one negative Pap smear were to be screened every 5 years (and all those with dysplasia treated), the estimated incidence of cervical cancer could be reduced by about 84%. Screening these women even every10 years would reduce the incidence by an estimated 64%.

Screening services may be provided either as organized or opportunistic (i.e. taking advantage of a woman's visit to the health facility for another purpose) services or a combination of both. It is generally accepted that organized screening is more cost-effective than opportunistic screening, making better use of available resources and ensuring that the greatest number of women will benefit. At a minimum, screening is recommended for every woman 30–49 years of age at least once in a life time.

Three different types of tests are currently available:

- Cytology-based screening or Conventional (Pap) and liquid based cytology (LBC)
- Visual inspection with Acetic Acid (VIA)
- HPV testing for high risk HPV types

In our country the Screen and treat' approach– using a screening test that gives immediate results (like visual methods, VIA) followed by "on the spot" treatment (e.g. using cryotherapy) of detected lesions, without any further tests unless a suspected cancer is a preferred approach. This is because it:

- Can effectively identify most precancerous lesions,
- Is noninvasive, easy to perform and inexpensive,
- Can be performed by all levels of healthcare workers in almost any setting,
- Provides immediate results that can be used to inform decisions and actions regarding treatment,
- Requires supplies and equipment that are readily available locally.

CRITERIA FOR AGE AND FREQUENCY OF CERVICAL CANCER SCREENING

1. Priority should be given to women who are between 30–49 years old for screening.
2. The screening interval (frequency) should be every 5 years for women with negative VIA result.
3. For VIA positive women who were treated with cryo or LEEP follow up visit should be scheduled a one year period
4. 3. Priority should be given to maximizing coverage within the at-risk target age group and assuring complete follow-up of those women with abnormal screening test results rather than maximizing the number of tests performed in a woman's lifetime.
5. All women who screen for cervical cancer should be offered HIV testing and counseling.

3.4 Key Considerations for Low-Resource Settings

The natural history of cervical cancer suggests that screening should start between the age of 30s and 40s as this is the peak age for most premalignant lesions. Although cervical cancer most often develops in women after age 40, high-grade dysplasia (CIN II or III) generally is detectable up to10 years or more before cancer develops, with a peak dysplasia rate at about age 35. Although unscreened women over 50 remain at relatively high risk of cervical cancer, women in this group who have had one or more negative tests in their 30s or 40s are at much lower risk.

Chapter Four

COUNSELING FOR CERVICAL CANCER PREVENTION

Duration: 500 minute

Chapter Objective:

By the end of this chapter, participants will be able to perform counseling using proper counseling skill, about cervical cancer screening test and treatment to help client to make informed decision.

Learning Objectives:

- Provide basic and accurate information about cervical cancer screening, possible resultsand the treatment options
- Encourage women and help them to get screened and treated if needed
- Conduct good counseling on home care needed after treatment for precancerous lesions

Chapter activity:

i. Provider -client simulations role play
ii. Clinical practice (two groups)):Observe while others counsel clients and also counsel clients in the clinic
iii. Review of clinical practice
iv. Discussion on questions frequently asked by women during counseling and how to respond
v. Role play on counseling prior to VIA testing , Counseling prior to cryotherapy, Counseling following cryotherapy
vi. Review of the day's activity

4.1 Counseling for cervical cancer prevention screening and treatment

Counseling is a key component of cervical cancer prevention services. Counseling allows women to make an informed decision about being screened, possible resultsand treated (if indicated). Women who are being tested for cervical cancer with VIA need accurate information about the disease and the testing and treatment procedures. Healthcare providers should encourage all women, between the ages of 30 and 49, to be screened for cervical cancer.

When counseling women make sure you:

- Use language women will understand
- Explain adequate information
- Ensure confidentiality

- Allow woman to consult with family members before a recommended procedure if she wants too
- Allow woman to have someone in the room only if she provided consent
- Encourage women to ask questions and allow time for discussion
- Provide additional sexual and reproductive health information such as self-breast examination, family planning, STI prevention and others.
- Always ask and obtain a woman's oral consent for screening and before sharing information and written consent before treatment.

Important points to cover during cervical cancer prevention counseling are:

- What and where the cervix is?
- What is cervical cancer and how it is detected?
- What causes cervical cancer and the risk factors for developing it?
- What can be done to prevent cervical cancer, with emphasis on precancerous lesions or disease; and HPV infection?
- Availability of HPV vaccines and who can benefit most from them
- A brief description of the test used to examine the cervix and treat it, if indicated.

It is often difficult for providers to counsel women about cervical cancer. It is equally difficult for women to talk openly about a disease that is sexually transmitted and that, if left undiagnosed and untreated, can lead to death. Talking about this sensitive problem will be easier if providers:

- Have accurate, complete and up-to-date information about cervical cancer tests, such as VIA.
- Types of treatment available for precancerous and cancerous lesions.
- Should build honest and understanding relationships with the women they counsel.

In addition, healthcare providers should recognize that most precancerous lesions of the cervix do not have clinical symptoms. Thus, most women being tested will consider themselves completely healthy. Thus, it is important to promote testing as a means of preventing cervical cancer.

Providers should know and be able to use basic counseling techniques. These techniques will help the provider establish a relationship with the client. If a woman believes in the competence and honesty of the provider, she will be more likely to have the test and, if necessary, accept treatment and return for a follow-up visit. In addition, she will be more likely to refer others who need cervical cancer screening.

4.2. Client right

Every woman being tested for precancerous cervical lesions or treated for abnormal findings has a right to information about her condition. Information should be given to her (and her family, where appropriate) in a supportive, confidential and nonjudgmental manner, and it should deal with:

- The results of the test;

- Procedure to be used, as well as the risks and benefits;
- Have the written consent to the treatment; and
- The need for referral to another facility, if necessary.
- Women have the right to decide to accept or refuse the treatment

Every woman has the right to discuss her concerns and condition in an environment in which she feels confident. The client should be assured that her conversation with the counselor or healthcare provider will be private and confidential.

Women should know in advance the type of physical examination (e.g., pelvic examination) or procedure (e.g., cryotherapy) that is going to be performed.

When a woman is undergoing a physical examination or procedure, it should be carried out in an environment (e.g., examination or procedure room) in which her right to privacy is respected. For example, when receiving counseling or undergoing a physical examination or procedure, she should be informed about the role of each person in the room (e.g., healthcare providers, students, supervisors, instructors, researchers, and so on).

Women should be made as comfortable as possible when receiving services. To a certain extent, this is related to the adequacy of service delivery facilities (e.g., proper ventilation, lighting, seating and toilet facilities). Moreover, the time she spends waiting to receive care should be reasonable.

Women have a right to express their views about the service they receive. A woman's opinions about the quality of services, either gratitude or complaint, together with her suggestions for changes in service provision, should be viewed positively in a program's ongoing effort to monitor, evaluate and improve its services. Regularly interviewing women about the services they have received and incorporating their suggestions for change will also improve the quality of care.

All information that a woman provides should be treated confidentially. This includes information about her medical history and the conditions causing her to seek care, the services provided to her and any family planning decisions she makes.

Creating an atmosphere of privacy is critical to protecting the woman's confidentiality, sense of security and dignity, and willingness to communicate honestly. Often, simple changes in the physical setting where clients are treated or counseled will offer the woman more privacy.

The following are some suggestions for maintaining privacy:

- Use a separate area, such as closed treatment room or curtained space, to encourage open communication.
- Draw curtains around the treatment area whenever the woman is undressed or, if curtains are not available, turn the treatment table so that the woman's feet are not facing a doorway or public space. Also provide a curtained area for changing clothes.
- Use drapes (or sheets, or even clothing if drapes are not available) to cover the woman's legs and body during examinations and procedures.
- During treatment, limit the number of people in the client care area to those involved in providing care. Even if the woman gives permission for a clinical training demonstration,

limit the number of persons who are in the room during the demonstration. In addition, staff and trainees in the client care area should refrain from casual conversation among themselves. (not necessary, b/c of repetition)

4.3 Being a good counselor

A good counselor:

- Encourages maximum participation and involvement by the woman (or couple) and helps her make her own decision
- Is an information giver and facilitator; suggests alternatives; helps the woman analyze and choose from known options; does not prescribe solutions; and helps her understand that she is making her own choice or decision
- Helps the woman to reveal her personality and life situation rather than make assumptions
- Determines her concerns and other issues that could be barriers to effective learning

General Advice When Counseling

A woman may become embarrassed when discussing screening for cervical cancer because it involves having a pelvic examination. Therefore, try to set the tone of the visit in a low-key, non-pressured manner, and assure her that the conversation is confidential. Finally, be sensitive to any cultural and religious considerations and respect her views. Additional tips for talking with a woman (or couple) include the following:

- Listen to what the woman wants to say and encourage her to express her concerns; try not to interrupt her.
- Let the woman know that she is being listened to and understood.
- Use supportive nonverbal communication, such as nodding and smiling.
- Answer her questions directly in calm, reassuring manner.
- Keep the message simple by using short sentences.
- Avoid medical terms; instead, use words that the woman will understand.
- Give the woman written information (if available and appropriate) to remind her of instructions.
- Finally, ask her to repeat back to you the key points to ensure her understanding.

4.4. When to Perform Counseling?

Counseling should be conducted;

1 Before VIA
2 During VIA
3 After VIA
4 Before Cryotherapy
5 During Cryotherapy
6 After Cryotherapy

4.4.1 Counseling prior to VIA testing

A woman who is interested in being tested by VIA should be given information about the

following:

- The nature of cervical cancer as a disease and consequence of a HPV infection
- Risk factors for the disease
- The role and importance of VIA testing
- Possible test results
- Explain about the detail of VIA procedure
- Risk associated with VIA procedure
- Consequences of not being tested
- Treatment options if the VIA test is abnormal.

4.4.2 Counseling during VIA testing

- Make the women comfortable as possible

  -Observe her facial expression and body language and listen attentively

- Encourage the woman to ask questions and speak freely about her concerns
- Explain what is happening during the procedure and what she should expect to feel
- While performing the VIA test, continually reassure the woman.

4.4.3 Counseling after VIA testing

- Inform the woman of her screening result
- Explain what the results really mean
- Tell her what her options are according to her screening results
- Inform the women when should come back for the follow up according to her test result
- If negative counsel her about the meaning of the test results and to return for follow up care after 5 years.
- If the woman tests VIA positive she should return after one year for follow up care.
- If the test result is suspicious for cervical cancer referral to next higher level cares
- Answer any questions the woman may have regarding her screening results

4.4.4 Counseling prior to cryotherapy

All women have a right to decide freely whether or not to receive treatment. Written consent need to be for all treatment procedures. The health worker obtaining the woman's consent for cryotherapy should follow these steps:

- Explain in detail, in a nonthreatening manner and in language the woman can understand, of the cryotherapy procedure, its risks, benefits, likelihood of success and alternatives.
- Allow time for and encourage the woman to ask questions and discuss her condition.
- Ask the woman if she gives consent for treatment.

Table4.1 Expected Side Effects of Cryotherapy

Side Effect	Management
Cramping	▪ Counsel patient before the procedure to expect some degree of cramping during and after the procedure and that cramping usually stops shortly after procedure. ▪ If cramping is severe, provide oral analgesic
Vaginal discharge (profuse, watery)	▪ Counsel patient to expect a discharge lasting 2–4 weeks. Provide patient with a feminine pads (If available). ▪ Counsel patient to expect discharge to change color from a pink tint to clear white or a yellow tint (occasionally streaked with blood). ▪ Counsel patient to return if discharge changes to foul-smelling or is pus-colored (if so, evaluate for infection and treat with antibiotics). ▪ Advise abstinence from sexual intercourse for 4 weeks or advise condom use for 4 weeks to prevent pelvic infection if abstinence is unlikely.
Spotting/light bleeding	▪ Counsel patient to expect spotting/light bleeding for 1–2 weeks. ▪ Counsel patient to return for evaluation if there is heavy bleeding.

4.4.5 Counseling during Cryotherapy

- Explain what is happening (steps of procedure, information about instrument used, etc….)
- Ask her how she is feeling
- Reassure her

4.4.6 Counseling following cryotherapy

Before leaving the health facility, a woman should receive counseling regarding:

- the details of self-care at home (hygiene, abstinence, use of condom, use of sanitary pads)
- conditions that might require coming to the clinic as soon as possible for care outside of the scheduled visits (Warning signs),
- the need to abstain from sexual intercourse for 4 weeks following treatment and a 4 week supply of condoms in case total abstinence for this long is not possible, and
- The need to return for her next follow up visit after one year.
- Give written information/take home messages (if available)

Warning Signs:

If you have any of the following, you should return to this or the nearest health facility:

• Fever for more than 2 days

• Severe lower abdominal pain

- Excessive foul smelling purulent vaginal discharge

• Bleeding for more than 2 days that is heavier than her heaviest days of menstrual bleeding

• Bleeding with clots

4.5Frequently asked questions asked by women

Question: Why should I have this screening test?

Answer: Cervical cancer is a serious health problem for women living in developing countries. It is a major cause of cancer death among women between the ages of 35 and 60.Women with cervical cancer often have symptoms such as bleeding or lower abdominal pain. When these symptoms are present, the cancer is usually advanced and little treatment is available. But cervical cancer can be easily prevented through a simple test such as VIA to detect abnormal cells on the cervix. By

examining the cervix before there are any symptoms, any abnormality can be found and effective treatment provided so that the cancer will be prevented.

Question: What is cervical cancer, and how would I get it?

Answer: Cervical cancer is a consequence of an STI. This means that the cervix has been exposed to one or more cancer-inducing types of HPV that, over time, have produced abnormal changes in the cells of the cervix. HPV is transmitted by sexual contact. Sometimes the presence of the virus takes the form of warts, either on the outside of the genital area or internally, such as on the cervix. When abnormal cells are present on the cervix and are not treated, they can become cancerous and eventually spread the disease beyond the cervix and pelvic organs. If it is not diagnosed and treated early, the cancer will lead to death.

Question: How does VIA work?

Answer: Washing the cervix with vinegar allows the healthcare provider to see the difference between a cervix that looks healthy and one that looks abnormal. The vinegar turns abnormal cells white.

Question: If I have a positive test, does that mean that I have cancer?

Answer1: No. However, if abnormal cells that could become cancer are seen and not treated, then cervical cancer could result. To prevent this from happening, treatment that will be almost 90% effective in curing this problem for the next 5 or more years can be provided.

Answer2: If there is evidence or a suspicion of cancer, and not just precancerous changes, you will be referred to a hospital in order to determine the stage of the cancer and be offered treatment that is not available at the local facility. This may include surgical procedures or other procedures to assess the amount of disease present or to remove diseased tissue as much as possible.

Question: What is the treatment if there are abnormal (precancerous) cells?

Answer: The treatment is known as cryotherapy, and it is a simple outpatient procedure. To do cryotherapy, an instrument is put on the cervix and treatment will be given.

Question: How effective is this treatment?

Answer: Cryotherapy is about 90% effective in curing this problem for at least 5 years.

Question: Will this treatment hurt?

Answer: During the treatment, you may feel some mild cramping in the lower abdomen. The cramping will disappear quickly over the next 15 to 30 minutes and is easily treated with an oral pain medication. For the next few days you may have some occasional mild cramping for which you may take whatever you might ordinarily take for menstrual cramps.

Question: What are the side effects of the treatment?

Answer: The most common side effect of the cryotherapy is a watery discharge for 4–6 weeks.

Almost everyone who gets this treatment has this discharge. Some women also may have light bleeding or cramping. During this time, you should avoid having sex douche or use tampons. If it is absolutely impossible to avoid sex over the 4 weeks following treatment, it is very important that you or your partner uses a condom.

Question: What could happen if I don't use a condom?

Answer: The treatment creates a "wound" on the cervix, which needs time to heal. While this wound is healing, you will be more susceptible to getting or transmitting a sexually transmitted infection such as Chlamydia, gonorrhea or HIV/AIDS. That's why it is so important to use a condom.

Chapter Five

Infection Prevention During VIA Testing and Cryotherapy

Duration: 570 minutes

Chapter Objective:

By the end of this chapter, participants will be able to explain the basic concept of infection prevention during VIA and cryotherapy.

Learning Objectives:

- Explainthe basic concept, principles, and purpose of infection prevention in a healthcare facility
- Practice appropriate infection prevention while providing VIA andcryotherapyservices
- Practice standard and appropriate care for the cryotherapy unit

Chapter Activities:

i. Clinical practice: observe and provide services in clinic (VIA/cryotherapy)
ii. Clinical practice: observe and provide services in clinic (VIA/cryotherapy) and review
iii. Demonstration in preparation of 0.5% chlorine solution

5.1 Introduction to Infection Prevention

People receiving health and medical care, whether in a hospital or clinic, are at risk of becoming infected unless precautions are taken to prevent infection.

For example in developed countries 5–15% of hospitalized patients and 9 – 37% of those admitted to intensive care units (ICUs) developed infection in HCFs. In Europe, studies in hospitals indicated an overall prevalence rate of 4.6 – 9.3%. And in this region more than 5 million HAIs are reported annually in acute care hospitals. On the other hand in the US alone annually HAI accounted for more than 2 million morbidities and over a 100,000 lost their lives as a result. Though, data are scarce an overall prevalence of 6.5% to 33% HAI is estimated in developing countries.

