

Course in visual methods for cervical cancer screening:

Visual inspection with acetic acid and Lugol's iodine



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Acknowledgments

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How to use this curriculum

This manual is designed to be used by trainers of clinicians who perform vaginal speculum examination and screening methods to prevent cervical cancer. It is a knowledge- and skills-based course. Participants must practice and refine counseling and screening skills (using visual inspection with acetic acid [VIA] and visual inspection with Lugol's iodine [VILI]) with actual patients and learn to identify precancerous lesions, cervical cancer, and other sexually transmitted infections. Participants will review the knowledge and skills needed to sensitively examine a patient using a speculum and to locate the cervix.

The centerpiece of this training course is a set of Powerpoint slides that convey information about sexually transmitted infections, cervical cancer, and cervical cancer screening techniques. The manual and the slides work together; section II in the manual mirrors the slides, with additional and complementary text. Trainers can use this section to work through each unit with participants.

A variety of teaching techniques and training exercises are used, including:

- Interactive lecture/discussion
- Slides/pictures of the cervix—normal, variations of normal, and abnormal
- Checklists
- Procedural guidelines for VIA and VILI
- Role playing/group activities
- Case studies
- Frequently asked questions for discussion
- Clinical practice with patients

A variety of audiovisual materials are used, including:

- Powerpoint slides or slides for use with a slide project/print copies of slides. The symbol ► will be used throughout the manual to indicate a slide. The text of the slide and additional information for trainers follow these symbols.
- Handouts.
- Flip charts.

Slides and handouts from the curriculum can be copied and inserted into packets or a course syllabus for the participants. Master copies of handouts are included in section VI of this manual for that purpose.

Overview

Section I. Background and planning materials

All trainers should read this section carefully and completely to understand the course content, the underlying philosophy and approach, the teaching/learning methods, and the evaluation

methods to be used. They will also need to review the equipment and supply list in order to prepare materials and equipment needed for the training sessions. This section includes:

- Facilities, supplies, and equipment checklist

Section II. Teaching outlines and training exercises

Suggested teaching materials, outlines, and guidelines for clinical practice sessions are included in this section. The teaching materials are divided into nine units—one unit for each content area. Each unit has learning objectives, a list of key topics to be covered, instructions for the trainer, and a detailed content outline with suggested training exercises. Each unit will also list the audiovisual and other materials to be used for that portion of the course. Teaching outlines are formatted for easy use, cover key points, and indicate where to use audiovisual and printed materials, group activities, and/or clinical practice. They are not meant to be a complete script; trainers should feel free to expand on points using their own teaching style and clinical experience, where appropriate.

Teaching outlines and training exercises include:

- Introduction and overview
- Unit 1: Normal anatomy and physiology of the vulva, vagina, and cervix
- Unit 2: Abnormal vaginal and cervical findings; natural history of cervical cancer
- Unit 3: Screening to detect the precursors of cervical cancer
- Unit 4: Counseling and informed choice
- Unit 5: Vaginal speculum examination technique and infection prevention
- Unit 6: Visual inspection with acetic acid (VIA)
- Unit 7: Visual inspection with Lugol's iodine (VILI)
- Unit 8: Referral and treatment after screening
- Unit 9: Sexually transmitted infections (STIs)

Section III. Course summary and evaluation

This section includes suggestions for summarizing the course and use of various evaluation methods to ensure that participants can safely and sensitively perform VIA and VILI.

Evaluation methods include:

- Pre-/posttest, quizzes, and questions and answers
- Trainer and student assessment/discussion of photos of the cervix
- Student self- and peer assessment of performance of VIA and VILI with patients (using handout A: “Learning guide for VIA and VILI”)

- Trainer observation of student performance of VIA and VILI with patients (using handout A: “Learning guide for VIA and VILI”)
- Course evaluation

Section IV. Sample schedule of activities

The schedule of activities covers a 6-day training period, with recommendations for ordering and allotting time to training activities. Trainers should carefully review these materials when planning the course, arranging for facilities and supplies, and organizing clinical practice sessions.

Section V. References and resources

This section lists publications that were used in the production of this trainers’ manual. These may be good resources for trainers and participants who want more information about cervical cancer screening.

Section VI. Slides and master copies of written materials

Printed copies of slides and cervical photos are included. All handouts, checklists (for example, the Learning guide for VIA and VILI), the pre-/posttest, and the course evaluation form are copy-ready masters included in this section of the manual.

Section I. Background and planning materials

Facilities, supplies, and equipment checklist

Facility set-up

- Conference room with tables and chairs arranged so that participants can easily see slides and join in discussion (a semicircle or U-shaped arrangement is preferred).
- Stand or table for computer and LCD projector or slide projector.
- Podium or table for trainer.
- Extra chairs for observers, additional trainers, and local staff.
- Area and table for registration.
- Area and table for refreshments, if available.
- Several smaller rooms for small-group work, if available.
- Examination rooms with exam table, hand-washing facilities, light source, and chair.

Registration table

- Participant sign-up sheets
- Name tags
- Packets with written materials/handouts for participants
- Pens, pencils, markers
- Copy of pre-/posttest for each participant

Audiovisual equipment

- Computer with Powerpoint for showing slides and LCD projector, if available, or slide projector and screen
- Extension cord, if needed, and voltage stabilizer
- Suitable power source (mains, generator, or car battery and inverter)
- Pointer, if available
- Microphone, if needed

Clinical practice sessions

- Women/patients
- Assignment of participants to patients
- Consent forms for women/patients (use a local example)
- Individualized medical charts for each woman/patient

- Handout A: Learning guide for VIA and VILI (to be used for self, peer, and trainer evaluation of participant performance)
- Equipment for visual inspection with acetic acid (VIA) and visual inspection with Lugol's iodine (VILI):
 - Cover sheet/drape to cover each woman/patient, if available
 - Bivalve speculum
 - Good light source (halogen flashlight preferred, if available)
 - Examination gloves
 - 3%–5% acetic acid (white table vinegar)
 - Cotton swabs
 - 0.5% chlorine solution
 - Report form for the results
 - Lugol's iodine (VILI only)

Section II. Teaching outlines and training exercises

Introductions and course overview

Objectives

- To welcome and introduce instructor and participants.
 - To establish a friendly and open atmosphere.
 - To provide an overview of the course and explain the goal and objectives.
 - To hear participant expectations of the course.
- ▶ **Course in visual methods for cervical cancer screening**
 - ▶ **Trainer and her students (photograph)**

Introductions

The course is meant to be interactive, not strictly lecture. Trainers, participants, and patients are encouraged to share experiences, information, and expectations for the course. Introductions should include everyone, including observers and participants—not just trainers.

- ▶ **Introductions**
 - Introduce each trainee and trainer.
 - Make decisions about ground rules.
 - Review course goal, objectives, and schedule.

Activity for introductions

(45 minutes)

Give the group 5 minutes to allow everyone present to introduce themselves to at least one person who they do not know. Ask them to tell the person their name, where they live and work, whether they have had any experience with cervical cancer screening, and what their expectations are for the course. Then spend 10 to 15 minutes more going around the room while the participants introduce each other.

The trainer may also go over the agenda and logistics related to the course after the introductions. A printed agenda with a time schedule can be handed out to participants.

Course overview

(45 minutes)

Review the agenda/schedule of activities and describe the general logistics of the course. Discuss any important ground rules, such as start times and tea breaks. Go over the contents and the sequence of the packet of materials given to participants. Encourage questions from participants at all times.

Review the overall goals of the course:

► **Overall goal**

- As individuals, to acquire the knowledge and skills to competently practice visual inspection with acetic acid (VIA) and visual inspection with Lugol's iodine (VILI).
- As a team, to learn how to provide the best possible services—in a sensitive manner—to our clients.

Emphasize that we want participants to perform VIA and/or VILI competently because improved cervical cancer screening can keep women from dying from cervical cancer. For the screening program to be effective, women must understand the benefits of early detection of precursor lesions that might develop into cervical cancer. Stress the importance of early detection of cervical precancerous lesions through the use of visual screening methods, including VIA and VILI.

Although much emphasis is placed on cytology (Pap smear) in many places, women must understand the benefits of undergoing visual screening tests: The results of visual screening tests are available immediately, making it possible to provide further management at the same visit. Lives can be saved by detecting and treating precursor lesions before the lesion has changed into cancer and more invasive treatments are needed. Visual screening tests are easy to perform and inexpensive.

We also want women to have an informed choice about obtaining screening and/or treatment. We want to teach a sensitive and caring approach to women presenting for screening, as well as develop the skills needed to perform VIA and VILI.

► **Learning objectives**

After completing this course, participants will be able to:

- Competently perform VIA and identify acetowhite lesions of the cervix that require follow-up.
- Competently perform VILI and identify mustard- or banana-yellow lesions of the cervix that require follow-up.
- Educate and sensitively counsel women about the importance of screening, how VIA and VILI are done, and what follows after VIA and/or VILI has been done.

Review the overall learning objectives of the course.

► **Overview of the course**

Unit 1: Normal anatomy and physiology of the vulva, vagina, and cervix

Unit 2: Abnormal vaginal and cervical findings; natural history of cervical cancer

Unit 3: Screening to detect the precursors of cervical cancer

Unit 4: Counseling and informed choice

► **Overview of the course**

Unit 5: Vaginal speculum examination technique and infection prevention

Unit 6: Visual inspection with acetic acid (VIA)

Unit 7: Visual inspection with Lugol's iodine (VILI)

Unit 8: Referral and treatment after screening

Unit 9: Sexually transmitted infections (STIs)

Give the participants an overview of the course and what topics will be covered.

► **Overview of the course**

Teaching/learning methods used in the course include:

- Interactive lecture and discussion
- Photos of the cervix—normal, variations of normal, and abnormal
- Checklists for performance skills (for example, handout A: “Learning guide for VIA and VILI”)
- Role-playing/group activities
- Clinical practice with clients

Tell the participants what teaching/learning methods will be used.

► **Overview of the course**

Evaluation methods used in the course include:

- Pre-/posttest, quizzes, and questions and answers
- Assessment of photos of the cervix
- Faculty observation of student performance of VIA and VILI with clients
- Student self- and peer assessment of performance

Tell the participants what evaluation methods will be used.

► **Review schedule of activities**

Review the 6-day schedule of activities.

► **Pretest**

- 15 multiple-choice questions in 30 minutes
- For training purposes only—not a grade

Administer the pretest (30 minutes). The pretest helps trainers know what to focus on and what participants already know. We expect that participants will not know the answers to many of the questions; they should do the best that they can. (The same multiple-choice questions will be used on the posttest, but the trainer should not let the participants know that.)

► **Kenyan village**

Display the slide with the photograph of the Kenyan village during the test.

Unit 1: Normal anatomy and physiology of the vulva, vagina, and cervix

▶ **Unit 1: Normal anatomy and physiology of the vulva, vagina, and cervix**

▶ **Staff (photograph)**

Show the slide with photograph of health workers while presenting an overview of unit 1.

Overview of unit 1

This unit provides background information needed to perform visual inspection with acetic acid (VIA) and visual inspection with Lugol's iodine (VILI) competently. The normal anatomy of the vagina and cervix are reviewed, and photos are provided so that participants can identify the important anatomy and become familiar with what a normal cervix looks like. Pictures of common normal variations will also be included to help participants discriminate between normal variations (that do not require any follow-up) and abnormalities.

Objectives

1. Identify normal cervical anatomy, including the squamocolumnar junction (SCJ) and the transformation zone (TZ).
2. Discuss the normal physiology of the cervix and understand how cervical anatomy and physiology change as a woman ages.
3. Understand the process of squamous metaplasia and the implications of this for performing an inspection of the cervix.

Topics

1. Examination of the female patient
2. The vulva
3. The vagina
4. The cervix
 - Size, shape
 - Parts
 - Composition
 - Stratified squamous epithelium
 - Postmenopausal cervix
 - Columnar epithelium
 - Ectopy or ectropion

- SCJ—original SCJ
- TZ
- Changes in SCJ—new SCJ
- Glandular crypts of columnar epithelium

Audiovisual materials

- Powerpoint/slides
- Interactive review of slides/photos of normal and normal variations

Teaching techniques/training exercises

- Interactive lecture, using the Powerpoint slides
- Questions and answers
- Slides/photos of the normal cervix and normal variations
- Interactive slide/photo review
- Homework: Quiz 1. Gross anatomy of the female genitourinary system
- Homework: Quiz 2. Gross anatomy of the uterus, cervix, and vagina
- Homework: Quiz 3. Cervical anatomy
- Homework: Quiz 4. Detailed cervical anatomy

Teaching outline

(2 hours, 15 minutes)

An understanding of the anatomy and physiology of the vulva, vagina, and cervix is important to (1) distinguish normal from abnormal throughout a woman's life, (2) perform a thorough visual inspection of the cervix, (3) understand where most cervical precancers (and cancers) start, and (4) identify cervicitis and vulvitis.

Topic 1. Examination of the female patient

► Topic 1. Examination of the female patient (title slide)

► Examination of the female patient

Includes:

- Observation of the external genitalia.
- Observation of the cervix and vagina through a speculum.
- Palpation of the cervix, uterus, and ovarian areas.
- Sometimes rectal examination.

▶ **Examination of the female patient (illustration)**

▶ **Female genitourinary system (illustration)**

Source: Reprinted from Sellors and Sankaranarayanan,¹ with permission.