What is an infection?An infection is a disease or a condition of the body that occurs when harmful germs get into the body and grow in number.

What is infection in Healthcare Facilities (HCF)?Infections in health care facilities are infections that occur in health care facilities like health centers, health posts, hospitals, etc. Or Healthcare-associated infection (HAI) is an infection that an individual gets while staying or living in a health care setting. Infections in HCFs have become a major health problem especially in the health institutions located in developing countries. Therefore identification of these infections, their source and some factors responsible for their acquisition is very important.

5.2: The Disease Transmission Cycle

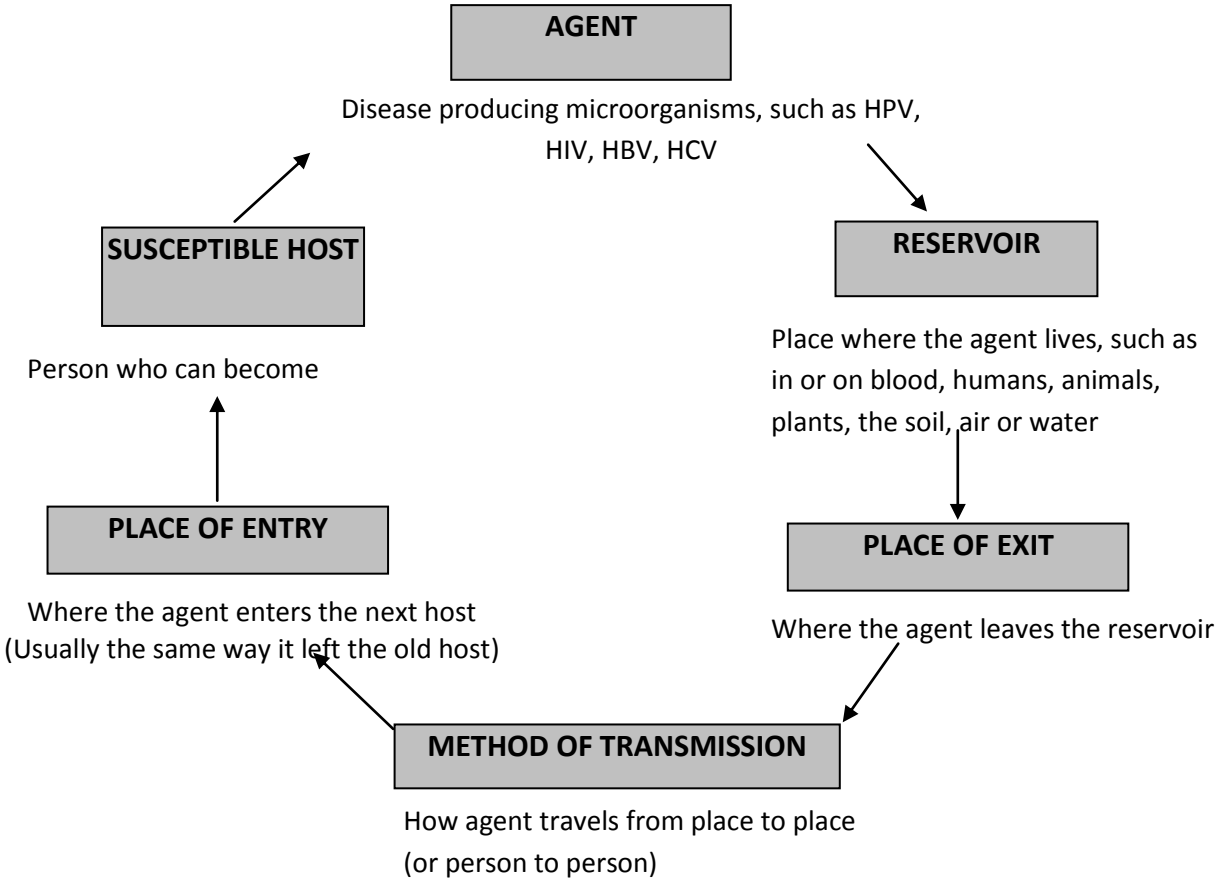
To prevent the transmission of infections, the disease transmission cycle needs to be broken at some point.

Knowing the disease transmission cycle is important if healthcare workers are to:

- ✓ Prevent the spread of infection during medical and surgical procedures,
- ✓ Teach others the factors required for transmission to occur, and most importantly,

- ✓ Teach others how to interrupt the process

Fig. 5.1 The disease transmission cycle (adopted)



Interrupting this cycle is the goal of IP practices.

In order to prevent and control infections in health care; CDC has developed two level of infection prevention and control strategies.

- ✓ Standard Precautions (First Level)
- ✓ Transmission-Based (Isolation) Precautions (Second Level)

5.3: First Level- Standard Precaution

Standard Precautions is the first level of precaution used to prevent and control infections in healthcare. Standard Precautions are the basic tasks that health care workers must do when caring for EACH and EVERY client/patient, in order to prevent and control the spread of infection. Therefore standard precautions are guidelines designed for use in caring for all people—both clients and patients attending health care facilities. They apply to blood, all body fluids, secretions and excretions (except sweat), non-intact skin, and mucous membranes.

Standard precautions designed to create a physical, mechanical, or chemical barrier between microorganisms and a person to prevent the spread of infection (i.e., the barrier serves to break the

disease transmission cycle).

Examples of barriers

- ✓ Physical: Personal protective equipment (PPE) (gloves, face masks, goggles, gowns, plastic or rubber aprons, and drapes)
- ✓ Mechanical: High level disinfectant (HLD) by boiling or steaming and sterilization by autoclaving or dry heat ovens
- ✓ Chemical: Antiseptics (alcohol-based antiseptic agents) and high-level disinfectants (chlorine and glutaraldehydes)

For further reading please refer the national infection prevention guideline

Standard Precaution – Key Components:

1. Hand washing
2. Personal protective equipment
3. Preventing injuries from sharp items
4. Safe infectious waste disposal
5. Environmental cleanliness
6. Instrument processing

1. Hand Washing

The number one way a harmful germ travels from place to place is by our hands. Remember: Hand washing is the NUMBER ONE way to stop the transmission of infections!

When to wash hands?

- ✓ When you get to work;
- ✓ When you see that your hands are dirty;
- ✓ Beforeand after examining the client;
- ✓ Before you put on gloves and after you take gloves off;
- ✓ After you touch blood or any other body fluid, mucus membranes, non-intact skin, or wound bandages;
- ✓ After touching dirty items;
- ✓ After using the bathroom;
- ✓ Before you leave work; and
- ✓ After you get home from work (before you touch anybody or anything)

How to handwash?

WASH HANDS ONLY WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB!

Duration of the entire procedure: **40-60 sec.**

WHO acknowledges the Hôpitaux Universitaires de Genève (HUG),
in particular the members of the Infection Control Programme, for their active participation in developing this material.

World Health Organization

October 2006, version 1.

2. Personal Protective Equipment (PPE)

PPE is a group of items used by health care workers to block harmful germs from getting on their skin and clothes. PPE is what you will put on at work to keep blood, urine, stool, spit, and sputum off of your skin and your clothes. The basic principle behind wearing PPE is to provide a physical barrier/protection for health care providers and patients/clients from microorganisms.

Table: 5:1 Type of Personal protective Equipment and Their Use

Type of Personal Protective Equipment	Must Be Used For:	Primarily Protects:
Gloves	For contact with mucous membranes, non-intact skin, blood, body fluids, secretions and contaminated items.	Service provider
Caps, gowns/scrub suits, masks, aprons, drapes	Invasive procedures where tissue beneath the skin is exposed	Service provider and client
Closed boots or shoes (open sandals are not acceptable)	Situations involving sharp instruments or when contact with blood and/or body fluids is likely	Service provider
Goggles or glasses, apron or mackintosh	Situations where splashing of blood, body fluids, secretions, or excretions is likely	Service provider
Masks	Situation that call for airborne or droplet transmission precautions	Service providers
Sterile drapes	Major or minor surgical procedures	Client

3. Prevent Injuries from Sharp Items

- ✓ Avoid recapping used needles
- ✓ Avoid removing used needles from disposable syringes
- ✓ Avoid bending, breaking or manipulating used needles by hand
- ✓ Place used sharps in puncture-resistant containers

4. Safe Infectious- Waste Disposal

Infectious waste is any waste generated from health and health related facilities that are capable of producing infectious disease.

Onsite handling and separation

Potential hazards associated with the handling of infectious waste necessitate certain precautions. Infectious waste needs to be sorted as

- ✓ Non-contaminated waste that can be disposed of with general waste
- ✓ “Sharps”- hypodermic needles, scalpels, knives, broken glass
- ✓ Contaminated materials for autoclaving and recycling
- ✓ Contaminated materials for disposal
- ✓ Anatomical waste (e.g. human and animal tissues)

The infectious waste should be clearly colored, coded and marked.

Storage of infectious waste

There are no storage time limits for generation of infectious waste. The waste need only be stored in manner to prevent release of the waste and to prevent nuisance conditions. Infectious waste stored at a permitted infectious waste treatment or disposal facility for more than 48 hours must be stored inside an enclosed structure maintained at 45^0 F or less (7.2^0 C).

Collection of infectious waste

Collection includes not only the gathering of infectious wastes and responsible materials, but also the transport of these materials, after collection, to the location where the collection vehicle is emptied.

Improper collection and transportation of infectious wastes carry the risk of infection for all people engaged in these activities. To avoid such risks

- ✓ Infectious wastes containers should be leak-proof, break-resistant, made of plastic or glass, and preferably have screw-caps containers;
- ✓ After the container is closed and sealed it should be wiped with disinfectant and then dried
- ✓ When an infectious waste is received and before the container is opened, it should be wiped with disinfectant and then dried

Disposal of Infectious Waste

Health personnel have a responsibility to protect themselves, the patients, the community and the environment from injury or damage originating from infectious wastes and to minimize the hazards involved in decontamination, reuse (recycling) and disposal.

Before being washed and reused, discarded (disposed) all infectious materials and contaminated articles should be made noninfectious (by soaking these contaminated items for10 minutes in 0.5% chlorine solution).

Infectious waste including packaging disposal needles, syringes and scalpels are best disposed of by incineration providing proper temperature, oxygen and residence time.

A landfill or incinerator is used as a means of disposing wastes.

5. Environmental Cleanliness

Everything in the clinic has to be clean and dry

Use 0.5% chlorine solution or soapy water for cleaning

At the beginning of each session, between patients where needed, at the end of each day

6. Processing Instruments:

There are three basic steps for processing instruments used in clinical and surgical procedures,

before they can be reused. These are valuable steps of infection prevention from soiled instruments (such as speculum, forceps, cryotip, etc.) and other reusable items.

They included:

- ✓ Decontamination
- ✓ Cleaning
- ✓ Sterilization or high-level disinfection

6.1 Decontamination

Decontamination is the first step in processing soiled surgical instruments, surgical gloves and other items. It is important, before cleaning, to decontaminate these items by placing them in a 0.5% chlorine solution for 10 minutes. This step rapidly inactivates HBV, HCV and HIV and makes the items safer to handle by personnel who clean them (AORN 1990; ASHCSP 1986).

Equipment and instruments required for decontamination

Prior preparation of the following equipment and instruments is essential for proper decontamination:

- ✓ Liquid/powder soap
- ✓ Clean water
- ✓ Measuring jug/container
- ✓ Buckets for three different solutions
- ✓ 0.5% chlorine solution

Before any procedure, prepare different decontaminating solutions with recommended concentration in three buckets (one for chlorine solution (0.5% chlorine [bleach]); one for soap solution; and one for clean water). Always use plastic- type containers.

If the available chlorine concentration is not as required, you need to dilute with water. Dilute Chlorine Solution (0.5% chlorine solution) can be prepared either from Concentrated Chlorine Solution.

6.2 Cleaning

It is an effective way to reduce the number of microorganisms on soiled instruments and equipment.Most microorganisms (up to 80%) in blood and other organic material are removed during the cleaning process.

Neither sterilization nor high-level disinfection is effective without prior cleaning (Porter 1987).

A thorough washing with soap and clean water also physically removes organic material such as blood and body fluids. This is important because dried organic material can entrap microorganisms, including endospores, in a residue that protects them against sterilization or disinfection. Organic matter also can partially inactivate some high-level disinfectants, rendering them less effective (AORN 1992; Rutala et al 1998).

Decontamination and cleaning process after completing VIA procedure:

A. Disposeof contaminatedobjects(swabandotherwaste)inaleak-proofcontainer with coverwhilestill wearing your glove.
B. Fullysubmergeusedspeculumandforcepsin the plastic containerfilledwith0.5%chlorine solution for **only**10minutes.
C. Immersebothgloved hands in the bucketcontaining0.5%chlorinesolutionandremoveby turningthem the insideoutanddisposeit in theleak-proof container.
D. After10minutes, clean instruments with a brush under soapywater,then rinsewith cleanwateranddryproperly(use utility or heavy duty gloveduringcleaning)

Notes toprovider:

- ✓ Do not use abrasive cleaners (e.g., Vim) or steel wool because these products can scratch or pit metal or stainless steel. These scratches then become a nesting place for microorganisms, making cleaning more difficult.
- ✓ Contaminated surface(s): If there is any surface (procedure table or instrument stand) that could have been contaminated by blood or other bodily fluid, you should decontaminate by wiping down with chlorine solution before you remove the glove or the surface should be cleaned after each procedure.

Decontamination and cleaning after completing cryotherapy procedure:

A. Immersebothgloved hands in the bucketcontaining0.5%chlorinesolutionandremove gloves byturningtheminside out.Disposeofthemina leak-proof/plastic container.
B. Beforebeginningthecleaningprocess, pututilityglovesonboth hands toprotectyourself.
C. Decontaminatethecryotherapyunit, hose, andregulator by wipingthemwithalcohol(70–90%).
D. Separatethe cryotip fromtheprobe,makesuretherubberstopperis placed inthe opening, andcoverthe thinmetal tubepartof theprobewithanotherprotectivecover(if not available, use cryotip as a cover)

Noteto provider: Alwaysprotectthe thinmetal tubefromdamagebecauseitisverysensitive andeasilydamaged.

- ✓ Put the cryotherapy unit on the pre-prepared location or in the holder on the regulator.
- ✓ Wash the cryotip with soap and water until visually clean and rinse it thoroughly with clean water
- ✓ **Do not submerge the cryotip in any chemical or disinfectant solution.**
- ✓ Allow the cryotip to air dry. Do not allow the cryotip to fall out during washing.
- ✓ After washing, the cryotip can be sterilized with high-pressure steam sterilization (autoclave) or high-level disinfectant by boiling for 20 minutes before reuse (timing starts when the water starts to boil/bubble).

5.4: Sterilization orHigh Level Disinfection

Sterilization

Sterilization destroys all microorganisms and must be used for all instruments that come into contact with sterile parts of the body e.g. that penetrate the skin or enter the womb.

Sterilization can be achieved by one of the following:

- ✓ Expose instruments to superheated steam in an autoclave: 20 minutes for unwrapped instruments and 30 minutes for wrapped instruments. Autoclaving is the preferred method of sterilization.
- ✓ Soak instruments in either 2–4% formaldehyde/glutaraldehyde for 8 to10 hours, then rinse thoroughly with sterile water.

High-level disinfection(HLD)

HLD destroys all organisms except bacterial spores, and is used when sterilization equipment is not available or the instrument is too delicate to be sterilized. One of the following processes can be used for HLD:

- ✓ Boil instruments for at least 20 minutes in plain tap water, which is changed at least daily. Make sure that instruments are fully covered by the water, and start timing after the water with the instruments is fully boiling. Do not add anything to the pot once you have started to time.
- ✓ Soak instruments in 0.5% chlorine or 2% glutaraldehyde solution for 20 minutes. Rinse thoroughly in boiled water, air-dry and store in a sterile cloth. These chemicals may be corrosive and can reduce the useful life of instruments that are repeatedly disinfected with them.

Sterilization and High Level Disinfection After VIA and Cryotherapy

Afterdecontaminationandcleaningandbefore sending tothe centralsterilization room,all instruments should bepacked independently.

A. Thecryotip shouldbewrapped inadoublethickness cottoncloth beforesendingfor steamsterilization.
B. Forceps,speculums, andallotherjoinedinstrumentsshouldbeintheopenor unlocked position.
C. Instrumentsshouldnotbe heldtightlytogether in a way thatwill prevent steamcontact with all surfaces.
D. It isbesttowrapcleaninstrumentsand other clean itemsin a double thicknessof cottoncloth.
E. Makesure ametalbandaroundthedrumisopen beforesterilizationtoallowsteam intothedrumthroughthe perforated wall.

AftersterilizationandbeforetransportingtotheVIA/cryotherapyprocedureunit:

A. Makesuremetal bands aroundall drums areclosed.

B. Makesure allpackswithcottonclotharedry. (Condensationmightdevelop,which increasesthe probabilityofmicroorganismaccumulation.)
C. Transfer forceps andtheirholdingcontainersshouldbecleanedanddried dailyand whenevervisiblycontaminatedneed sterilization.
D. After sterilization, storethewrappedcryotip in acleananddryplace. Itcanbe reassembled andreattachedtothe cryoprobeduringcryotherapyprocedure.

Note to Provider: Instrument processing for VIA and cryotherapy (decontamination and cleaning) should be done by the person who performed the procedure.