▶ **Gross anatomy of the uterus, cervix, and vagina (illustration)**

Topic 2. The vulva

▶ **Topic 2. The vulva (title slide)**

▶ **The vulva (illustration)**

▶ **The vulva**

Refers to a woman's genital area, visible on the outside. Parts include:

- The **mons pubis**—the fatty part covered with hair, just above the prepuce.
- The **labia majora**—two large, fleshy lips, usually covered by hair on the upper, outer surface.
- The **labia minora**—two thin tissue folds that meet anteriorly and enclose the clitoris.
- The **clitoris**—a small, erectile organ.

▶ **The vulva (illustration)**

Note to trainer: Show slide with anatomy of the vulva and review anatomy with the participants.

▶ **The vulva**

- The opening of the vulva is called the *vestibule*, and it contains the urethra, Bartholin ducts, and Skene's glands.
- Skene's glands are near the urethra.
- Bartholin ducts are on each side of the labia, toward the bottom third.

▶ **The vulva and internal anatomy (illustration)**

Source: Reprinted from Sellors and Sankaranarayanan,¹ with permission.

Topic 3. The vagina

▶ **Topic 3. The vagina (title slide)**

▶ **The vagina**

- The vagina is a stretchy fibromuscular tube that extends from the vulva upward and backward toward the cervix and uterus.
- It is widest at the upper area (near the cervix) and narrower near the opening on the vulva.
- The anterior wall is in close contact with the bladder; the posterior wall is in close contact with the rectum.
- It is normally pink in color, with folds or rugae.

▶ **The vagina**

The space in the upper vagina surrounding the cervix is called the *vaginal fornix*.

- **Lateral fornix**—between the cervix and the vaginal walls.
- **Anterior fornix**—between the cervix and the anterior wall of the vagina.
- **Posterior fornix**—between the cervix and the posterior wall of the vagina.

Topic 4. The cervix

▶ **Topic 4. The cervix (title slide)**

▶ **Size and shape of the cervix**

The cervix is the opening of the uterus.

It is cylindrical in shape and is normally 3–4 cm long and 2.5–3.5 cm in diameter.

The external os of the cervix opens into the vagina.

The internal os is the point at which the cervix and uterus meet, above the vagina.

▶ **Gross anatomy of the uterus, cervix, and vagina (illustration)**

Note to trainer: Show this slide for review.

▶ **Parts of the cervix**

- **Ectocervix**—exterior to the external os and readily visible during speculum exam.
- **Endocervix**—the portion above the external os and not easily seen.
- **Endocervical canal**—traverses the endocervix, connects the uterine cavity with the vagina; extends from the internal to the external os.

▶ **Anatomy of the cervix and vagina (illustration)**

Note to trainer: Use this slide to identify the internal os, external os, fornix, ectocervix, and endocervical canal.

▶ **External cervical os**

The cervix and the external os vary in size and shape depending on the woman's age, parity, pregnancy, and hormonal status:

- Small, round pinhole in the prepubescent girl or nulliparous woman.
- Can be a large, irregularly shaped, gaping slit in parous women.

▶ **External cervical os—nulliparous (photograph)**

▶ **External cervical os—parous (photograph)**

▶ **Speculum examination and visualization of the cervix (illustration)**

Note to trainer: The speculum is inserted downward at an angle when a woman is lying on her back; then the cervix usually can be visualized when the bills of the speculum are opened.

Source: Courtesy of L. Sankaranarayanan.

▶ **Composition of the cervix**

The cervix is composed of dense, fibromuscular connective tissue.

It is covered by two types of epithelium:

- Stratified **squamous epithelium** (usually covering large areas of the ectocervix).
- **Columnar epithelium** (covers the endocervix and may also be visible on the ectocervix).

The two kinds of epithelium meet at the squamocolumnar junction (SCJ).

▶ **Cervix (photograph)**

Note to trainer: Ask participants to identify the pink, stratified squamous epithelium; the red, columnar epithelium; and the SCJ, the area where they meet.

▶ **Stratified squamous epithelium**

The stratified squamous epithelium is located on the outside of the cervix or ectocervix.

It appears pink on visual exam.

In adult women, there are two types:

- **Original** squamous epithelium, which is formed during embryonic life.
- **Metaplastic** squamous epithelium, which is newly formed.

▶ **Stratified squamous epithelium**

Layers of squamous cells on the ectocervix are 15–20 cells deep.

The basement membrane separates the squamous epithelium from the underlying tissue.

A single layer of round basal cells with large, dark nuclei and little cytoplasm is found at the base, next to the basement membrane.

▶ **Schematic diagram of stratified squamous epithelium**

Source: Courtesy of R. Sankaranarayanan.

▶ **Stratified squamous epithelium**

The basal cells mature and divide to form the next layer of cells.

From the basal to the top layer, the cells increase in overall size, while the nucleus of the cell decreases in size.

▶ **Schematic diagram of stratified squamous epithelium**

Source: Courtesy of R. Sankaranarayanan.

Note to trainer: Use this slide for review.

▶ **Quiz—schematic diagram of stratified squamous epithelium**

Source: Courtesy of R. Sankaranarayanan.

Note to trainer: Ask participants to identify each part of the stratified squamous epithelium: the superficial cell layer, the intermediate cell layer, the parabasal layer, the basal cell layer, and the basement membrane.

▶ **Postmenopausal cervix**

The maturation or development of the squamous epithelium depends on the hormone **estrogen**.

In postmenopausal women, the multiple layers do not accumulate, and the squamous epithelium thins, becomes atrophic, looks pale, and is susceptible to trauma.

▶ **Postmenopausal cervix (photograph)**

Note to trainer: In this photograph of the postmenopausal cervix, a cervical speculum is in place, and the SCJ, which is withdrawn into the endocervical canal, can be seen.

▶ **Columnar epithelium**

Columnar epithelium (also called *glandular epithelium*) lines the endocervical canal.

It is a single layer of tall cells with dark-staining nuclei.

▶ **Columnar epithelium (illustration and photomicrograph)**

Source: Illustration courtesy of L. Sankaranarayanan.

▶ **Columnar epithelium**

Columnar epithelium is much thinner than squamous epithelium.

It appears as a bumpy, reddish area.

Glandular cells within the columnar epithelium secrete cervical mucus.

▶ **Columnar epithelium**

Reddish columnar epithelium meets with the pink squamous epithelium at the SCJ.

A variable amount of the ectocervix can be covered by columnar epithelium, depending on the age and the hormonal and reproductive status of the woman. This is called *ectopy* or *ectropion* and makes the cervix look red.

▶ **Cervix (photograph)**

Quiz: Ask participants to identify the stratified squamous epithelium, the columnar epithelium, and the SCJ.

▶ **Ectopy or ectropion (photograph)**

Note to trainer: One hundred percent of the cervix is covered by columnar epithelium; this is described as *100% ectropion*.

▶ **Ectopy or ectropion**

Ectopy/ectropion is normal. (It has been improperly referred to as an *erosion* in the past.)