5.5: What to Do If Exposure Occurs?

When any exposure to blood or other body fluids occurs, the following steps may reduce the risk of infection with HBV, HIV and other blood-borne pathogens.

- ✓ For exposure to skin or mucous membranes, wash the affected area immediately with soap and water, and rinse thoroughly to remove any potentially infectious particles.
- ✓ When a puncture wound or cut occurs, allow it to bleed. Cleanse and rinse the wound with soap and water. (Irrigating with saline, alcohol or iodine has not been shown to decrease risk of infection with HBV or HIV, and may even result in irritation and scarring.)
- ✓ For exposure to the eyes, flush the eye immediately with water, then irrigate for 30 minutes with normal saline.

Healthcare workers who are exposed to blood or body fluids should be given complete information about treatment options so that they can make an informed choice. An antiretroviral agentshould be offered based on the national guide line recommendation.

5.6: Making Infection Prevention Programs Work

Implementing effective strategies to ensure that healthcare workers follow IP guidelines is crucial to preventing the spread of infection. Education and other efforts intended to make the healthcare facility safer should be directed to all healthcare workers not just physicians and nurses. In some countries housekeeping staff have a rate of needle stick injuries second only to operating room staff. This is due in large part to used needles being incorrectly discarded and housekeeping staff not being taught how to protect themselves (Tietjen et al 1992).

Compliance with IP guidelines can be strengthened if there is consistent support for safety efforts from program managers. This support includes ensuring that dangerous practices are eliminated, identified deficiencies are corrected, and staffs are actively encouraged to suggest better safety practices. It is also important that supervisors regularly provide feedback and reward appropriate IP practices, and those role models, especially physicians and other senior staff, support recommended IP practices and model appropriate behavior (Lipscomb and Rosenstock 1997). Finally, educational programs geared to problem solving not just providing information and addressing psychosocial factors (minimizing stress, emotional strain and interpersonal problems) can lead to better compliance and improved safety of healthcare workers (Rogers 1997).

Chapter Six

CLIENT ASSESSMENT AND VIA TESTING

Duration: 450 minutes

Chapter Objective:

By the end of this chapter participants will be able todemonstrate is client assessment and VIA testing

Learning Objective:

- Explain who needs to have cervical pre-cancer screening using VIA
- Perform client assessment
- Perform VIA testing

Chapter Activities:

i. Clinical Practice: Observe and provide services in clinics
ii. Image review
iii. Review of clinical practice
iv. Review of the day's activity

6.2 Background

VIA is one way of performing cervical cancer testing. As discussed in **Chapter1**, its advantages include the simplicity of the technique and the ability to provide women with an immediate result. As with any other medical procedure, training with guided practice is required in order to perform VIA competently.

6.3 Who should be tested?

Testing for cervical cancer precursors is recommended for **any woman between the ages of 30 and 49**. Cervical cancer rates peak among women between the ages of 40 and 50, so testing should take place during the ages in which detecting a precancerous lesion is most likely, normally 10 to 20 years earlier.

6.4 When to Perform VIA

VIA can be performed at any time in the menstrual cycle, including during menses, and at a postpartum or post abortion checkup.

Possible results of VIA screening for cervical precancerous lesion

1. VIA positive
2. VIA negative
3. Suspicious for cancer

Guidance is provided for each outcome, including when counseling is needed. For each outcome there are either simple instructions for the woman (e.g., return for VIA every 5 years) or specific issues that should be discussed with her, such as when and where treatment can be provided, the potential risks and benefits associated with treatment, and when referral for additional testing or more extensive treatment is necessary.

6.5 Client Assessment

Cervical cancer screening usually is performed as part of universal mass reproductive health screening program or some other primary healthcare service, such as a prenatal or post-partum visit, initiation or continuation of family planning, post abortion care, voluntary sterilization or assessment for STIs. Therefore, the brief history and limited examination outlined in this chapter should be presented in the context of the reproductive health service being provided.

Take a brief reproductive health history. It should include the following:

- Menstrual history
- Bleeding pattern (e.g., post coital or irregular bleeding)
- Parity
- Age at first intercourse
- Use of contraceptive method

Be sure to include information on any of the cervical cancer risk factors previously mentioned. A sample record form is shown in **Figure 6-1.**

Figure 6.1 Sample cervical cancer prevention service client record form

CLIENT IDENTIFICATION: MRN: _____ VIA register No. : _____

Name of client: _____ Age: _____

Address: _____ Tele:_____

Date of visit_____Visit: ☐ First visit ☐Follow-up visit

Educational Status (enter last grade completed): _____ ☐Check box if unable to read and write

REPRODUCTIVE HISTORY:

Marital status:_____ Parity:____ Current contraceptive(s):_____ Age at first intercourse:_____

Menstrual Bleeding Pattern:☐ Regular (21-35 intervals) ☐ Irregular ☐ Menopause

Postcoital spotting or bleeding☐ Yes □ No

STI History: Number of sexual partner(s) of **Client**: _____ **Partner_____**

History of STI: **Client**: ☐Yes ☐ No **Partner:**☐ Yes ☐No

HIV/AIDS testing:☐Unknown. ☐Yes. If tested, enter chart status: ☐ Reactive ☐Non-reactive

If reactive, is the patient currently on HAART: ☐ Yes ☐No

Other risk factors:

History of smoking ☐Yes☐NoChronic corticosteroid use☐Yes☐No

EXAMINATION:

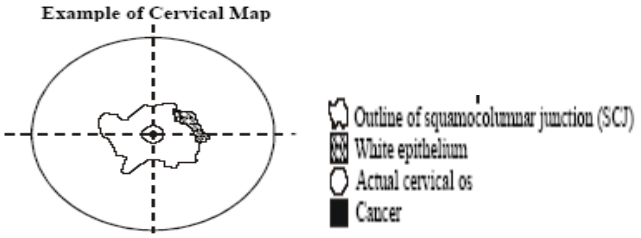
Result of breast examination ☐ Normal ☐Abnormal (please describe details below)

Result of pelvic examination ☐ Normal ☐Abnormal (please describe details below)

Suspicious for cancer ☐ Yes ☐No(please describe details below)

SCJ was completely seen ☐ Yes ☐No(please describe details below)

Cervical map: Draw the cervical findings on right circle using the instructions from the left circle



Enter findings here

VIA Result:☐Negative ☐Positive ☐Suspicious for Cancer

Management with VIA Result:

If **negative**, counseled to return in 5 years. Return Visit date: _____

If **positive**,**Cryotherapy details:** ☐Done immediately (same day)☐Doneother day ☐Refused Cryotherapy ☐ Ineligible for Cryotherapy (Describe reason in Referral part)

Date Cryotherapy done: _____ **Return visit date:** _____

STI Suspected: ☐Yes, Treatment provided: _____ ☐ No

Referral Details: Place where client referred to: _____

Reasons of referral: ☐ Lesion > 75%☐Lesion larger than cryoprobe>2 mm ☐ Lesion extended inside os☐Suspicious for cancer ☐Pregnancy☐Other non-gynecologic or gynecologic problem (please describe)

Providers Name:_____Signature:_____

6.6 INSTRUMENTS AND SUPPLIES

VIA can be performed in any clinic that have the following items:

- Examining table
- Light source
- Timer
- Bivalve speculum(Cusco or Graves)
- Kidney dish
- Sponge forceps
- Instrument tray or container

The few supplies needed for performing VIA should all be available locally:

- Cotton swabs
- New examination gloves or high-level disinfected surgical gloves
- New wooden spatula and/or condom
- Dilute (3–5%) acetic acid solution (clear vinegar is acceptable)
- 0.5% chlorine solution for decontaminating instruments and gloves
- A record form for recording the findings

The **examining table** should allow the examiner to insert the speculum and see the cervix

Light from a window is usually not sufficient to see the cervix, so use a **light source**, such as a goose-necked lamp or a flashlight (torch), if available. The light must best enough for the examiner to see the upper end of the vagina where the cervix is located. In section cannot be performed if there is not enough light to see the entire cervix. It is also important that the light source not be too hot. A lamp that is too hot will be uncomfortable for both the woman and the provider. A high-quality flash light provides adequate light without too much heat. In addition, the flash light does not require a source of electricity is portable and can be placed in whatever position allows the best view of the cervix.
Timer/Stopwatch or clock: To monitor the elapsed time

A Graves **bivalve speculum** is preferred because it is more effective at exposing the cervix, but either Cuscoor Graves can be set and left open while the cervix is being examined. This leaves the provider's hands free to swab the cervix, adjust the light source and manipulate the cervix and speculum in order to see the cervix fully. A Simms speculum is not recommended because it has only one blade and has to be held by an assistant.
In addition, to couple cryotherapy with VIA testing, the necessary instruments for cryotherapy should be ready and available (see **Chapter 7**).
Cotton swabs are used to remove mucus and discharge from the cervix and to apply acetic acid to the cervix. These swabs should be generously covered with clean cotton so that they will be able to

wash the cervix thoroughly with acetic acid and not scratch or injure the cervix. The cotton swabs do not have to be sterile. Cotton "wool" formed into balls and applied to the cervix with a forceps is also acceptable.

Gloves Use a new pair of gloves for every woman.

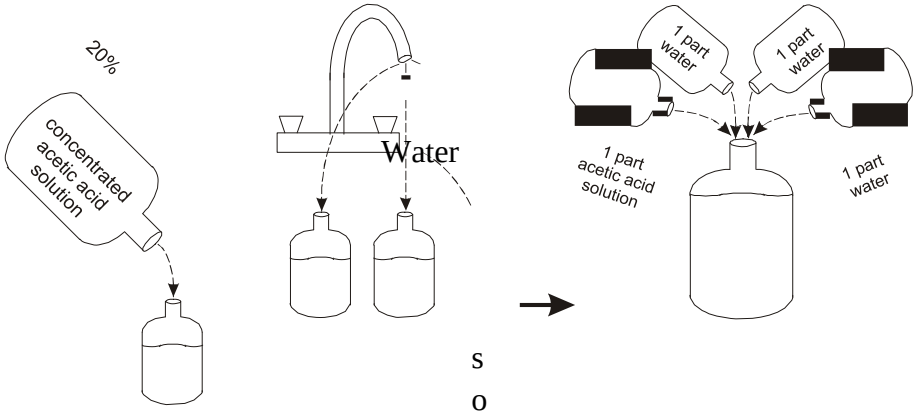
The **wooden spatula** is used to push away the lateral walls of the vagina if they protrude through the speculum blades. Use a new spatula for every woman. Alternatively, a condom with a cut tip can be rolled over the speculum blade stoprevent the walls of the vagina from pushing into the space and preventing an adequate view of the cervix.

Acetic acid is the main ingredient of vinegar. A dilute (3–5%) solution is recommended. Often what is sold in the market is a "vinegar-substitute" that in fact is acetic acid. If neither vinegar nor an acetic acid substitute is available, a pharmacist/chemist or local chemical supplier can make the dilute acetic acid using the following formula:

Total parts of water = $\frac{\%\text{concentrate}}{\%\text{ dilute}} - 1$

For example, to prepare a dilute solution (5%) from a 20% concentrated acetic acid solution:

TP water= $\left[\frac{=20\%}{5\%}\right] - 1 = 4 - 1 = 3$ parts water to 1 part concentrate



1part 1 part 1 part 5% dilute solution

Chlorine solution (0.5%) is used to decontaminate the speculum and surgical gloves after each use. After decontamination, the speculum instrument tray or container should be cleaned and then high-level disinfected or sterilized.

6.7 VISUAL INSPECTION WITH ACETIC ACID (VIA)

General Procedure: To perform VIA, the provider applies a dilute acetic acid solution to the cervix. This solution shows any changes in the cells covering the cervix (epithelial cells) by producing the "aceto-white" reaction. First, the provider performs a speculum examination to see the cervix. Then, the cervix is cleaned to remove any discharge, and acetic acid is applied thoroughly to the cervix. After 1 minute the cervix, including the entire SCJ, is inspected for any aceto-white change. The results of the test (i.e., either test-positive or -negative) should be discussed with the woman, and treatment should be offered after counseling, if it is appropriate and immediately available.

Classification of VIA Test Results

The assessment findings should be recorded using the standardized categories summarized in **Table 6-1**.

Table 6-1.VIAClassification Relative to Clinical Findings

VIA CLASSIFICATION	CLINICAL FINDINGS

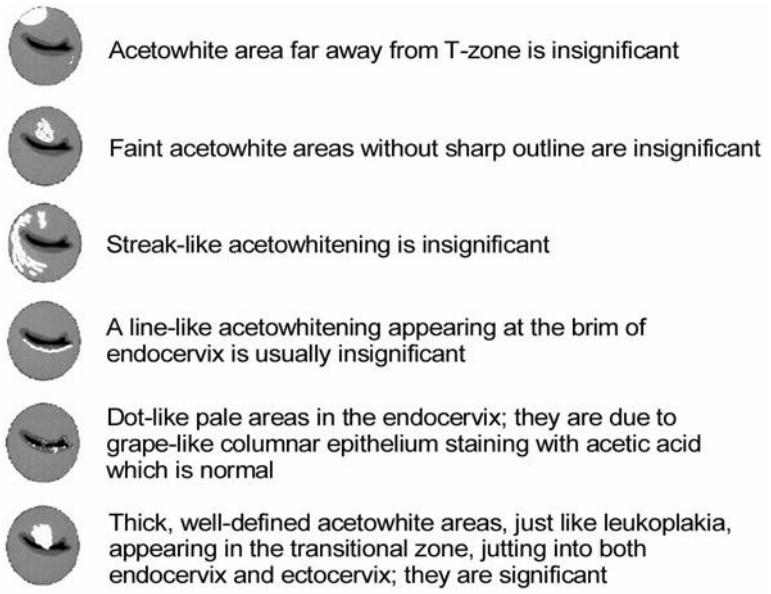
Test-positive Raised and thickened white plaques of aceto-white epithelium, usually near the SCJ

(See Figure 6-3)

Test-negative Smooth, pink, uniform and featureless; ectropion, polyp, cervicitis, inflammation, Nabothian cyst

Suspicious for Cancer Cauliflower-like growth or ulcer fungating mass

Figure6-3.Clinical Significance and Location of Aceto-white Lesions



Adapted from: International Agency for Research on Cancer (IARC).

Step- by-step Instructions

Client Assessment and Getting Ready

Step 1 Before performing the VIA test, discuss the procedure with the woman. Explain why the test is recommended and exactly what will take place during the examination. Also discuss with her the nature of the most likely findings and the follow-up or treatment that might be required.

Step 2 Make sure that all necessary instruments and supplies are available, including a high-level disinfected or sterile speculum, cotton swabs in a clean container, a bottle of dilute acetic acid and adequate light source. Test the light source to be sure it is working.

Bring the woman into the examination area. Ask her to empty her bladder if she has not already done so. If her hygiene is poor, have the woman thoroughly wash and rinse her genital area. Ask her to remove only enough clothing (including undergarments) so that the pelvic examination and VIA test may be performed.

Step 3 Assist the woman with positioning herself on the examining table and drape her for the pelvic examination.

Step 4 Wash hands thoroughly with soap and water and dry with a clean, dry cloth or air dry. Palpate the abdomen.

Step 5 Put a pair of surgical gloves on hands.

Step 6 Arrange the instruments and supplies on a high-level disinfected tray or container, if not already done.

VIA Test

Step 1 Inspect the external genitalia and check the urethral opening for discharge. Palpate the Skene's and Bartholin's glands. Tell the woman that the speculum is about to be inserted and that she may feel some pressure.

Step 2 Gently insert the speculum fully or until resistance is felt and slowly open the blades to reveal the cervix. Adjust the speculum so that the **entire** cervix can be seen. This may be difficult in cases where the cervix is large or extremely anterior or posterior. It may be necessary to use a sterile cotton swab, Spatula or other instrument to gently push the cervix down or up into view.

Note: If the walls of the vagina are very lax, use a cotton swab or wooden spatula to push away any tissue protruding between the blades of the speculum. Alternatively, prior to insertion of the speculum, a condom can be rolled over the blades and the tip of the condom cutoff. When the speculum is inserted and the blades are opened, the condom will prevent the walls of the vagina from pushing into the space between the blades.

Step 3 When the cervix can be seen in its entirety, fix the blades of the speculum in the open positions that it will remain in place with the cervix in view. Doing this enables the provider to have at least one hand free.

Note: Throughout the procedure, it may be necessary to repeatedly adjust either the angle from which the cervix is viewed or the light source in order to achieve the best view of the cervix.

Step 4 Move the light source so that you can see the cervix clearly.

Step 5 Look at the cervix and check for evidence of infection (cervicitis) such as whitish purulent discharge (muco-pus); ectopy (ectropion); grossly apparent tumors or Nabothian cysts, ulcers or "strawberry" lesions (Trichomonas infection).

Step 6 Use a cotton swab to remove any discharge, blood or mucus from the cervix. Dispose of the swab by placing it in a leak proof container or plastic bag.

Step 7 Identify the cervical os and SCJ and the area around it.

Step 8 Soak a clean swab in dilute acetic acid solution and apply it to the cervix. If necessary, use swab store peat applications of acetic acid until the cervix has been thoroughly washed with acid. Dispose of used swab(s).

Step 9 Once the cervix has been washed with the acetic acid solution, wait for 1 minute, and observe the cervix for aceto-white changes.