Exposure of the columnar epithelium to the acidic vaginal fluid causes replacement of the columnar cells with newly formed metaplastic squamous epithelium.

▶ **Ectopy or ectropion**

Ectropion may be especially visible in newborns and adolescents and during pregnancy as a result of eversion of the endocervical columnar epithelium.

This happens because of hormonal influences and swelling of the cervix.

▶ **Diagram of the transformation zone (TZ)**

Note to trainer: Point out the area of ectopy, the SCJ, the distal cervical crypt opening, and the area included in the TZ.

▶ **SCJ**

The SCJ is the place where the squamous and columnar epithelia meet.

It often appears as a sharp line of demarcation with a slight difference in height between the two kinds of epithelium.

▶ **Original SCJ**

The **original SCJ**, laid down during embryonic life, is visible during childhood and perimenarche, after puberty, and in the early reproductive years.

It is on the outer cervix, away from the os.

▶ **Transformation zone**

The **transformation zone** is the area on the cervix between the original SCJ and the new SCJ.

▶ **Diagram of the TZ**

Note to trainer: Point out the area of ectopy, the SCJ, the distal cervical crypt opening, and the area included in the TZ. Ask what is happening in the TZ. The columnar epithelium is gradually transforming into squamous epithelium.

▶ **Squamous metaplasia**

Metaplasia refers to the change or replacement of one type of cell by another.

Squamous metaplasia is a physiologic process that occurs on the cervix—the columnar cells on the side of the SCJ closest to the os are gradually replaced with squamous cells.

▶ **Squamous metaplasia**

This process results from the exposure of the columnar cells to the acid environment of the vagina.

▶ **SCJ and the development and maturation of squamous metaplasia (illustration)**

Source: Reprinted from Sellors and Sankaranarayanan,¹ with permission.

Note to trainer: This slide shows the SCJ and the development and maturation of squamous metaplasia, which begins at the tip of the columnar villi and progresses to immature metaplasia and then maturing metaplasia.

▶ **Transformation zone**

The area between the original SCJ and the new SCJ is called the *transformation zone*.

The TZ is covered by **metaplastic squamous epithelium**—squamous epithelium that has replaced the columnar epithelium that existed in that area.

▶ **Diagram of the TZ**

Note to trainer: As a review, point out the area of ectopy, the SCJ, the distal cervical crypt opening, and the area included in the TZ. Tell participants that they will be asked to fill in the labels on the diagram later.

▶ **Changes in SCJ—new SCJ**

A new SCJ is formed where the metaplastic or growing squamous epithelium meets the columnar epithelium.

The TZ is the area bounded by the original SCJ, moving toward the external os, after menarche and throughout the reproductive life of a woman.

▶ **Location of SCJ and TZ (illustration)**

Source: Courtesy of L. Sankaranarayanan.

▶ **Diagram of the TZ**

Note to trainer: To review, point out the area of ectopy, the SCJ, the distal cervical crypt opening, and the area included in the TZ. Tell participants that they will be asked to fill in the labels on the diagram later.

▶ **Glandular crypts of columnar epithelium (illustration and photomicrograph)**

Source: Courtesy of L. Sankaranarayanan.

▶ **Effect of estrogen**

Cervical anatomy is influenced by estrogen—the location of the SCJ changes throughout a woman’s life in response to changes in estrogen levels.

▶ **Effect of estrogen**

As a result of increased estrogen levels (menarche, oral contraceptive use, pregnancy):

- Cervix swells and enlarges.
- Eversion of the endocervical epithelium out onto the ectocervix occurs, pushing the SCJ away from the os, making it easier to see.

As a woman ages, the SCJ retreats inward toward the internal os, making it more difficult to see.

▶ **Location of SCJ and TZ**

Source: Courtesy of L. Sankaranarayanan.

Note to trainer: Point out how the location of the SCJ and TZ change throughout a woman’s life. You may also want to begin to discuss the clinical relevance of the changing location.

▶ **Transformation zone**

The TZ near the new SCJ is the most important area for observation, because this is the area where abnormal cells of the precursor lesions of cervical cancer are most likely to arise.

Note to trainer: The location of the SCJ and the TZ are very important points for participants to understand, so that they look for the critical area when they perform VIA and VILI. Encourage questions at this point, and be sure to show the photos again if needed.

Review

- ▶ **Review (title slide)**
- ▶ **Cervix (photograph)**

Quiz: Ask participants to identify the squamous epithelium, columnar epithelium, SCJ, and TZ. Ask what area would be most important to look at when visually examining the cervix.

- ▶ **Nabothian follicles**

Nabothian cysts or follicles are commonly observed in the TZ.

Nabothian follicles are retention cysts lined by columnar epithelium that result from the occlusion of the openings of the crypts by the squamous epithelium.

The buried columnar epithelium continues to secrete mucous that distends the follicle.

The surface has a milky-white hue.

- ▶ **Development of squamous metaplasia and Nabothian follicles (illustration)**

Source: Courtesy of R. Sankaranarayanan.

- ▶ **Cervix (photograph)**

Quiz: Ask participants to identify the stratified squamous epithelium, the columnar epithelium, the SCJ, and areas of recently formed squamous metaplasia. A pointer might be helpful if you are using slides.

- ▶ **Cervix (photograph)**

Quiz: Ask participants to identify a Nabothian follicle on this slide (the button-like white area with ill-defined margins is due to a Nabothian follicle).

Training activity

Homework: quiz 1. Gross anatomy of the female genitourinary system

- ▶ **Quiz 1—Gross anatomy of the female genitourinary system**

Source: Reprinted from Sellors and Sankaranarayanan,¹ with permission.

Note to trainer: Provide participants with a copy of this slide (see section VI of the manual for a master copy that can be reproduced). Let participants take the quiz home and do it as homework.

Ask them to bring it back the next day. Trainers should post a correctly labeled diagram in the meeting room the next morning so that participants can check their work.

Answers:

1. Urinary bladder
2. Pubic bone
3. Urethra
4. Uterus
5. Cervix
6. Vagina
7. Rectum

Training activity

Homework: quiz 2. Gross anatomy of the uterus, cervix, and vagina

► Quiz 2—Gross anatomy of the uterus, cervix, and vagina

Note to trainer: Provide participants with a copy of this slide (see section VI of the manual for a master copy that can be reproduced). Let participants take the quiz home and do it as homework. Ask them to bring it back the next day. Trainers should post a correctly labeled diagram in the meeting room the next morning so that participants can check their work.

Answers:

1. Uterine fundus
2. Fallopian tube
3. Ovary
4. Body of uterus
5. Endocervical canal
6. Endocervix
7. Fornix
8. External os
9. Exocervix
10. Vagina

Training activity

Homework: quiz 3. Cervical anatomy

► Quiz 3—Cervical anatomy

Note to trainer: Provide participants with a copy of this slide (see section VI of the manual for a master copy that can be reproduced). Let participants take the quiz home and do it as homework. Ask them to bring it back the next day. Trainers should post a correctly labeled diagram in the meeting room the next morning so that participants can check their work.

Answers:

1. TZ
2. Most distal cervical crypt opening—area of metaplasia
3. SCJ
4. Columnar epithelium/ectopy

Training activity

Homework: quiz 4. Detailed cervical anatomy

► Quiz 4—Detailed cervical anatomy

Note to trainer: Provide participants with a copy of this slide (see section VI of the manual for a master copy that can be reproduced). Let participants take the quiz home and do it as homework. Ask them to bring it back the next day. Trainers should post a correctly labeled diagram in the meeting room the next morning so that participants can check their work.

Answers:

1. Columnar epithelium
2. Squamous metaplasia
3. Crypt openings
4. Nabothian cysts
5. Gland crypts

Training activity

Slides for review

► Cervix—normal and variations of normal

Note to trainer: The real cervixes shown in the next ten slides demonstrate normal findings or variations of normal. There are no abnormal cervixes in this series.

As each slide (or photograph) is displayed, ask participants to identify the SCJ, the TZ, areas of squamous metaplasia, and Nabothian cysts (if present). This exercise can be a group activity. A pointer is helpful if slides are used.

Unit 2: Abnormal vaginal and cervical findings; natural history of cervical cancer

► Unit 2: Abnormal vaginal and cervical findings; natural history of cervical cancer (title slide)

Overview

This section of the course briefly reviews common abnormalities of the cervix and vagina, including cervicitis and vaginitis, although more detail will be presented in unit 9, “Sexually transmitted infections.” The cause and natural history of cervical cancer is discussed, showing that almost all women (estimates of 70% to 80%) will be infected with carcinogenic (cancer-causing) types of human papillomavirus (HPV). Some women have additional risk factors for infection or expression of disease, but almost **all** face the risk of being exposed to a cancer-causing type of HPV.

Differences in the rates of cervical cancer exist between the developing world and developed countries (sometimes 10- to 20-fold), primarily because screening programs for early detection of the precursor lesions are not in place or are poorly functioning in many developing countries. Research shows that screening does work and treatment of precancerous lesions is much easier than attempting to find and cure cervical cancer once it has begun. Women’s lives can be saved by screening and effective treatment.

Objectives

1. Define the signs and symptoms of vaginitis and cervicitis.
2. Discuss the types of HPV and the causal association between HPV and cervical cancer.
3. Discuss HPV prevalence and incidence, risk factors for infection with HPV, and risk factors for the development of cervical cancer.
4. Understand the scope of the problem of cervical cancer and some of the reasons for differences in cervical cancer rates throughout the world.
5. Understand the natural history of cervical cancer and the progression from HPV exposure to precursor lesions to cancer.
6. Discuss why screening for the early detection of precursors works.
7. Inspect selected photos of abnormal cervixes.

Topics

1. Cervical and vaginal infection and inflammation
 - Symptoms women have
 - Common causes of infection
 - Examination findings for cervicitis and vaginitis

2. HPV and cervical cancer
 - Causal association between HPV and intraepithelial precursors of neoplasia
 - Precursor lesions precede cancer by many years
 - Terminology for precursors
 - Types of HPV; HPV infection is common: incidence and prevalence
 - Risk factors for HPV infection
 - Risk factors associated with disease
 - Epidemiologic associations between HPV and cervical neoplasia are strong
 - Terminology of precursor lesions of cervical cancer
 - Natural history of cervical cancer
 - Scope of the problem worldwide
3. Screening programs
 - Why is it a problem?
 - Cervical cancer in Kenya
 - Early detection works
 - Implications for patient care
4. Identifying precursor lesions

Audiovisual materials

- Powerpoint/slides for unit 2
- Slides/photos of abnormal cervixes

Teaching techniques/training exercises

- Interactive lecture, using the Powerpoint slides for unit 2
- Handshake game
- Questions and answers
- Short quiz
- Slides of abnormal cervixes

Teaching outline (105 minutes)

Clinicians performing visual inspection methods for cervical cancer screening, such as VIA and VILI, must be aware of the causes of abnormality of the cervix and vagina, including various

kinds of infections, such as cervicitis and vaginitis. This unit primarily focuses on the natural history of cervical cancer from exposure to human papillomavirus (HPV) to the development of precancerous lesions (cervical intraepithelial lesions [CIN]) to cervical cancer—all over the course of several years.

There are more than 100 types of HPV, and almost all women (approximately 80%) are exposed to and infected by carcinogenic types of HPV through sexual activity. However, not all develop cervical cancer. Some factors increase a woman's risk of exposure to HPV or development of precancerous lesions or cervical cancer. Women whose immune systems are suppressed (those who are being treated for cancer, who are taking antirejection drugs after transplantation, who are infected with HIV, who are pregnant, or who have diabetes) are more likely to develop cervical cancer after being infected with a cancer-causing type of HPV.

► **Overview**

This unit covers the following topics:

- Cervical and vaginal infections
- Causal association of human papillomavirus (HPV) with neoplasia (intraepithelial precursors, cancer)
- HPV prevalence and incidence
- Risk factors for infection and neoplasia
- Developing-world perspective
- Implications for patient care

Topic 1. Cervical and vaginal infection and inflammation

► **Topic 1. Cervical and vaginal infection and inflammation (title slide)**

► **Cervical and vaginal infections**

Inflammation is the most common pathological condition of the cervix. It is usually caused by an infection.

► **Cervical and vaginal infections**

The columnar epithelium is more prone to infection than the squamous epithelium.

Inflammation of the cervix is called *cervicitis*.

Inflammation of the vagina is called *vaginitis*.

► **Symptoms**

Women with cervicitis or vaginitis may also have the following symptoms:

- Excessive and/or malodorous discharge.
- Itching, swelling, or pain in the vagina or vulva.

- Pain or burning with intercourse or urination.

▶ **Common vaginal and cervical infections (in order of frequency)**

Organism/infection	Area affected	
	Vulva/vagina	Cervix
Human papillomavirus	X	X
Anaerobic overgrowth (bacterial vaginosis)	X	
<i>Candida albicans</i> ("yeast")	X	X
<i>Trichomonas vaginalis</i>	X	X
<i>Chlamydia trachomatis</i>		X
<i>Neisseria gonorrhoeae</i>		X
Herpes simplex virus	X	X

Note to trainer: Bacterial vaginosis is a common vaginal condition in which there is overgrowth of anaerobic bacteria and reduction of lactobacilli, the normally dominant bacteria in a healthy vagina. Bacterial vaginosis is further discussed in unit 9.

▶ **Signs of cervicitis**

- The cervix may appear more red than usual and swollen.
- There may be mucopurulent or copious discharge in the cervical os.

▶ **Possible chlamydial cervicitis (photograph)**

Note to trainer: Note purulent discharge in and around os.