Step 10 Inspect the SCJ carefully. Check to see if the cervix bleeds easily. Look for any raised and thickened white plaques or aceto-white epithelium.

Note: The SCJ should be completely seen to determine if the cervix is normal or abnormal.

Step11 As needed, reapply acetic acid or swab the cervix with a clean swab to remove any mucus, blood or debris that develops during the inspection and that may obscure the view. Dispose of used swab(s).

Step12 When visual inspection of the cervix has been completed, use a fresh cotton swab to remove any remaining acetic acid from the cervix and vagina. Dispose of used swab(s).

Step13 Gently removes the speculum. If the VIA test is negative, place the speculum in 0.5% chlorine solution for 10 minutes for decontamination. If the VIA test is positive and, after counseling, the patient requests immediate treatment, place the speculum on the high-level disinfected tray or containers that can be used during cryotherapy.

Step14 Perform a bimanual examination and rectovaginal examination (if indicated). Check for cervical motion tenderness; size, shape and position of the uterus; pregnancy or any uterine abnormality and enlargement or tenderness of adnexa.

Post-VIA Tasks

Step1 Wipe the light source with 0.5% chlorine solution or alcohol to avoid cross-contamination between patients.

Step2 Immerse both gloved hands in 0.5% chlorine solution. Remove the gloves by turning them inside out. Disposing them in a leak proof container or plastic bag.

Step3 Wash hands thoroughly with soap and water and dry them with a clean, dry cloth or air dry.

Step4 If the VIA test is negative, ask the woman to move toward the head of the table and help her sit up. Ask her to get dressed.

Step5 Record the VIA test results and other findings such as evidence of infection (cervicitis); ectropion; grossly apparent tumors; or Nabothian cysts, ulcers or "strawberry cervix." If aceto-white change that is characteristic of a diseased cervix is present, record the cervical examination as abnormal. Draw a "map" of the cervix and the diseased area on the record form (see **Figure 6-1)**

Step6 Discuss the results of the VIA test and pelvic examination with the woman. If the VIA test is negative, tell her when to return for repeat VIA testing.

Step7 If the VIA test is positive or cancer is suspected, tell the woman what the recommended next steps are. If treatment is immediately available, discuss this possibility with her. If referral is required for further testing or treatment, make arrangements for the referral and provide the woman with the necessary forms and instructions before she leaves the clinic. If it is possible to make an appointment now, this is the best time.

Possible Links between VIA Testing and Treatment

For VIA positive eligible for Cryotherapy offer immediate treatment. Woman must receive all treatment related counseling before testing takes place and must have the chance to ask questions and reinforce the counseling between testing and treatment. If immediate treatment is not possible offer treatment after focused counseling and/or offer treatment at any separate visit.

Chapter Seven

Treatment and follow up

Duration: 1520 minutes

Chapter Objective:

By the end of this chapter the participant will be able to explain patient treatment and follow up.

Learning Objectives:

- ✓ Explain the various treatment options for cervical precancerous lesions and be able to explain their advantages and disadvantages
- ✓ Provide basic and culturally acceptable counseling to clients eligible for treatment of cervical precancerous lesions
- ✓ Perform cryotherapy procedures/services
- ✓ Counsel and arrange post cryotherapy client follow up
- ✓ Identify clients that are not eligible for cryotherapy and be able to take appropriate measures (provide alternative treatment and/or arrange referral)
- ✓ To identify the complications of treatments for precancerous lesions

Chapter activities:

i. Steps of Cryotherapy
ii. Clinical practice: observe and provide services in the clinic
iii. Review of clinical practice
iv. Cryotherapy procedure
v. Procedure continued
vi. Chapter summary
vii. Post course Questionnaire
viii. Clinical practice: observe and provide services in the clinic
ix. Review of practice
x. Discussion on preparing clinical site to provide VIA and cryotherapy services
xi. Clinical practice: Evaluate provision of services in the clinic
xii. Review of practice
xiii. Review of the day's activities
xiv. Discussion onpreparing clinical site to provide VIA and cryotherapy services (continued)

7.2 Background

A1995surveyofproceduresbeingused in developing countries to manage precancerous lesions (dysplasia or CIN) reported that hysterectomyandconebiopsy both ofwhichinvolvehospitalization and are associated with significant procedure-related costs and risks were the most commonly used methods. Available scientific evidence, however, supportstheuseofseveral outpatient procedures

(e.g., cryotherapyandLEEP)asbeinghighly effective (Bishop, Sherris and Tsu1995).Thecontinueduseofinpatientmethodssuchasconebiopsy and hysterectomy that are more costly and potentially more risky to womenisinpartduetoalackofequipmentandsuppliestoperform these simpler and safer procedures. It is also due in part to the fact that cervicalcancerscreeninginsomecountriesisnotofferedatlowerlevelsofthehealthcaresystemwhereoutpatienttreatmentcouldbemade available (see Appendix G for details).

Table7-1 shows a comparison of several methods for treating precancerous lesions.

Table7-1.CervicalCancerTreatmentOptions

Procedure	**Outpatient**	**Anesthesia**	**ElectricalPower**	**Nonphysicians**	**Cost**[a]
Cryotherapy	Yes	No	No	Yes	Low
Electrocautery	Yes	Yes (local)	Yes	Yes	Low
Coldcautery	Yes	Yes (local)	Yes	Yes	Low
LEEP	Yes	Yes (local)	Yes	No	Mod
Laservaporization	Yes	Yes (local)	Yes	No	High
Conebiopsy	No	Yes (general orregional)	Yes[b]	No	High
Hysterectomy	No	Yes (general orregional)	Yes[b]	No	High

a:Low= < $500,Moderate= $500–1500,High= > $1500

b: Requiredforuseofoperatingroomlightingandequipment

AsdiscussedinChapter1, therecommendedsee and treatapproach will have the greatest programimpactif it:

Canbeprovidedatthelowestlevelofthehealthcaresystemwherethemajority of women at risk are located,

- Can take place during the same visit,
- Can be provided by nurses or nurse midwives, and
- Offersexcellentcurerates with a goodcost-benefitratiofortreatmentof lesions that have a low likelihood of being cancerous.

Formostcountrieswithlimitedresources,cryotherapy,eitheraloneorincombinationwithLEEP(provided at a referral center), is the best outpatient option.

7.3 Outpatient Treatment Procedures

Until recently, which of these outpatient treatment options is most effectivehasbeendisputed.Arandomized clinical trial conducted by Mitchell and colleagues (1998) provides strong evidence that cryotherapy,laservaporizationandLEEParenotsignificantlydifferent ineffectiveness(successratesrangingfrom 74to83%).Inorderto

reducebiasinthisstudy,allpatientswereclassifiedaccordingtothesize (area) and type (histologic grade) of the lesion.

As shown in Table 7-2, differences in effectiveness, persistence, recurrence and complications were not statistically significant. In addition,tomoreaccuratelydeterminethe recurrence rate,womenwerefollowedupforalongertimethaninanypreviousstudyofthistype.
Themainfactorthatwasassociatedwithtreatmentfailurewaslesion size, and it was clear that when large lesions (for example, lesions that mightbetoolargeforthecryotip toreach) werepresent,allthreetreatmentmethods (cryotherapy,LEEPandlaser)weremorelikelytofail than when smaller lesions were present.

Table7-2.ComparisonofTreatmentOptions

	Cryotherapy (n=139)	LaserVaporization	LEEP (n=130)
Effectiveness(at1year)	76%	83%	84%
• Persistence	7%	4%	4%
• Recurrence	19%	13%	13%
Complications	2%	4%	8%
Bleeding (peri- and post-operative)	0%	1%	3%

Source:Mitchellet al.1998.

Infact,whenthesize,typeandlocation of the lesion were taken into account, only the association between lesion size and the rates of persistence was statistically significant. Women with lesions covering morethantwo-thirdsofthesurfaceofthecervixwere19timesmore likely to have persistent disease than those with smaller lesions, regardlessoftheprocedureused. Otherfactorsthatincreasedtheriskof recurrence at least two-fold were:

- Age over 30 years,
- Positive HPV test (types 16 or 18), and
- Previous treatment for CIN.

General description of the cryotherapy procedure

- Cryotherapy is a procedure that eliminates precancerous lesions on the cervix by freezing them.
- Cryotherapy involves applying a highly cooled metal disc (cryotip or cryoprobe) to the cervix and freezing its surface using carbon dioxide gas or nitrous oxide gas as the coolant.
- The treatment consists of applying the coolant continuously for 3 minutes, allowing the abnormal cervical lesion(s) to thaw for 5 minutes, and the reapplying the coolant for another 3 minutes. This procedure is called the “double-freeze” technique and does not require anesthesia.

- After treatment, almost the entire cervix will appear frozen and white, creating an "ice ball." This will gradually thaw, producing a watery discharge that may last for several weeks.
- Color will return to the tissue but it will remain fragile, requiring a few weeks to heal.
- Once the abnormal cells are removed, they fall off the cervix and new, healthy cells grow back.
- Cryotherapy is a simple and inexpensive procedure. It can be completed in less than 30 minutes.
- It is an outpatient procedure (there is no need for anesthesia or any premedication) and can be performed by a nurse, physician, or other trained and competent health worker.

2. Eligibility criteria

Reminder to Provider: Refer to Appendix 1 for additional information on eligibility criteria for cryotherapy.

Cryotherapy should be offered to a woman if an aceto-white lesion was observed during the VIA test and she meets eligibility criteria.

Eligibility criteria for cryotherapy include:

- Not suspicious for cancer
- Can see the entire extent of the lesion
- Aceto-white lesion occupies < 75% of the cervix
- Lesion does not extend onto the vaginal wall beyond the cervix,
- Cryotip covers the lesion (< 2mm of lesion extends beyond edge of cryotip)
- No anatomical deformity of the cervix that prevents good application of cryotip
- Client is not pregnant
- Client is more than 12 weeks postpartum
- Client doesn't have cervicitis (PID)

3. Potential risks

- There are no serious risks associated with cryotherapy. It is a safe procedure, with low risk of major complications.
- Many women will experience a cold feeling in their vagina and lower abdomen during the procedure and some women could experience mild cramping during the procedure and for 2-3 days after the procedure.

4. Benefits:

- Reduces the chances of cervical cancer.
- Removes abnormal cells and promotes the growth of new healthy cells on the cervix.
- Does not have a long-term impact on women's fertility or pregnancy outcomes.

5. What a woman can expect after being treated with cryotherapy

- All women will experience watery vaginal discharge for 4–6 weeks.

- Some women will experience cramping and spotting/light bleeding.
- Women will have to be responsible for self-care at home, which includes avoiding internal douching, avoiding use of vaginal tampons, and abstaining from sexual intercourse, or using condoms during intercourse if abstinence is not possible for 4 weeks.
- If a woman experiences mild pain, she can take any analgesics

If a woman experiences any of the following she should return to a facility:

– Fever for more than 2 days

– Severe lower abdominal pain

– Bleeding for more than 2 days that is heavier than her heaviest days of menstrual bleeding

– Bleeding with clots

– Vaginal discharge with foul smell

6. Likelihood of success

Cryotherapy is about 90% effective in curing abnormal cervical lesions. This means that out of 100 women with abnormal cervical cells who are treated with cryotherapy, about 90 of them will be cured. The remaining 10 may need a second cryotherapy treatment after 1 year, or they may need further investigation and management depending on the extent of the lesion.

Table7-6.ComparisonofTreatmentModalities

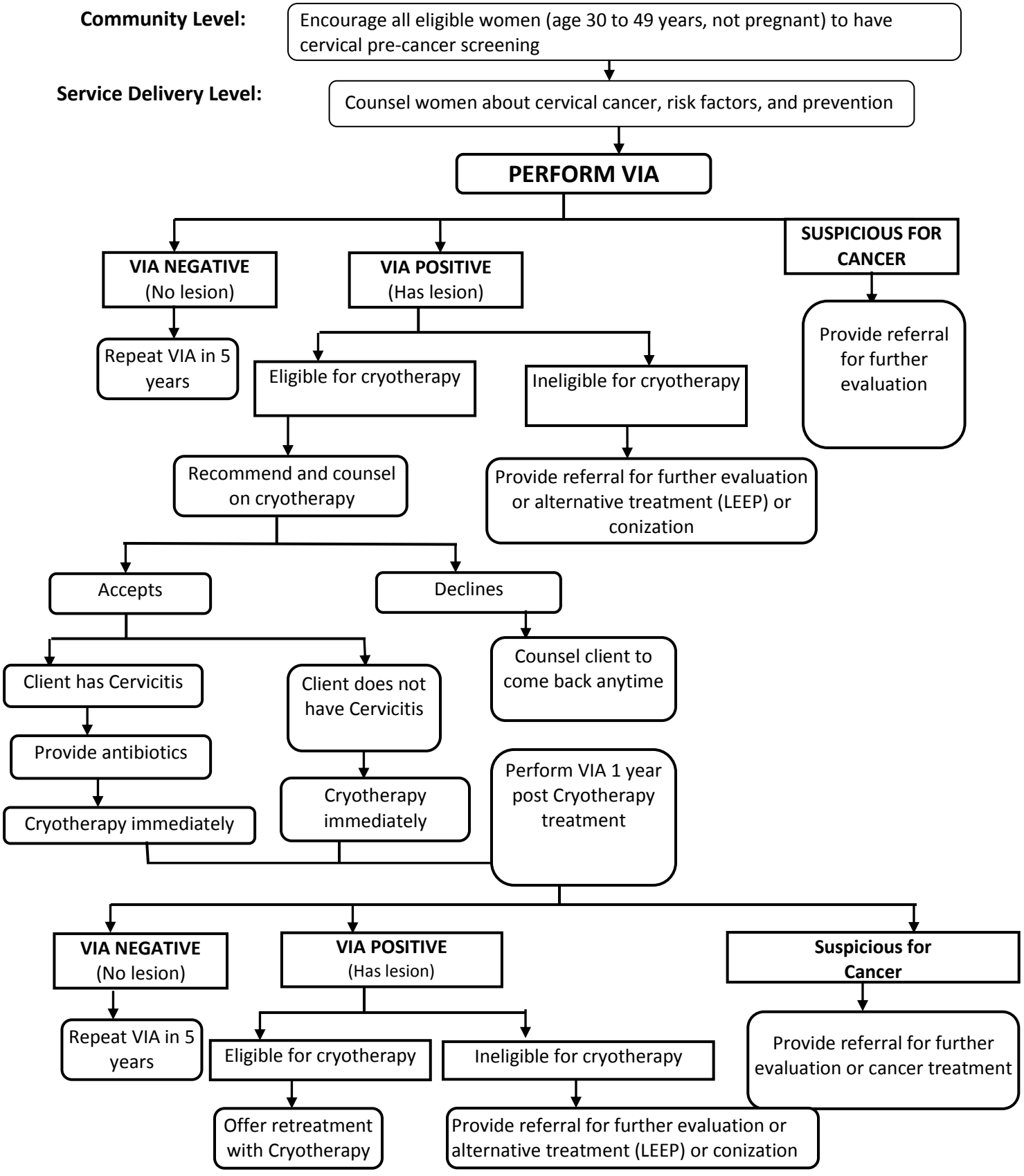
Treatment	Advantage	Disadvantage
Cryotherapy	➢ Effective with mild andmoderate lesions(85 - 95% cure rate) ➢ Inexpensive ➢ Non-physician can Perform ➢ No local anesthesiaRequired ➢ No electricity required ➢ Associated with fewcomplications/side effects	➢ Variable success rate withlarge, severe lesions(70–90% cure rate) ➢ Leaves nottissue sample forconfirmatory diagnosis) ➢ Difficult to determineexact amount of tissuedestroyed ➢ Associated with profusewatery discharge for 4–6weeks followingtreatment ➢ Requires access to andresupply of coolant (CO2or N2O) ➢ Not to be conducted if woman is pregnant.

LEEP	➢ Effective (90–96% curerate) ➢ Enables tissue samplingfor diagnosis ➢ Associated with fewcomplications/side effects	➢ More expensive thancryotherapy ➢ Primary side effect isperi-operative bleeding(3–8%) ➢ Physician required toperform ➢ Requires local anesthesia ➢ Requires electricity (butcould be battery powered) ➢ Requires resupply ofloops ➢ Should not be performedduring pregnancy
Electrocautery	Effectivewithmildand moderate lesions(90%curerate) ➢ Inexpensive ➢ Sturdyequipment ➢ Associatedwithfewcomplications/sideeffects	➢ Variablesuccessratewithlarge,severe lesions(85–95%curerate) ➢ Destructive(leavesnottissuesamplefor confirmatorydiagnosis) ➢ Difficulttodetermineexactamountof tissue destroyed ➢ Associatedwithwaterydischargeforupto 6weeksfollowingtreatment ➢ Requireslocalanesthesia ➢ Requireselectricity(butcouldbebattery powered) ➢ Shouldnotbeperformedduringpregnanc y

Althoughitisclearthatallofthese treatment options can be safe and effective,thequalitiesofcryotherapymakeitmostattractivetolow-resourcesettings,especiallywherenurseswillbeexpectedtoprovidea significant proportion of the preventive services

Figure7-2isasampleflowdiagram summarizing thepossibleoptions forwomenafterVIAtesting.Italsoshowsthetreatmentoptionsfor VIAtest positivewomen.