▶ **Signs of vaginitis**

- The vaginal walls, and perhaps the vulva, will appear more red (and swollen) than usual.
- Some infections have a characteristic discharge (for example, greenish-white discharge with small bubbles for *Trichomonas vaginalis*).
- Ulceration may also be present (surface layer is denuded).

▶ **Vaginitis/vaginosis prevalence**

Bacterial vaginosis: 35%–45%

Yeast infections: 20%–35%

Trichomoniasis: 10%

Source: Data from Tchoudomirova.²

▶ **Signs of bacterial vaginosis**

- Note the grey, milky discharge evenly coating the vulvar and vaginal surfaces.

- There may be a slight odor from the discharge.

Note to trainer: The characteristic smell of the discharge may be described as “fishy.”

▶ **Bacterial vaginosis—the clue cell**

Microscopic examination of the discharge shows that the normal lactobacilli, which keep the vagina healthy (by producing an acid environment) are found to be lacking.

Numerous gram-negative to gram-variable rods cover the surface of the vaginal epithelial cell. These are called clue cells, and they give the cell a grainy appearance.

▶ **Signs of candidiasis**

- The woman may have a sore, swollen vulva and vagina.
- Itching and a reddened appearance of the vulva and vagina may also be present.
- A white, curd-like discharge is characteristic.

▶ **Candidiasis—pseudomycelia (photomicrograph)**

Note to trainer: *Candida* hyphae and buds (pseudomycelia) are seen under the microscope.

▶ **Signs of trichomoniasis**

- Trichomoniasis causes intense itching and sometimes pain with intercourse.
- A greenish-grey or watery discharge may be present. It may appear frothy or have tiny bubbles in it.
- A reddened cervix (often red spots, called *strawberry cervix*) is common.

Note to trainer: The discharge may have a foul smell.

▶ **Trichomoniasis (photograph)**

Multiple red spots are typical of *Trichomonas* cervicitis.

After application of Lugol’s iodine, the cervix has a “leopard skin” appearance.

▶ ***T. vaginalis* (photomicrograph)**

Note to trainer: *T. vaginalis*, a small organism with tails or flagellae, is visible under the microscope.

▶ **Cervicitis—chlamydia or gonorrhea (photograph)**

Note mucosal bleeding where purulent discharge has been wiped away.

Note to trainer: Purulent discharge and mucosal bleeding are characteristic of cervicitis due to chlamydia or gonorrhea.

▶ **Types of genital herpes**

- First episode: primary infection, nonprimary infection
- Recurrent episode
- Asymptomatic episode

Note to trainer: “First episode” refers to the first time the patient has noticed an episode because of associated symptoms. This may coincide with the initial infection, or infection may have occurred some time before, apparently without symptoms or signs.

▶ **Signs of genital herpes**

- Red, raised, tender vesicles or lesions may occur anywhere on the vulva, in the vagina, or on the cervix or anal area.
- Multiple vesicles may occur.

▶ **Genital herpes on the vulva (photograph)**

▶ **Genital herpes on the mucosal surface of the labia (photograph)**

▶ **Genital herpes—recurrence on the cervix (photograph)**

▶ **Genital herpes—recurrence on the buttocks (photograph)**

Note to trainer: Point out the differences between herpes lesions and the ulcer of syphilis as you review the next three slides.

▶ **Primary syphilis—ulcer on the labia (photograph)**

▶ **Primary syphilis—labial swelling and hidden ulcer in introitus (photograph)**

▶ **Primary syphilis—“clean” ulcer on the penis (photograph)**

▶ **Chancroid—“dirty” ulcer on the penis (photograph)**

Topic 2. HPV and cervical cancer

▶ **Topic 2. HPV and cervical cancer (title slide)**

▶ **HPV and cervical cancer**

There are more than 100 types of HPV.

Several types can cause changes in the cervix leading to cervical cancer precursors and cervical cancer.

Several other types cause genital warts.

HPV is sexually transmitted.

▶ **Intraepithelial lesions (the precursors of cervical cancer)**

Thirty of the approximately 100 HPV types involve the anogenital tract.

Ten low-risk types cause external genital warts.

Twenty high-risk types cause:

- Cervical intraepithelial neoplasia (CIN)
- Vaginal intraepithelial neoplasia
- Vulval intraepithelial neoplasia
- Anal intraepithelial neoplasia
- Penile intraepithelial neoplasia

▶ **External genital warts (caused by low-risk types of HPV) (photograph)**

▶ **Types of HPV (chart)**

- Nongenital (70 types)
- Cancer-causing or carcinogenic (20 types)
- Noncarcinogenic (10 types)

▶ **HPV infection is common**

Women are generally infected in their teens with the advent of sexual intercourse.

In men, the virus infects the cells of the urethra, but there are rarely any lesions or other symptoms.

▶ **HPV types and related cancer risk**

HPV type	Cancer risk
6, 11, 42–44	Low to negligible
16, 18, 31, 33, 35, 39, 45, 51–53, 55, 56, 58, 59, 63, 66, 68	High—implicated in most cervical and other anogenital cancers

Note to trainer:

- More than 100 HPV types have been identified.
- More than 90% of genital wart lesions examined are associated with HPV types 6 and 11.⁴
- The risk of genital tract cancer from HPV types 6, 11, and 42–44 is considered low or negligible.^{5,6}
- HPV types 16 and 18 have been strongly implicated in cervical and other anogenital cancers.³ The evidence for the remainder of types listed in this table is less strong.⁵

- Of patients who develop CIN, 99.8% are infected with the HPV virus.⁵

▶ **Precursor lesions (CIN) precede cancer by many years**

After the initial infection with HPV, a precursor lesion (CIN) may result (in fewer than 10% of cases), but the lesion rarely progresses to cervical cancer. When it does, progression takes 10–15 years.

It is rare, but not impossible, for HPV infections to result in cervical cancer within 1–2 years.

▶ **Natural history of cervical cancer (illustration)**

Note to trainer: Explain that this illustration shows a cross-section of the epithelium of the cervix and that these changes take place over a number of years. Ask participants to observe the change in the cells of the cervix.

▶ **Natural history of cervical cancer**

HPV types that cause CIN (precursor lesions that can lead to cervical cancer) cause a change in the cells of the cervix.

The nucleus becomes larger, and the healthy cellular material decreases in size.

▶ **Natural history of HPV infection (illustration)**

▶ **Terminology of precursor lesions of cervical cancer**

Note to trainer: The lesions that are precursors of cervical cancer are called *cervical intraepithelial neoplasia*. They are categorized on the basis of the severity of the cellular changes.

- CIN 1: low-grade lesion
- CIN 2: high-grade lesion
- CIN 3: high-grade lesion
- Invasive cancer

▶ **CIN 1**

Among women with CIN 1:

- In 60%, the condition will regress.
- In 30%, the condition will persist.
- In 10%, the condition will progress to CIN 2 or 3.