Figure7-1.SampleFlowDiagramforCervicalCancerPrevention



Counseling Guidelines for Cryotherapy

1. General counseling guidelines

Cryotherapy should be offered only if the woman meets the eligibility criteria (refer to Appendix 1). (If the woman is not eligible for cryotherapy, see Section III, Alternative Treatments.) All women have a right to make informed decisions freely whether or not to receive treatment. If the woman is eligible, it is essential that she is informed and counseled on the following:

a. What the cryotherapy procedure is,

b. Benefits of the procedure,

c. Potential risks,

d. Post-treatment care and follow-up, and

e. Likelihood of success.

2. Suggested counseling language for provider:

a. What is the cryotherapy procedure?

- Your VIA test showed abnormal cervical tissue that can be removed with a procedure called cryotherapy.
- It is a procedure that is used to remove abnormal cervical tissue from the cervix.
- Once the abnormal cells are removed, they fall off the cervix, and new, healthy cells grow back.
- It takes a short time.
- During the cryotherapy procedure you will hear a hissing noise, but it is nothing to be worried about.
- Cryotherapy only involves removing abnormal cervical tissue. It will not be used for treatment or removal of any other internal or external female genitalia.

b. What are the potential risks?

- There are no serious risks associated with cryotherapy. It is a safe procedure, with very low risk of serious complications.
- Many women will experience a cold feeling in their vaginas and lower abdomens during the procedure and some women could experience mild cramping (like menstrual cramps) during the procedure. This is common and does not require hospitalization.

o To allow proper healing after cryotherapy treatment and reduce increased transmission of HIV (other types or resistant strains of the virus for HIV-positive women), it is essential that you abstain from sexual intercourse for 4 weeks following treatment.

o We will supply you with condoms in case total abstinence is not possible for this time period.

h. Date of next scheduled visit

o Provide the woman with her next scheduled visit date (at 1 year post last visit) and location.

i. Post-cryotherapy prepackaged set

o A post-cryotherapy prepackaged set should contain a set of sanitary pads, a post-cryotherapy information sheet, and a set of condoms (if she has no objection) to take with her.

7.4 Instruments and Equipment

Refer to chapter 6

Thecryotherapysystem5 (Figure 7-2) enables high-pressure compressedgastotravelfromthegascylinderintothe expansion/freezingchamberofthecryoprobe.Thesystemconsistsofthefollowing:

- Metalcryotipdesignedtofitupagainstthecervixandcompletelycoverth eareassurroundingtheSCJanddiseasedareas;
- Hand-heldcryotherapyunit(or“cryogun”or“cryoprobe”),which includesthehandle,freezeanddefrosttriggers,andinsulatedprobe;
- Flexible hose connecting the regulator to the cryotherapy unit; and
- Regulator with pressure gauge,cryotherapyunit holder,safetyvalve, and exhaust vent/filter.
- The cryotherapyunit is designed to connect to acompressedgas cylinder.Atimer with a second hand also is desirable.

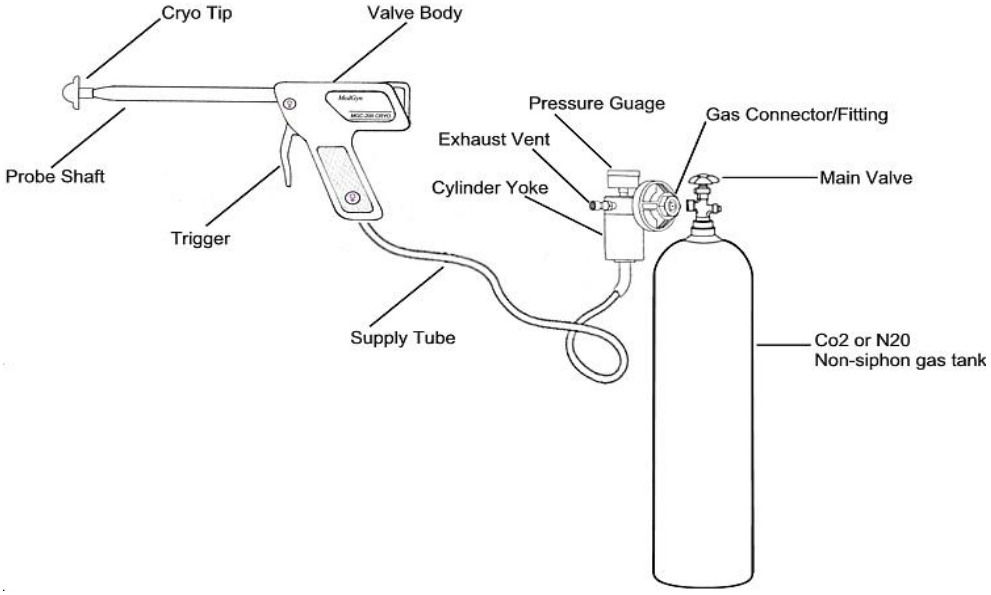


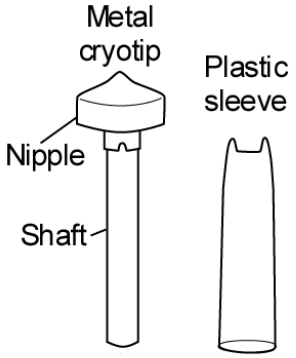
Figure 7-2 cryotherapy system

Eithercompressedliquidcarbon dioxide ornitrousoxidegasisusedasthecoolantstofreezeanddestroythe cells of the cervix.Carbon dioxide is a common, inexpensive and safe gas costing about 50% less than nitrous oxide. It should be used "bonedry"or"medical grade"becausecontaminantsaffectthefreezabilityofthecryosurgicalequipment. Nitrous oxide hasalowerfreezingtemperature(average-89^{0}C[-128.2^{0}F] versus-68^{0}C [-90.4^{0}F]for carbon dioxide)and,therefore,takessomewhatlesstimefortreatment.Theminimumworkingpressureshownont hegaugeshouldbe40–70kgpersquarecentimeter(kg/cm2). The minimumtemperatureattheprobetipforeffectivefreezingshouldbeat least-60EC(-76^{0}F).

It is recommended that each site providing cryotherapy services have at least two 25 kg carbon dioxide gas tanks. And a rough estimate is 22-26 treatments per 25 kg tank, but this needs to be tracked to anticipate needs for the programme and service sites, as well as to provide ongoing cost-analysis.

Cryoguns are designed to be used with a variety of cryotips. An exocervicalcryotip,whichhasacircularend(about19mmindiameter) witha raised"nipple,"isrecommendedforusewhenprovidingcervical Preventtheshaftofthecryotipfromcontactingandfreezingvaginal tissue, are provided with some cryotherapy units.

Figure7-3.CryotipandProtectiveSleeve



Supplies:Thesuppliesneededto perform cryotherapyarethesameasthose needed for VIA (see page 52:

- Cotton swabs
- New examination gloves or high-level disinfected surgical gloves
- New wooden spatula
- Dilute (3–5%) acetic acid (white vinegar is acceptable)
- 0.5% chlorine solution for decontaminating instruments and gloves
- A record form

Cotton swabsareusedtowipethecervixandremovemucusor discharge before performing cryotherapy. These swabs should be generously covered with clean cotton so that they will not

scratch or injure the cervix. The cotton swabs do not have to be sterile.

Examinationglovesshouldbenew.Ifsurgicalglovesarebeingre-used, theyshouldbehigh-level disinfectedaftereachuse.Sterileglovesarenot necessary.) Use a new pair of gloves for every patient.

Awoodenspatulaisusedto protect the lateralwallsofthevaginafromthecryotip,particularly in patients whohaveverylaxvaginalwalls. Use a new wooden spatula for each patient.

Chlorinesolution(0.5%)isusedtodecontaminatethespeculum and surgical gloves after each use. After decontamination, the speculum, instrument trayorcontainerand surgical gloves should be washed thoroughlywithsoapandwater,thoroughly rinsed and then high-level disinfectedorsterilized. (See Appendix Cfordetailedinformationon how to prepare the chlorine solution.)

7. 5 Cryotherapy Procedure

General Procedure First,avaginalspeculumis inserted tolookat the cervix. Once the lesion has been identified, the healthcare provider places the tip of the cryoprobeagainstthecervix,coverstheentirelesion,andappliesgentle pressure. The "trigger" of the cryotherapy instrument is depressed and locked in place, allowing the coolant gas to flow to the tip. The healthcareproviderfreezesthecervicallesionwithapplyingthecoolant continuously for 3 minutes, allows the lesion to thaw for 5 minutes and then applies the coolant for another 3 minutes. For maximumeffectiveness,theiceballforming on the cervixshouldbeatleast4mm thick and extend outside the lesion by 3–5 mm.

CryotherapySystem—includingpreparing for use,performing the freeze-clear-freezetechniqueandpost-procedureprocessing.

Appendix Eprovidesguidancefortroubleshooting problems commonly encountered when using the LL100 Cryotherapy System.

Step-by-StepInstructions:Client Assessment and Getting Ready

Step1:Priortoperformingcryotherapy,discusstheprocedurewiththepatient.Explainwhythetreatment is necessary, what the alternatives to cryotherapy treatment are and why abstinence (oruseofcondoms)isimportantfollowingtheprocedure.Tellheraboutthesteps of the procedure,thesoundemittedbytheequipment,anydiscomfortshemayfeelandthesideeffectssh ewillencounter after the procedure.

Step 2:Makesurethatallnecessaryinstrumentsandsuppliesare available.

Step 3: Insertahigh leveldisinfected or sterile cryotipintotheclearplasticprotectivesleeve if it have a sleeve.Alignthesmallplastictabsonthesleevewith theslotsbeneaththenippleofthecryotipandfirmlysecurethemin position.

Step 4:Remove the protective cover fromthe end of the probe(if any).

Step5: Beforebringingthe patient intotheexamination/procedure area,besureshehasemptiedher bladder if it has been more than 30 minutes since the VIAtest. Ask her to undress only from thewaist down.Followingthis,helpherontothe examining table and drape her for the procedure.

Step 6: Washhandsthoroughlywithsoapandwateranddrywithaclean,dryclothorairdry.Then, put apair of surgical glove.

Step 7: Arrangethe instruments and supplieson a high-level disinfected tray or container, if not already done.

Step 8: Check pressure on pressure gauge:

- Green: approximately 40–74 kg/cm2. Appropriate pressure to operate
- Yellow: below 40 kg/cm2. Replace gas cylinder (see below)

- Red: above 74 kg/cm2. Unsafe to operate (see below)

Confirm pressure in "green zone" before starting the procedure

Cryotherapy Procedure

Step 1: Tellthewoman that thespeculumisabouttobeinsertedand that she may feel some pressure.

Step 2: Gentlyinsertthespeculumfullyoruntilresistanceisfeltand slowly open the blades to see the cervix. Adjust the speculum so that the entire cervix can be seen. This may be difficult in caseswherethecervixislarge, parouspatulousorextremelyanteriororposterior.Itmaybenecessarytouseacleancottonswab,spatulaorf orcepstogently push the cervix down or up into view.

Step 3.Whenthecervixcanbe seen in its entirely,fixthebladesofthe speculum intheopenpositionsthatitwillremaininplacewiththecervixinview.Thisenables the provider to have at least one hand free.

Step 4. Move the light source so that you can see the cervix clearly.

Step 5. Useacottonswabtoremoveanydischarge,bloodormucus from thecervix.Identifythecervicalos,theSCJandthesiteandsizeofthelesion.Ifnecessary,applyacetic acidsothatthe lesion can be seen. Dispose of the swab by placing in a leakproof container or plastic bag.

Step 6. Pointtheprobeattheceiling.Pressthefreezetriggerfor1 secondandthenthe defrost triggerfor1secondtoblowgasout through the thin metal tube.

Note:Tellthepatientthatshewillhearthesoundofthecryotherapy unit.

Step 7.Screwthecryotipwithsleeveontothe end ofthe probe. Tighten itwithyourhandsonly.Donotuseanytoolstotighten the cryotip onto the probe.

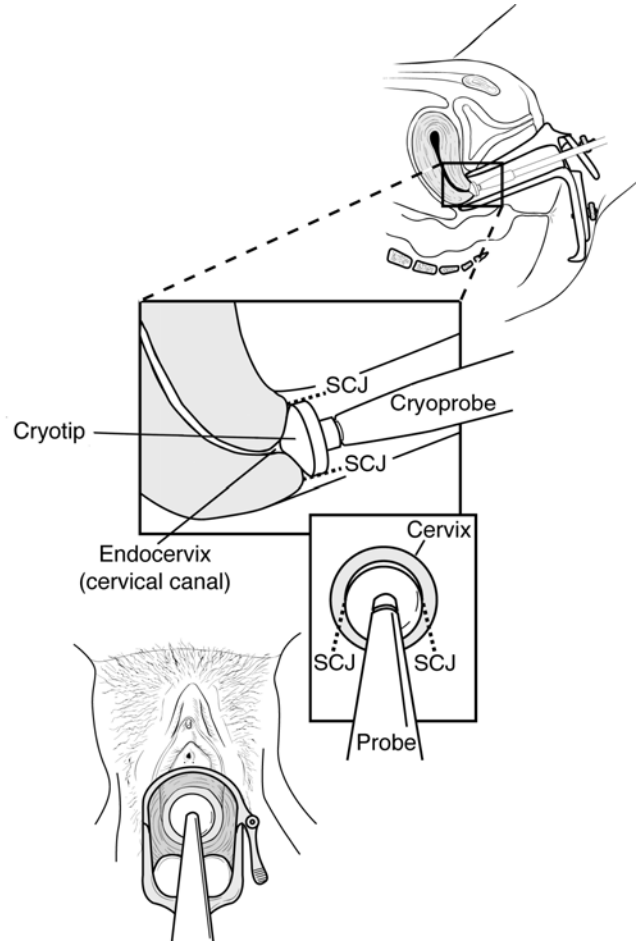
Note:Ifthecryotipwillnotattachtotheprobecorrectly,checkthat the sleeve tabs are properly inserted into the slots on the cryotip.

Step.8

Applythecryotiptothecervix,ensuringthatthenippleiscenteredandplacedsquarelyontotheos(Figure7-5).Itisnotnecessarytograspthecervix with a tenaculumorforceps.Be sure that the lateral vaginal walls are not in contact with the cryotip.Remindthewomanthattheunitwillmakenoiseduring the procedure.

Note:Itmaybenecessarytouseawooden spatula to push away any tissueprotrudingfrombetweenthebladesofthespeculum. Alternatively,beforeinsertingthespeculum,acondomcanberolledoverthebladesandthe tipof thecondomcutoff.Whenthespeculumisinsertedandthebladesareopened,thecondomwillpreventthe walls of the vagina frompushing into the space between the blades.

Figure7-5.ApplyingtheCryotiptotheCervix



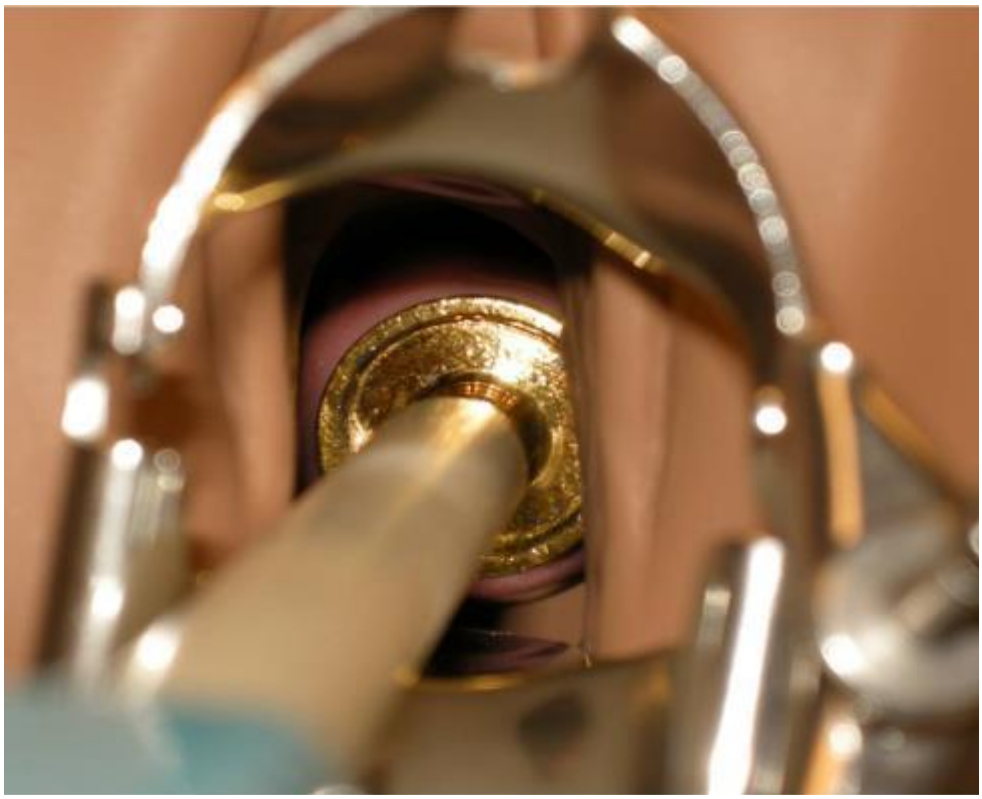
Step.9

Holdthecryogunperpendiculartotheplaneofthecervix.Pressthefreezetriggertostartthefreezingprocess. Setthetimerfor 3 minutes. Be sure to apply pressure to the cervix as the gas beginstoflowtothe cryoprbe.Watchasthe iceballdevelops at and around the cryotip.

Photograph courtesy of Paul Blumental

Step 10.Usethe double-freeze technique/’3-5-3’ minute/.

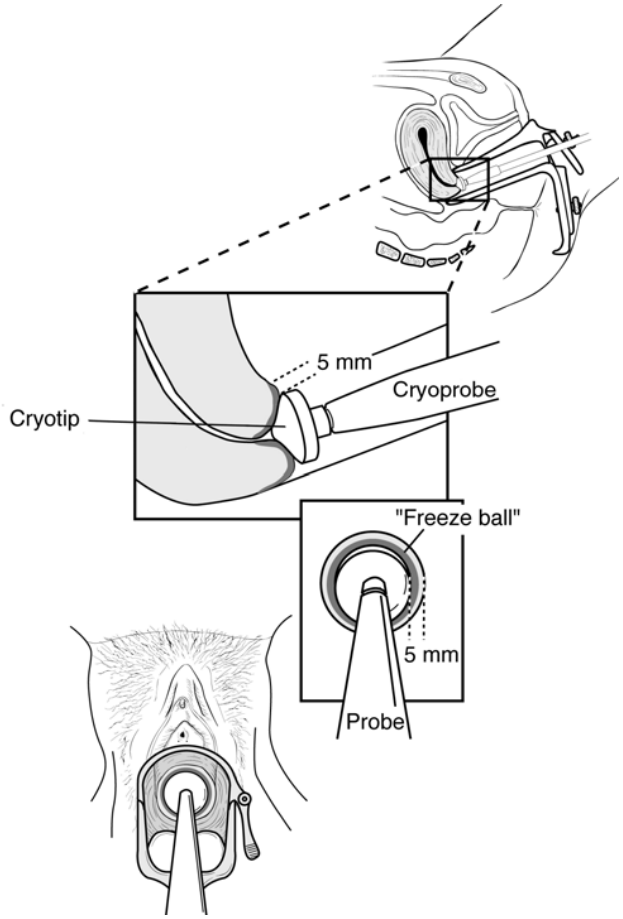
Photograph courtesy of Paul Blumental



Photograph courtesy of Paul Blumental

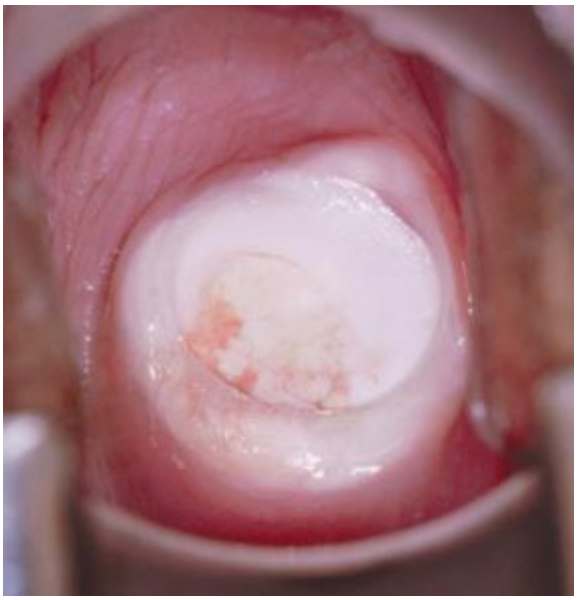
Step. 11
After3minutesoffreezing,thecryotipwillbeattachedtothecervixbytheiceball.Donotpullthecryotipoff. Defrost and waitforittodetachitselffromthecervix.(Thisusuallytakes less than 30 seconds.)
Step 12 Wait5minutesandrepeatthefreezingprocedurefor 3 minutes and defrost.

Figure7-6.FreezingProcesswithCryotherapyUnit



Note:Duringthecryotherapyprocedure,thecylinderwillbecomecold, andmoisturemayformontheoutsideofthecylinderandhose.Inaddition,thepressuregaugewillshowadropinpressure.Allofthese changes are normal. If the pressure gauge, however, shows that the pressureisbelow50kg/cm^2, stopperformingcryotherapy.Waituntilthecylinderreturnstoroomtemperatureandthegaspressurerises above50kg/cm^2.Also,whitegrains of ice maycomeoutoftheexhaustport.Thisisnormalandwillnotinterferewiththe operation of the cryotherapy unit.

Step.13 Attheendoftheprocedure inspects thecervixcarefullytoinsurethatahard,white,completelyfrozen"iceball"ispresent. If not,repeatsteps9–11atleastonceputtingmorepressureon the cervix. Ensure that adequate pressure is displayed on the gauge attached to the cryotherapy unit. If pressure is inadequate, arrange for gas resupply and reschedule the procedure.



Photograph courtesy of Paul Blumental

Step 14 After the procedure, close the master cylinder valve.
Step 15 Inspectthecervixforanybleeding.Ifthereisbleeding,apply pressure to the area using a clean cotton swab. Dispose of swab(s).

Step 16 Removethespeculumandplaceina0.5%chlorinesolution for 10 minutes for decontamination.

Postcryotherapy Tasks
Step 1.Wipethelightsourcewith0.5%chlorinesolutionoralcoholto avoid cross-contamination

between patients.

Step 2.Immersebothglovedhandsin0.5%chlorinesolution.Removegloves byturninginsideout.Disposing of gloves, place in leakproofcontainerorplasticbag.

Step 3 Washhandsthoroughlywithsoapandwateranddrywithclean, dry cloth or air dry.

Step 4 Checkthatthewomanisnothavingexcessivecrampingbefore she sits up, gets off the examining table and gets dressed. If severecrampingpersists,giveherananalgesic.

Step 5 Advisethewomanregardingpost-treatmentcare,warningsignsand followup schedule.

Step 6 Recordherresultsofthetreatmentandwhenthepatientis scheduled to return for followup in the patient's record.

Step 7 Observethewomanforatleast15minutes.Askherhowshe feels before sending her home.

Step 8 Follow theinstructions as in chapter 5 for processing the cryotherapy unit after use

7.6 Routine Follow up

Patient Instructions:Most womenwill not experience problems following cryotherapy. Advisethewomantoexpectmildcrampingandaclear(orlightly blood-stained)waterydischargethat usuallylastsforupto6weeks.Ifit becomes foul-smelling or pus-colored, or if she has pain, she should return to the clinic immediately to check for possible infection.

Advise the woman that she should not douche, use vaginal tampons or havesexualintercoursefor 4weeksoruntilthedischargeiscompletely gone.

Note:Ifthewomanwillnotbeabletoabstainfromsexualintercourse, tellhertousecondomswitheveryact of intercourse. Provide her with Condoms.

Adviseherregardingthe follow upscheduleandwarningsigns as follows.

WarningSigns

Ifyouhaveanyofthefollowingyoushouldreturntothisorthenearesthealth facility:

- Feverformorethan2days
- Severelowerabdominalpain,
- Bleedingheavierthanyourheaviestdaysofmenstrualbleedingformorethan2 days
- Bleedingwithclots
- Vaginal discharge with foul smell

Scheduleafollowupappointmentfor1yearaftertheprocedure,andgivethe woman the name of the service center or clinic to which she should return.Writteninformationon this shouldbeprovided.Finally, the woman should be given a last opportunity to ask any questions she might have.

Followupthewomanshouldreturnforarepeat VIA testing in 1 year. At this visit, afterobtainingahistoryofanyproblems, the VIA test should be done and any abnormalities noted. Because the SCJ may not be visible, the cervixshouldbecarefullychecked to assess how it has healed and whetheranylesionpersists. Criteriaforretreatmentorreferralatthisvisit are listed in Table 7-8

Table7-8. TreatmentStatusandRecommendedAction in the follow up visit

VIA CLASSIFICATION	**DESCRIPTION**	**RECOMMENDED ACTION**
VIA Test-Negative	• SCJ visible • No aceto-white lesion	• Repeat VIA test in 5 years
Persistent	• VIA test-positive,but lesion(s) less than 75% of surface area of cervix	• Treat again with cryotherapy or LEEP with consent to the client if available in the facility
Progressed	• VIA test-positive with larger lesion(s)than when treated or now covering more than 75% of the surface area	• Refer to center or nearest facility offering other diagnostic and treatment options like LEEP, Conization, colposcopy etc
Other Referral	• Persistent lesions that qualify for retreatment with cryotherapy, but patient requests referral for a different method of treatment	• Counsel again about advantages and disadvantages of all treatment methods ;refer to nearest facility where treatment of choice is

ALTERNATIVE TREATMENTS

Loop Electrosurgical Excision Procedure (LEEP)

It is a technique that uses electrical current passed through a thin wire loop to remove abnormal tissue. Unlike cryotherapy, LEEP requires local anesthesia and electricity. Compared to cryotherapy, LEEP has a slightly higher rate of complications and side effects (e.g., post-procedure bleeding and pain during procedure). Unlike cryotherapy, LEEP enables tissue sampling for diagnosis. For further information refer standard text books on LEEP

LEEP is indicated:

- For precancerous lesions that are not eligible for cryotherapy, but should not be performed when severe cervicitis is present, the client is pregnant or the client is less than 12 weeks postpartum.
- LEEP may be used in cases suspicious for cancer, but only as a diagnostic tool, not as a means of treatment.
- LEEP is performed only with those who have demonstrated clinical competence in the procedure.

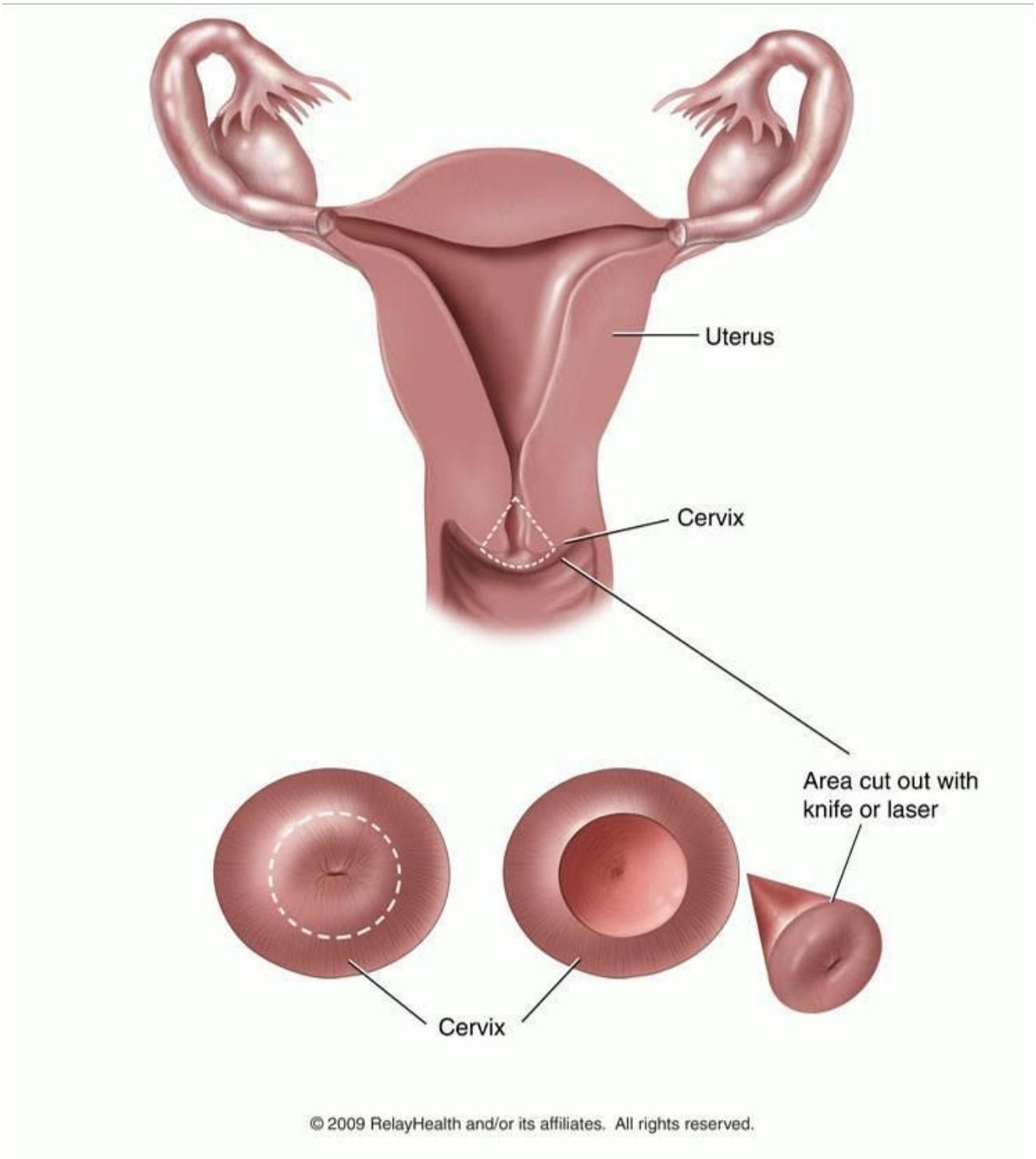
- LEEP requires anaesthesia and is to be performed only in settings that can handle potential urgent complications related to the procedure (e.g., heavy bleeding).
- The tissue excised during LEEP should be sent for histologic examination.
- Follow-up screening with VIA in one year

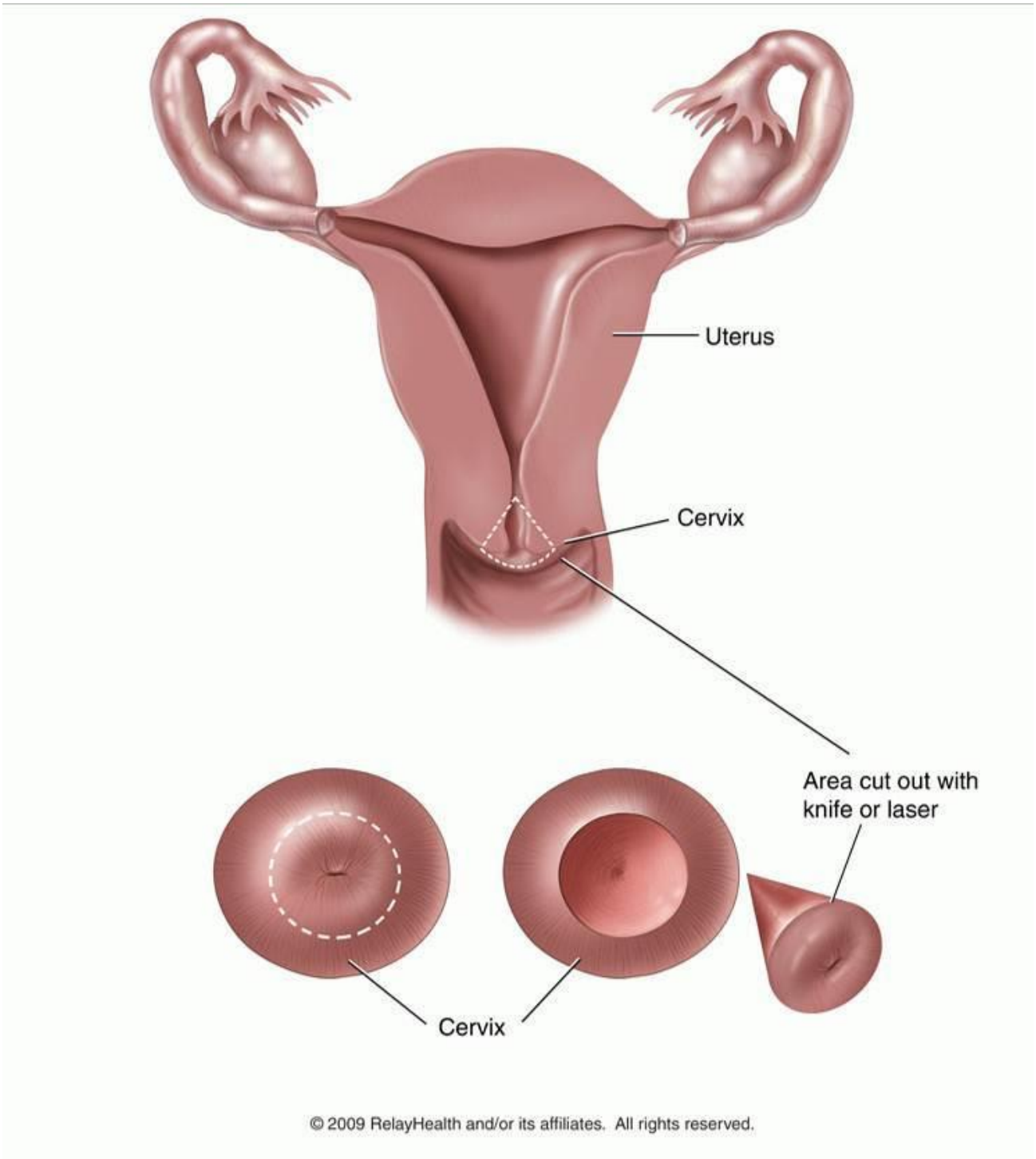
Conization (Cone Biopsy)