▶ **HPV prevalence in Ontario women (carcinogenic types) (graph)**

Source: Data from Sellors et al.⁷

Note to trainer: This graph shows the percentage of women tested who were infected with HPV, as detected by the Hybrid Capture II (manufactured by Digene). Data are shown for seven age groups.

► **HPV infection is common**

In a Canadian survey, 24% of women 20–24 years of age were infected with cancer-causing types of HPV at the time they were tested.

In contrast, only 4% of women 45–49 years of age were infected with HPV.

Studies in which women were tested again at a later time show that infection lasts an average of 8 months.

Training activity

Handshake game

► **The “handshake” game**

This game can help improve understanding of HPV infection and how common it is.

Note to trainer: Distribute a small piece of paper to each participant. Write the word “virus” on two of the slips of paper. Participants should place the piece of paper in a pocket, so others can’t see it. Then all participants circulate around the room for a few minutes, shaking hands with as many of the other participants as they would like. Tell the participants that the hand shaking represents sexual contact with a person and therefore a possible exposure to HPV, if either individual is carrying the virus (has the word “virus” written on their slip of paper). Participants should remember with whom they shook hands and in what order, if possible.

After five minutes, ask participants to take out the piece of paper. Identify the persons with the word “virus” written on the paper. How many people shook hands with the persons that had “virus” written on their paper? How many of those people shook hands with others in the group after contact with the “virus”? Was anyone “abstinent”? Can participants see how exposure to HPV virus occurs easily and unknowingly?

► **Risk factors for HPV infection**

- Number of sexual partners/frequency of sexual intercourse.
- Sexual partner’s number of other sexual partners.
- Infection with other sexually transmitted infections.
- The risk of acquiring HPV infection increases with increasing numbers of partners, increasing frequency of intercourse, and having sex with infected partners.⁸
- The results of studies that have examined the use of condoms have been inconclusive; one study reported that condoms did not protect against genital warts, another reported that condom use was protective.⁸

- Similar rates of HPV infection are found in pregnant and nonpregnant women when polymerase chain reaction is used to detect virus.⁸
- The highest rates of genital HPV infection are consistently found among sexually active women older than 25 years.⁸
- A number of other host-related factors have been associated with genital HPV infection, including initiation of sexual intercourse at an early age, infection with other sexually transmitted infections, and high frequency of episodes of sexual intercourse per week.⁹

▶ **Risk factors associated with disease**

Over a lifetime, sexually active adults have a 70%–80% chance of being infected with a cancer-causing type of HPV.

So why don't we all get cancer?

▶ **Men and HPV**

Men likely face the same chance of HPV infection as women.

Rarely, older men (>65 years of age) develop cancer of the penis.

Circumcision appears to reduce the risk that infection will lead to cancer of the penis, as well as the risk of transmission of cancer-causing strains of HPV.

▶ **Cancer of the penis (photograph)**

▶ **Risk factors for CIN or cancer**

- Infection with a high-risk HPV type.
- Family history of CIN or cancer (mother, sister).
- Immunosuppression (associated with disease, such as AIDS; medication to prevent rejection of transplant; chemotherapy; pregnancy).
- Diabetes mellitus.
- Certain HLA tissue types.
- Smoking.

Note to trainer:

- Rather than increasing the risk of HPV infection, use of oral contraceptives may increase the probability of disease progression in women already infected with HPV.⁸
- All patients should be advised to stop smoking; there is a correlation between smoking and malignant manifestations of HPV disease.¹⁰
- Any condition in which there is a deficiency of cell-mediated immunity increases risk⁹—for example, immunosuppressive therapy (steroids) after transplantation, diabetes mellitus, and chemotherapy.

► **Epidemiologic associations between HPV and cervical neoplasia are strong**

HPV is present in **all** squamous cervical cancers (SCCs).

There is a consistent association of HPV with CIN and SCCs in case-control studies.

High-risk types (for example, 16, 18, 31, 45, 56) account for 90% of SCCs worldwide.

Type 18 is associated with adenocarcinoma (cancer arising in the columnar epithelium).

► **Terminology of precursor lesions of cervical cancer**

Note to trainer: The lesions that are precursors of cervical cancer are called *cervical intraepithelial neoplasia*. They are categorized on the basis of the severity of the cellular changes.

- CIN 1: low-grade lesion
- CIN 2: high-grade lesion
- CIN 3: high-grade lesion
- Invasive cancer

Clarification of associated terminology:

Koilocytosis: A “halo” appearance in cells infected by HPV. Sometimes seen on Pap smear reports.

Dysplasia: A previously used term that sometimes is still used to refer to precancerous epithelial cellular changes on the cervix, where the ratio of the size of the cell nucleus to the size of the cell is increased. Dysplasia is graded as mild, moderate, and severe. This term has been superceded by *CIN* and, correspondingly, by *CIN 1*, *2*, and *3*.

Cervical intraepithelial neoplasia (CIN): CIN is categorized as CIN 1, 2, or 3. CIN 1 denotes low-grade changes, whereas CIN 2 and CIN 3 denote progressively higher-grade precursors of cervical cancer. HPV is the primary cause of CIN. Among women with CIN 1, in 60%, the condition will regress; in 30%, the condition will persist; and in 10%, the condition will progress to CIN 3.

Carcinoma in situ: *Carcinoma in situ* is a previously used term associated with the “dysplasia” classification system; it is sometimes still used by pathologists to denote a very high-grade/very serious-looking CIN 3 lesion. **It does not signify cancer.**

Low-grade squamous intraepithelial lesion: This term is used in the Bethesda system to classify cervical cytology. It includes mild dysplasia/low-grade CIN (CIN 1).

High-grade squamous intraepithelial lesion: This term is also used in the Bethesda system; it describes moderate and severe dysplasia (CIN 2 and 3).

Cancer: Refers to a lesion that is “invasive”—that has breached the basement membrane and involves the subepithelial stroma (as opposed to CIN, which is always intraepithelial) within the epithelium. In the case of the cervix, it is usually a squamous cell carcinoma that starts in the cells of the squamous epithelium in the TZ, near the new SCJ.

CIN is the preferred classification for the purposes of this course.

► **Natural history of cervical cancer (illustration)**

Note to trainer: Briefly review the time frame for progression of CIN to invasive cancer. Note that although large numbers of women are infected initially, some develop low-grade lesions (CIN 1), and in 60% of cases of CIN 1, the lesions revert to normal. Over the course of 2 to 10 years, a small percentage of cases of CIN progress. The immune system is thought to play a key (but poorly understood) role in whether an infected woman eventually clears the infection or develops progressively more severe grades of neoplasia.

► **Natural history of cervical cancer**

Note to trainer: Review the characteristics and management of HPV lesions. Screening is focused on identifying precursor lesions and CIN 1, 2, and 3.