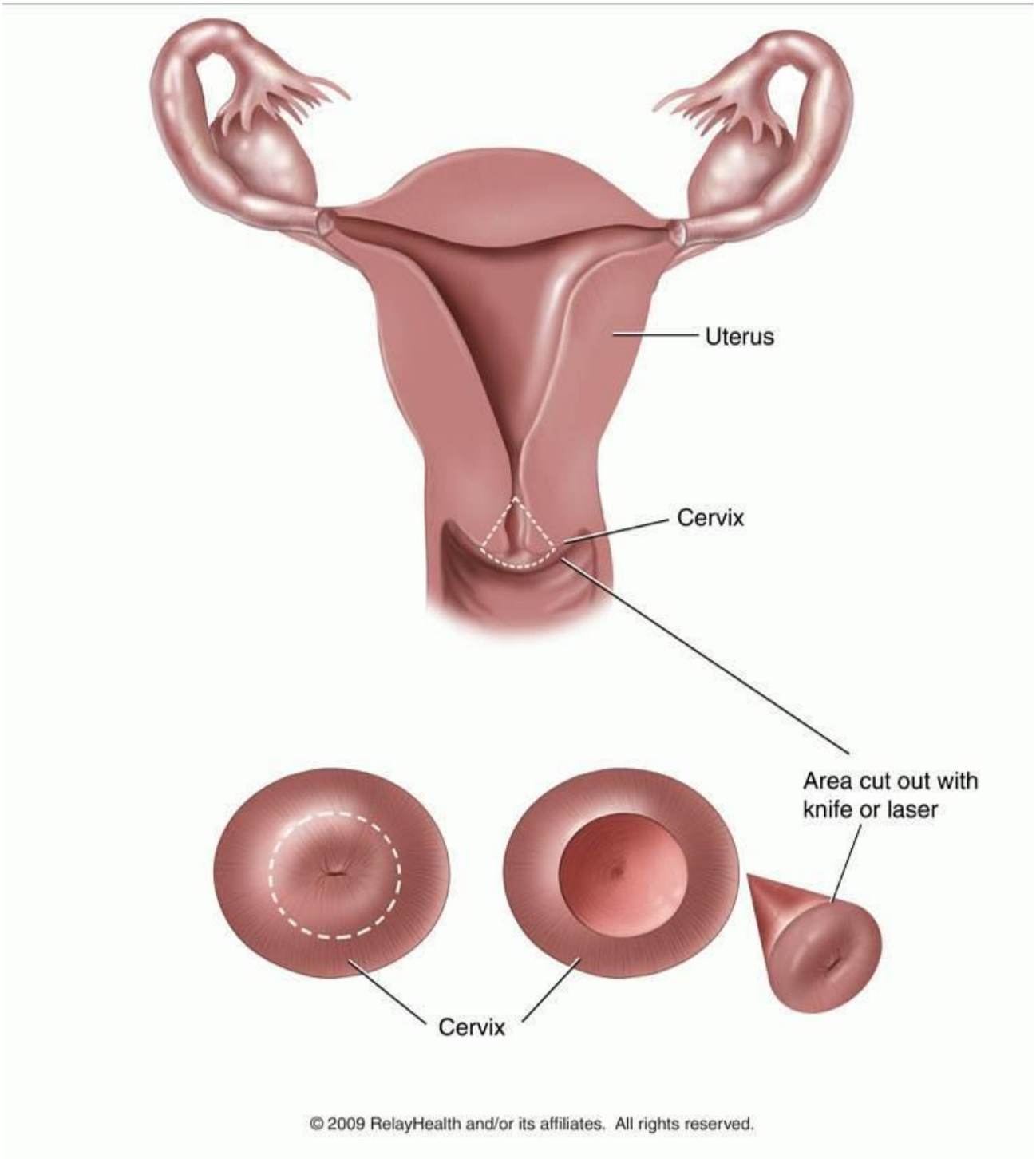
Conization is the removal of a cone-shaped area from the cervix, including portions of the outer cervix (ectocervix) and inner cervix (endocervix). Excision can be performed with a scalpel (cold-knife conization), laser, or electrosurgical loop. Cold-knife conization (also called "cone biopsy") involves removing a large area of the cervix with a scalpel, and is usually done in the operating room under general or regional (spinal or epidural) anesthesia. It provides clean specimen margins for looking at under a microscope, but it is typically associated with more bleeding than laser or LEEP. Conization is recommended for the treatment of lesions that cannot be treated with cryotherapy (large or unknown extent of lesion) and unclear type of cervical abnormality to rule out invasive cervical cancer as it allows taking tissue for biopsy to confirm the diagnosis. The woman may be discharged from the hospital the same or the next day. Complications include bleeding, infection, stenosis, and cervical incompetence with possible decreased fertility.

Hysterectomy

This is the surgical removal of the entire uterus, including the cervix. Hysterectomy is not usually indicated for treatment of high-grade precancerous lesions and carcinoma in situ, which can be treated with simpler outpatient methods. For lesions that cannot be treated with cryotherapy or LEEP, inpatient methods such as cold knife conization are appropriate, but hysterectomy may be used when there are no alternative treatments. It is a highly invasive procedure with risk of complications such as infection, hemorrhage, and injury to adjacent organs.







Chapter 8

Performance Evaluation

Duration: 105 minutes

Chapter Objective:

By the end of this chapter, participants will be able to identify tools and formats that are important for monitoring and evaluation of cervical cancer prevention activities

Learning objectives

1. Practice on cervical cancer prevention service client intake form and client register (log book)

2. Demonstrate Monthly/Quarterly summary reporting format

Chapter activities:

i. Familiarize participants with client register
ii. Introduce participants with Monthly/Quarterly summary reporting format
iii. Ensure the different tools in the previous chapters are well addressed these include client consent form, appointment card,

8.1: Background

Routine monitoring of cervical cancer prevention and treatment activities is important for planning and track progress. Data recording and reporting helps to analyze data which gives information on human resource, supply and equipment requirement of the facility. Facility-level data recording should be used to monitor and evaluate the specific services provided at the facility. A facility-level system relies largely on registers to collect and aggregate data collection should be done at the service delivery point on a daily basis by trained VIA/cryotherapy providers. Information gathered from the registers will be used to calculate monthly statistics based on the indicators. The health facility in-charge using the trained service providers will be responsible for compiling data on a monthly basis. The data compiled and reported to the woreda then to Region and to Federal Ministry of health will help for further analysis that will be used in planning, monitoring and evaluation at different level.

What is Monitoring? Monitoring is the [routine] collection and analysis of measurements of the key elements of programme or project performance over time to examine progress.

–Tracks priority information relevant to program planning, intended outputs, outcomes and impacts

–Tracks costs & program functioning

–Provides basis for program evaluation when linked to a specific program.

(this part is optional, it can omitted) What is Evaluation? –Is a rigorous, scientifically based collection of information about program activities, characteristics, and outcomes to determine the merit /worth of a specific program

–Is used to improve programs and inform decisions about future resource allocations.

8.2 Key Monitoring Indicators

The National Cervical Cancer Prevention Program will track key program indicators. The following two key indicators are already incorporated with the HMIS Unit's annually reported national health indicators.

These are:

- **Total number and % (of target population) of clients screened with VIA**
- **Total number and % of women screened for VIA (Normal, precancerous and suspicious**

8.3: Annex: Cervical cancer prevention service client Intake form

Figure 6.1 Sample cervical cancer prevention service client record form

CLIENT IDENTIFICATION: MRN: _____ VIA register No. : _____

Name of client: _____ Age: _____

Address: _____ Tele:_____

Date of visit_____Visit: ☐ First visit ☐Follow-up visit

Educational Status (enter last grade completed): _____ ☐Check box if unable to read and write

8.4: Annex: Client Register

Identification	

			Family Planning and contraceptive services																
Personal information			Registration			Counseling and testing			VIA screening				Fill app		Clinical exam and contraceptive services provided				
Serial No.	MRN	Sex (M/F)	Reg. date (DD/MM/YY)	New acceptor at registration (√)	Repeat acceptor at registration (√)	HIV Test offered (√)	HIV Test performed (√)	HIV Test Result (R *or* NR *or* I)	HIV specific counseling / methods offered (√)	VIA screening for women age 30-49 (√)	VIA Test Result (Normal, PC, or Suspicious for Ca)	Cryotherapy treatment given / FT status checked (√)	Contraindication for hormonal method (√)	Contraindication for IUD (√)	Permanent method selected (TL *or* V)	Visit No.	Visit date (DD/MM/YY)	Contraceptive provided	Remark/Appointment
1)	(2	(3	(4	5)	6)	7)	8)	9)	10)	11	12	13)	14)	15)	16)	17)	18)	19)	20)
																1			
																2			
																3			
																4			
																5			
																1			
																1			
																5			
																1			

8.5: Annex: Quarterly/monthly: Summary Report of Service Provision

Region name	
Facility name	
Reporting month/ Quarter/: From _____to _____Year_____	

❑ New client

VIA testing, treatment, and referral for women in care

Months	Number counseled on CCP	Number tested with VIA	Number with no cervical lesion on VIA	Number with identified cervical abnormalities on VIA testing			Number of women who received treatment			Number referred for other treatment	
				eligible for cryo	not eligible for cryo	Suspicious for cervical cancer	Treated with cryo	Treated with LEEP	Received other treatment	not eligible for cryo	Suspicious for cervical cancer
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total of the quarter											

❑ Clients for one year post-treatment follow-up

Months	Number counseled on CCP	Number re-tested with VIA	Number with no cervical lesion on VIA	Number with identified cervical abnormalities on VIA testing			Number of women received treatment			Number referred for other treatment	
				eligible for cryo	not eligible for cryo	Suspicious for cervical cancer	Treated with cryo	Treated with LEEP	Received other treatment	not eligible for cryo	Suspicious for cervical cancer
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total of the quarter											

8.6: Annex: Cervical Cancer Prevention Services Appointment Card

FRONT OF THE CARD:

Medical Record Number: _____

VIA Serial Number: _____

Name: _____ Age: _____

Address: _____

Hospital Name: _____ Region: _____ City/Town: _____

Date of first visit: _____

Date of Appointment	**Signature of provider (if seen on the appointed date)**

Note:

- Don't forget to bring the appointment card with you when you visit the facility for your follow up visit.
- It is important for your health that you keep your appointment.

BACK OF THE CARD:

HOW A WOMAN CAN DECREASE HER RISK OF GETTING CERVICAL CANCER

- Get screened for cervical cancer regularly.
- Delay your first sexual intercourse.
- Limit your number of sexual partners.
- Use a condom every time you have intercourse.
- Avoid smoking.
- Get an HPV vaccination, if available and applicable.

8.7: Annex: Consent Form

□ሆስ□ታሉ ስም .....

ቦታ.....

□መህፀን በር የቅድመ ካንሰር ህክምና ማካሄጃ የፈቃደኝነት መግለጫ ስምምነት

እኔ በ..... ሆስ□ታል ውስጥ በፈቃደኝነት □መህፀን በር የቅድመ ካንሰር ምርመራን (VIA) **ያደረግሁ ሲሆን ምርመራውን ያደረገልኝ የጤና ባለሙያ የምርመራው ውጤት የቅድመ ካንሰር ምልክት ማሳየቱን ገልፆልኛል። ውጤቱንም አስመልክቶ በጤና ባለሙያው ተገቢውን የምክር አገልግሎት እና ለዚህ ተገቢ የሆነ ክራዮቴራፒ** (Cryotherapy) **የሚባል ህክምና በሆስፒታሉእንደሚገኝ ተገልፆልኛል።**

ህክምናውን አስመልክቶ በሚገባኝ ቋንቋ በበቂ ሁናቴ የተገለፀልኝ ሲሆን ስለህክምናው ያልገባኝን ና ተጨማሪ ማወቅ ስለምፈልገው ማለትም ስለ ተለዋጭ ጎህክምናዎች፤የህክምናውን አፈፃፀም እና የህክምናውን ውጤት አስመልክቶ እንድጠይቅ እድል ተሰጥቶኛል። ለጥያቄዎቼም በቂ መልስ ተሰጥቶኛል። ህክምናውም በፈቃድ ላይ የተመረኮዘና ህክምናውን ያለመቀበል መብት እንዳለኝ እንዲሁም ባልቀበለው ከማንኛ□ም ተ□እኖ ነፃ መሆኔ ተገልጦልኛል።

በመሆኑም በባለሙያ የተሰጠኝን ምክርና አስፈላጊውን መረጃ በመገንዘብ ያለማንም ተፅዕኖ በራሴ ፈቃድ ህክምናውን ለማድረግ መስማማቴን በፊርማዬ እ□ል□ለሁ።

□ታካሚ ስም ..... የጤና ባለሙያው ስም .....

□ርማ ..... **□ርማ .....**

k” ..... k” .....

8.8: Annex: Take home message

1. ለአጭር ግዜ የሚቆይ መለስተኛ የሆድ ቁርጠት የሚጠበቅ ሲሆን ሕመሙ ብሶ ከተገኘ ማንኛ

የማህፀን በር የቅድመ ካንሰር ህክምና (Cryotherapy) ካረፉ በኋላ ሊገነዘቧቸው የሚገቡ መልእክቶች፡-

ውም አይነት የሚዋጥ የሕመም ማስታገሻ መውሰድ፡፡

2. ከ2-4 ሳምንት የሚቆይ የማኅፀን ፈሳሽ ሲኖር፤ መልኩ ቀላ ከማለት ወደ ነጭ እየተቀየረ ይሄዳል፡፡ ይህ የማህፀን ፈሳሽ ሽታ ካመጣ ወይም መልኩ ወደ ቢጫነት ከተቀየረወደ ህክምና ተቋም በመምጣት ይታከሙ፡፡
3. ከ1-2 ሳምንት የሚቆይ አልፎ አልፎ የሚታይ አነስተኛ ደም ከማህፀን ሊታይ ይችላል፡፡ ሆኖም መጠኑ አየባሰ ከሄደ ወይም በወር አበባ ጊዜ ከሚታየው ደም መጠን በላይ ከሆነ ወደ ህክምና ተቋም በመምጣት ይታከሙ፡፡
4. ከህክምናው በኋላ ለ 4 ሳምንታት ያህል ከ ግብረ ስጋ ግንኙነት መቆጠብ በእጅጉ ይመከራል፡፡ ይህን ማድረግ ካልተቻለ ኮንዶምን በመጠቀም የማህፀን ኢንፌክሽንን ይከላከሉ፡፡
5. ብልቶት አካባቢ ሲታጠቡ ወደውስጥ ዘልቀው እንዳይታጠቡ ይመከራል
6. የቀጠሮ ጊዜዎን በአግባቡ ያስታውሱ፡፡

ሀ. ሁለት ቀንና ከዛ ያለፈ ትኩሳት፡፡

የሚከተሉትን የአደጋ ጊዜ ምልክቶች ሲያዩ በማንኛውም ጊዜ የቀጠሮ ሰአት ሳይጠብቁ ወደ ጤና ተቋም በመምጣት ይታከሙ፡፡

ለ. ከባድ የሆነ የሆድ ቁርጠት በተለይም ትኩሳት አብሮት ካለ፡፡

ሐ. ከሁለት ቀን ያለፈ ደም መፍሰስ ይሄውም በወር አበባ ጊዜ ከሚታየው ከፍተኛ ደም መፍሰስ የበለጠ ሲሆን

መ. የረጋ ደም የተቀላቀለበት ፈሳሽ ሲኖር

ሠ. ሽታ ያለው ፈሳሽ ሲኖር

8.9: Annex: Post-Cryotherapy Information Sheet

After receiving cryotherapy for treatment of cervical lesions, you need to know the following:

1. You may have short-lasting, mild, lower-level abdominal cramping. If you have mild pain, you can take any anti-pain medicine.
2. You will have watery vaginal discharge that lasts 4–6 weeks. The color of the discharge will change from pale red to white over time. If the discharge has an unpleasant small and the color changes to yellow, you need to visit the health facility and get treatment.
3. You may have spotting (light bleeding) that lasts 1–2 weeks. If the bleeding is heavier than on your heaviest days of menstrual bleeding, you need to visit the health facility and get treatment.
4. You are strongly advised to avoid sexual intercourse for about 1 month until the wound heals. If this is not possible, please use a condom regularly to prevent infection.
5. Please remember your follow-up appointment date carefully.

If you have any of the following warning signs, you should return to the health facility immediately. Do <u>not</u> wait for your appointment date.

Return to the facility immediately if you have:

1. Fever for 2 days or more.
2. Severe lower abdominal pain, especially if accompanied by fever.
3. Bleeding for more than 2 days that is heavier than your heaviest days of menstrual bleeding.
4. Bleeding with clots.
5. Vaginal discharge with a foul or unpleasant smell

References

1. Anderson Met al. (eds). 1997. *A Textand Atlas of IntegratedColposcopy.* Mosby: St. Louis, Missouri. 10–11.
2. GengIetal.1999.Atypicalimmaturemetaplasia(AIM)ofthecervix:Is it related to high-grade squamous intraepithelial neoplasia (HSIL)? *Human Pathology* 30(3): 345–351.
3. JHPIEGO.1999.*AtlasofVisualInspectionoftheCervixwithAceticAcid(VIA)*. JHPIEGO: Baltimore, Maryland.
4. Rubin MM. 1999. Cytologic concerns in adolescents: entering the transformation zone. *ADVA* Berek and Novak's Textbook of Gynecology, 14th edition, 2007.
5. Infection Control Course. North Carolina Department of Health and Human Services November, 2011
6. Cervical Cancer Prevention Guidelines for Low-Resource Settings. Jhpiego, 2005
7. Infection prevention guidelines for healthcare facilities with limited resources. Linda Tietjen; DéboraBossemeyer; Noel McIntosh. JHPIEGO; 2003
8. Infection Prevention and Patient Safety Resource Package – Participant's Manual. FMOH April 2012
9. Single-Visit approach to cervical cancer prevention; Clinicalstandards of practice andcounselingguide. Pathfinder International May, 2012
10. Single-Visit approach to cervical cancer prevention; Counseling Cue cards. Pathfinder International, 2013
11. WHO (2010) Health care-associated infections more common in developing countries. *accessed from http://www.who.int/mediacentre/news/notes/2010/infections_20101210/en/index.html*
12. WHO (2009) WHO Guidelines on Hand Hygiene in Health Care. First Global Patient Safety Challenge Clean Care is Safer Care
13. WHO. (2006). Comprehensive Cervical Cancer Control. A guide to essential practice.
14. Infectious waste management for the Ethiopian health center team. Jimma University, In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education; 2005
15. Infection Control Course. North Carolina Department of Health and Human Services November, 2011
16. Infection prevention guidelines for healthcare facilities with limited resources. Linda Tietjen; DéboraBossemeyer; Noel McIntosh. JHPIEGO; 2003
17. Infection Prevention and Patient Safety Resource Package – Participant's Manual. FMOH April 2012
18. WHO (2010) Health care-associated infections more common in developing countries. *accessed from http://www.who.int/mediacentre/news/notes/2010/infections_20101210/en/index.html*

19. WHO (2009) WHO Guidelines on Hand Hygiene in Health Care. First Global Patient Safety Challenge Clean Care is Safer Care
20. WHO. (2006). Comprehensive Cervical Cancer Control. A guide to essential practice.
21. Loop Electrosurgical Excision Procedure(LEEP);Clinical Standard of Practice.Pathfinder International October, 2013
22. Infectious waste management for the Ethiopian health center team. Jimma University, In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education; 2005
23. Anderson Met al. (eds). 1997. *A Text and Atlas of Integrated*
24. *Colposcopy*. Mosby: St. Louis, Missouri. 10–11.

25. GengIetal.1999.Atypicalimmaturemetaplasia(AIM)ofthecervix:Is it related to high-grade squamous intraepithelial neoplasia (HSIL)? *Human Pathology* 30(3): 345–351.

26. JHPIEGO.1999.*AtlasofVisualInspectionoftheCervixwithAceticAcid a (VIA)*. JHPIEGO: Baltimore, Maryland.

27. Rubin MM. 1999. Cytologic concerns in adolescents: entering the transformation zone. *ADVA*
28. Berek and Novak's Textbook of Gynecology, 14th edition

29. BlumenthalP.2002.Immunizationagainstcervicalcancer:Who?When? Where?*MedscapeGeneralMedicine* 4(4).Availableat http://www.medscape.com/viewarticle/444979.

30. Cason J, P Rice and JM Best. 1998. Transmission of cervical cancer-associatedhumanpapillomavirusesfrommothertochild.*Intervirology a* 41(4–5): 213–218.

31. Groopman J. 1999. Contagion. *The New Yorker* 75(26): 44–49.

32. JudsonFN.1992.Interactionsbetweenhumanpapillomavirusandhuman immunodeficiencyvirusinfections.*IARCScientificPublications*119:199–207.

33. KoutskyLAetal.2002.Acontrolledtrial of a human Papillomavirus type 16 vaccine. *New England Journal of Medicine*347: 1645–1651.

34. MagnussonP,PSparenandUGyllensten.1999.Geneticlinktocervical tumors. *Nature* 400: 29–30.

35. MassimiPandLBanks.1997.Repressionofp53transcriptionalactivity by the HPV E7 proteins. *Virology* 227(1): 255–259.

36. McDonald C. 1999. Cancer statistics, 1999: Challenges in minority populations. *CA—A Cancer Journal for Clinicians* 49(1): 6–7.

37. Moscicki AB et al. 1999. Risk factors for abnormal anal cytology in youngheterosexualwomen. *CancerEpidemiology,Biomarkers& Prevention* 8(2): 173–178.

38. Palank C. 1998. An introduction to colposcopy concepts, controversies and guidelines. *ADVANCE for Nurse Practitioners* 6(10): 45–50, 91.

39. RodenRB,MLingandTCWu.2004.Vaccination to prevent and treat cervical cancer. *Human Pathology* 35(8): 971–982.

40. RodenRB,DRLowyandJTSchiller.1997.Papillomavirusisresistant to desiccation. *Journal of Infectious Diseases* 176(4): 1076–1079.

41. Schreckenberger C and AM Kaufman. 2004. Vaccination strategies for thetreatmentandpreventionofcervicalcancer. *Current Opinion in Oncology* 16: 485–491.

42. StentellaPetal.1998.HPVandintraepithelial neoplasia recurrent lesionsofthelowertract:assessmentoftheimmunesystem.*European Journal of Gynaecological Oncology* 19(5): 466–469.

43. StewartACetal.1996.Intratypevariationin12humanpapillomavirus types:Aworldwideperspective.*JournalofVirology*70(5):3127–3136.

44. TeraiMetal.1999.Highprevalence of human papillomavirus in the normaloralcavityofadults.*OralMicrobiologyandImmunology*14(4):201–205.

45. Walboomers JMM et al. 1999. Human papillomavirus is a necessary causeofinvasivecervicalcancerworldwide.*JournalofPathology a* 189(1): 12–19.

46. WenLMetal.1999.Riskfactorsfortheacquisitionofgenitalwarts:Arecondoms protective?*Sexually Transmitted Infections* 75: 312–316.

47. WrightTCetal.2006.HPVvaccinesandscreeninginthepreventionof cervicalcancer;conclusionsfrom a2006workshopofinternational experts. *Vaccine* 24S3: S3/251–S3/261.

48. YlitaloNetal.1999.Smokingandoralcontraceptivesasriskfactorsfor cervicalintraepithelialneoplasia.*InternationalJournalofCancer*81(3):357–365.

49. Infection Control Course. North Carolina Department of Health and Human Services November, 2011
50. Infection prevention guidelines for healthcare facilities with limited resources. Linda Tietjen; DéboraBossemeyer; Noel McIntosh. JHPIEGO; 2003
51. Infection Prevention and Patient Safety Resource Package – Participant's Manual. FMOH April 2012
52. WHO (2010) Health care-associated infections more common in developing countries. accessed from http://www.who.int/mediacentre/news/notes/2010/infections_20101210/en/index.html
53. WHO (2009) WHO Guidelines on Hand Hygiene in Health Care. First Global Patient Safety Challenge Clean Care is Safer Care
54. WHO. (2006). Comprehensive Cervical Cancer Control. A guide to essential practice.
55. Infectious waste management for the Ethiopian health center team. Jimma University, In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education; 2005
56. AllianceforCervicalCancerPrevention(ACCP).2003. Effectiveness, Safety, and Acceptability of Cryotherapy: A Systematic Literature Review.CervicalCancerPrevention Issues in Depth #1. ACCP. http://www.path.org/files/RH_cryo_white_paper.pdf
57. AndersenESandMHusth.1992.Cryosurgeryforcervicalintraepithelial neoplasia: 10-year followup. Gynecological Oncology 45: 240–242.
58. Berget A, B Andreasson and JE Bock. 1991. Laser and cryosurgery for cervicalintraepithelialneoplasia. ActaObstetriciaetGynecologicaScandinavica 70: 231–235.
59. BigriggMAetal.1990.Colposcopicdiagnosisandtreatmentofcervical dysplasia in one visit.Lancet 336: 229–231.
60. BishopA,JSherrisandVDTsu(eds).1995.Cancer Dysplasia TreatmentinDevelopingCountries:ASituationAnalysis.PATH:Seattle, Washington.
61. BrysonSCP,PLenehanandGMLickrish.1985.Thetreatmentofgrade III cervical intraepithelial neoplasia with cryotherapy: An 11-year experience.AmericanJournalofObstetricsandGynecology151:201–
62. Draeby-KristiansenJetal.1991.Tenyearsaftercryosurgicaltreatment ofcervicalintraepithelialneoplasia.AmericanJournalofObstetricsand Gynecology 165(1): 43–45.

63. Gordon H and I Duncan. 1991. Effective destruction of cervical intraepithelialneoplasia(CIN)3at100degreesusingtheSemm cold coagulator: 14 years' experience. British Journal of Obstetrics & Gynecology 98: 14–20.
64. GunasekeraPC,JHPhippsandBVLewis.1990.Largeloopexcisionofthetransformationzone(LLETZ)comparedtocarbondioxidelaserinthetreatmentofCIN:Asuperiormodeoftreatment. British Journal of Obstetrics & Gynecology 97: 995–998.

65. HemmingsonE,UStendahlandSStenson.1981.Cryosurgicaltreatmentofcervicalintraepithel ialneoplasiawithfollowupoffivetoeightyears. American Journal of Obstetrics and Gynecology 139(2): 144–147.

66. KeijserKGGetal.1992.Diathermyloopexcisioninthemanagementof cervical intraepithelial neoplasia: Diagnosis and treatment in one procedure. 1992. American Journal of Obstetrics and Gynecology166(4):1281–1287.

67. LoobuyckHandIDuncan.1993.Destruction of CIN 1 and 2 with the Semm coldcoagulator:13years'experiencewiththesee-and-treat policy. British Journal of Obstetrics & Gynecology100: 465–468.

68. LuesleyDMetal.1993.Loopdiathermy excision of the cervical transformationzoneinpatientswithabnormalcervicalsmears. British Medical Journal 300: 1690–16

69. MaimanMetal.1999.Vaginal5-fluorouracil for high-grade cervical dysplasiainhumanimmunodeficiencyvirusinfection:arandomizedtrial. Obstetrics & Gynecology 94(6): 954–961.

70. MitchellMFetal.1998.Arandomizedclinicaltrialofcryotherapy,loopelectrosurgicalexcision fortreatmentofsquamousintraepitheliallesions of the cervix. Obstetrics & Gynecology 92: 737–744.

71. OlatunbosunOA,FEOkonofuaandSOAyangade. 1992. Outcome of cryosurgeryforcervicalintraepithelialneoplasiainadevelopingcountry. International Journal of Gynecology & Obstetrics 38: 305–310.

72. PrendivilleW,JCullimoreandSNormal.1989.Largeloopexcisionofthetransformationzone(LLETZ).Anew method of management for women with cervical intraepithelial neoplasia. British Journal of Obstetrics & Gynecology 96:1054–1060.

73. Schantz A and L Thormann. 1984. Cryosurgery for dysplasia for the uterineectocervix.ActaObstetriciaetGynecologicaScandinavica63:

74. WrightTC,RMRichartandAFerenczy.1992.ElectrosurgeryforHPV-RelatedDiseasesoftheLowerGenitalTract:APracticalHandbookfor Diagnosis and Treatment by Electroexcision and Fulguration Procedures.BioVisionInc.:Montreal, and Arthur Vision, Inc.: New York.

75. Wright VC and EM Davies. 1981. The conservative management of cervicalintraepithelialneoplasia:Theuseofcryosurgeryandthecarbon dioxidelaser.BritishJournalofObstetrics&Gynecology88:663–668

Annex XX: Formula for making diluted chlorine solution

If the available chlorine concentration is not as required, you need to dilute with water. Dilute Chlorine Solution (0.5% chlorine solution) can be prepared either from Concentrated Chlorine Solution or any chlorine powder.

To determine the total parts water needed for dilution, you can use the following formula. Finally, mix 1 part concentrated chlorine with the total parts water to be added).

Formula for Making a Dilute Chlorine Solution from Concentrated Solution

STEPS

- Determine concentration (% concentrate) of the chlorine solution you are using.
- Determine total parts water needed use formula below

$$\textbf{Total Parts (TP) water} = \left[\frac{\textbf{\% concentrate}}{\textbf{\% dilute}}\right] - 1$$

Mix 1 part bleach with the total parts water.

Example: Make a dilute solution (0.5%) from 5% concentrated solution.

1. Calculate TP water: $\left[\frac{5.0\%}{0.5\%}\right] - 1 = 10 - 1 = 9$
2. Add 1 part concentrated solution to 9 parts water.

Or if Chlorine is not available in solution; you can use the following formula to prepare a 0.5% chlorine solution from any chlorine powder.

Formula for Making a Dilute Chlorine Solution from Dry Powder

STEPS

- Determine concentration (% concentrate) of the powder you are using.
- Determine grams bleach needed use formula below

$$\text{grams/liter} = \left[\frac{\%\ \text{Dilute}}{\%\ \text{Concentrate}}\right] \times 1000$$

- Mix measured amount of bleach powder with 1 liter of water.

Example: Make a dilute chlorine solution (0.5%) from a dry powder (35%).

Calculate grams/liter: $\left[\frac{0.5\%}{35\%}\right] \times 1000 = 14.2\ \text{g/L}$

Add 14.2 grams (~14 g) to 1 liter of water.

Annex XX:Handling, Care, Transport, Storage, and Use of CO2 Gas Cylinder and Cryotherapy Machine

1.**Storage of CO_2 Gas Cylinders**

1.1 Gas cylinders shouldnotbestoredfor excessiveperiods oftime. Purchaseonlyenoughgas to meetshort-termneeds.

1.2 Rotatestocksof gascylindersto ensurethatthefirstinarethefirstused.

1.3 Storegas cylinderinadry,safeplaceona flat surface intheopen air.Ifthis isnotpossible, storeinan adequately ventilatedbuilding.

1.4 Protectgas cylindersfromexternalheatsourcesthatmayadverselyaffecttheirmechanical integrity.This is particularlyimportantinhotclimates.

1.5 Storegas cylindersatatemperatureof20–30°Celsius(68–86° Fahrenheit)andawayfrom sunlight.

1.6 Gas cylinders shouldbestored awayfromsourcesof ignitionand other flammable materials. Youcouldalsopostwarningnoticesprohibitingsmokingandunprotected electrical lightingdevices or open flames.

1.7 Ensurethevalvesonemptycylindersareclosedtoprevent contaminantsfromenteringthe cylinder.

1.8 Storegas cylinderssecurely whentheyarenotin use.Theyshouldbeproperlyrestrained,

unlesstheyaredesigned tobefreestanding.

1.9 Storecylinderswheretheyare not vulnerable tohazards causebyimpact(e.g., awayfrom vehicles andhumanmovement).

2. Transportof CO2GasCylinders

2.1 Avoid the need for manual handling of gas cylinders whenever possible (e.g., by using cylinder trolleys).

2.2 Do not use valves, shrouds, or caps for lifting cylinders

2.3 Gas cylinders should not be raised or lowered unless adequate precautions are taken to prevent them from falling.

2.4 Fit suitable protective valve caps and covers to cylinder, when necessary, before transporting. This helps prevent moisture and dirt from gathering in the valve of the cylinder, and provides protection during transport.

2.5 Securely stow gas cylinders to prevent them from moving or falling. This is normally in the vertical position.

2.6 Avoid transport them in vehicles where the load space is not separated from the driver's compartment.

2.7 Disconnectregulators andhosesfromcylindersbeforeliftingandtransport.

3. Handling,Care,andUseofCO_2GasCylinders

1.1 Gas cylinders should always be stored in the upright position.

1.2 Do not move cylinders unnecessarily and always keep them in a secure place by attaching them to a wall.

1.3 Do not shake the gas inside the cylinders. However, if this occurs, allow time to pass before using them again. Do not use for at least 4 hours if you think the gas is not in stable condition.

1.4 Do not use gas cylinders if they are hot to the touch; wait until they have cooled down.

1.5 Do not over tighten when attaching a regulator to a gas cylinder. If possible, tighten by hand only. Always check for leakage.

1.6 Always make sure the gas pressure of the regulator is within the green-shaded operating range (40–70 kg/cm^2).

1.7 Do not forget to close the gas valve after completing the cryotherapy procedure.

1.8 Remove the remaining gas from the cryotherapy system by deflating (this helps avoid the formulation of ice).

4. Handling,Care,andUseofCryotherapy Machine

1.1 Rings and washers need to be inspected every time the cylinder is changed and replaced. All O-rings, washers, and gaskets must be compatible with the gas. Only use components recommended by the equipment suppliers.

1.2 Always screw the fine end of the cryoprobe closed with the cryotip after use.

1.3 Do not fit the cryotip into the cryoprobe against resistance as it will erode the screw.

1.4 Never apply any kind of lubricant to the thread or the connected thread.

1.5 Make sure you have defrosted the cryotherapy machine and cleared the compressed CO2 gas from the cryoprobe and the cryotherapy machine. (Leaving compressed gas in it creates pressure in the cryotherapy system and damages it.)

1.6 Keep the cryotherapy machine in a safe place by either hanging it on the cylinder or in an instrument trolley with the cryotip covered and in a place where people will not touch it.

1.7 When applying cryotherapy to the cervical lesion in "freeze" mode, squeeze the trigger gently until it latches. There is no need to maintain pressure on the trigger.

1.8 To defrost, squeeze the trigger against the handle and hold. In few seconds the tip will have ice/frost on it, look defrosted, and detach easily from the tissue. Do not attempt to withdraw the probe prior to defrosting, as the tissue will be torn.