	HPV infection	Low-grade lesions (CIN 1)	High-grade lesions (CIN 2 and 3)	Invasive cancer
Characteristics	Extremely common among women of reproductive age. Can remain stable, lead to CIN, or become undetectable.	Usually are temporary and disappear over time. Some cases, however, progress to high-grade CIN. It is not unusual for HPV to cause low-grade CIN within months or years of infection.	High-grade CIN, the precursor of cervical cancer, is significantly less common than low-grade CIN. High-grade CIN can progress from low-grade CIN or, in some cases, directly from HPV infection.	Women with high-grade CIN are at risk of developing invasive cancer; this generally occurs slowly, over a period of several years.
Management	Although genital warts resulting from HPV infection may be treated, there is no treatment that eradicates HPV. Primary prevention through use of condoms offers some protection.	Low-grade CIN generally should be monitored rather than treated, because most lesions regress or do not progress.	Should be treated, because the lesions will progress to cancer in a significant proportion of cases.	Treatment of invasive cancer is hospital-based, expensive, and often not effective.

► **Histology of lesion progression (photomicrographs)**

► **Natural history of cervical cancer (illustration)**

► **High-grade CIN (CIN 2 or 3) (photomicrograph)**

► **Cervical cancer develops many years after HPV infection**

After the initial infection with HPV, a precursor lesion may result (in fewer than 10% of cases), but the lesion rarely progresses to cervical cancer. When it does, progression takes 10–15 years.

It is rare, but not impossible, for HPV infections to result in cervical cancer within 1–2 years.

► **Natural history of cervical cancer (illustration)**

Review slide of the natural history of cervical cancer, stressing the time frame for exposure and the length of time required for progression of CIN.

► **Of those infected, few have problems**

For every 1 million women infected with HPV, 10%—or about 100,000—will develop precancerous changes in their cervix (CIN).

Topic 3. Screening programs

► **Topic 3. Screening programs (title slide)**

► **Scope of the problem worldwide**

More than 230,000 women die from cervical cancer worldwide each year.

Each year, 400,000 new cases occur.

Eighty percent of those cases are in the developing world.

Source: Data from Ferlay.¹¹

► **Differences between developing and developed world**

Death from cervical cancer is much more common in the developing world due to a lack of effective screening programs that can identify and treat precancerous lesions.

Adequate screening = decreasing incidence of cervical cancer.

► **Why is cervical cancer such a problem?**

- Pap smear and other screening tests and treatment are not available in many developing countries.
- Increasing sexually transmitted infection and HIV/AIDS rates in many developing countries may also increase cervical cancer rates.

► **Cervical cancer in Kenya**

In Kenya, cervical cancer is a common disease, with the highest occurrence in women 40–45 years of age.

Fewer than 1% of women in Kenya have been screened.

Source: Personal communication, J. Karanja, 2002.

▶ **Early detection works!**

A precursor lesion of cervical cancer develops slowly, over 10–15 years, and can be easily treated.

Therefore . . . screening (detection of the precursors) and effective treatment are very important to prevent cancer.

▶ **Cervical cancer prevention**

The vision: **prevention of all deaths** from cervical cancer through screening women and identifying and treating precursor lesions.

Topic 4. Identifying precursor lesions

▶ **Topic 4. Identifying precursor lesions (title slide)**

▶ **Identifying precursor lesions**

To screen for precursor lesions, clinicians must be able to identify normal and abnormal changes on the cervix. (This is why we are going to learn about visual screening methods and learn about some abnormalities of the cervix.)

▶ **Cervix with leukoplakia and with a densely hyperkeratotic condyloma (photographs)**

▶ **Abnormal cervical lesions**

- **Leukoplakia** and **exophytic warts** have an excess of keratin (keratosis) and appear white.
- Precursor lesions (CIN) have an excess of cellular proteins and appear white after the application of dilute acetic acid. CIN lesions also lack glycogen, so they turn mustard- or banana-yellow after application of Lugol's iodine.

▶ **Cervix with a large area of acetowhite around the os, after acetic acid application (photograph)**

Note to trainer: This slide shows CIN 1 as it may appear on visual inspection with acetic acid.

▶ **CIN 1 (mild CIN, a precursor lesion)**

HPV is the primary cause of CIN.

Among women with CIN:

- In 60%, the condition will regress.
- In 30%, the condition will persist.

- In 10%, the condition will progress to CIN 2 or 3.

Source: Photograph courtesy of Dr. Renzo Barrasso.

Note to trainer: This photograph shows an intraepithelial lesion. There is a raised white area containing small dots of regularly spaced punctuation on the posterior lip. The squamocolumnar junction is perfectly defined. Normal metaplasia is seen on the anterior lip.

- “Cervical intraepithelial neoplasia” (CIN) is the term used to encompass benign neoplastic and premalignant epithelial abnormalities of the cervix.
- HPV is now widely accepted as the primary etiology of CIN.
- The exact mechanism by which the virus is eradicated is not known, but evidence suggests that the eradication or persistence of HPV is dependent upon the immune response of the host.

► **CIN 1 (mild CIN) (photograph)**

Source: Photograph courtesy of Dr. Renzo Barrasso.

Note to trainer: Arrows point to acetowhite lesions.

► **CIN 2 (photograph)**

Arrow points to area of acetowhite.

► **CIN 1, 2, and 3**

It may be difficult to distinguish between CIN 1, 2, and 3 with the naked eye after staining with acetic acid or Lugol’s iodine.

They can be distinguished when biopsied for histologic examination and when a smear is examined cytologically.

► **Natural history of cervical cancer (illustration)**

Note to trainer: Show this slide for review. Again, note the amount of cellular change associated with CIN 1, 2, and 3. Note the thickness of the abnormal cell layers in CIN 1 and 2. However, the superficial layers of cells may look similar.

► **Cervical cancer (photograph)**

Source: Photograph courtesy of Dr. Renzo Barrasso.

Note to trainer: This photograph shows vegetating cervical cancer. Despite the absence of atypical vessels and erosive areas, the proliferative/papillary structure of the lesion suggests the presence of invasive cancer.

- HPV DNA sequences are expressed by 99.8% of cervical carcinomas.³ The two main types associated with this malignancy are HPV 16 and 18, although several others, such as types 31, 33, 52, and 56, are also “high risk.”⁴
 - Atypical vessels are the most specific (seldom leading to false-positive result) feature seen during a colposcopic examination; surface irregularities or a papillary structure may be seen. The edge of the lesion is usually raised, and irregularity of the surface around the external os is characteristic. Ulceration, which masks the epithelial surface, is sometimes seen. Contact bleeding is another suspicious finding. Large atypical areas should be carefully studied, because the risk of microinvasion is directly related to the extent of the lesion.¹²
- ▶ **Cervical cancer (photograph)**
 - ▶ **Cervical cancer (photograph)**

Review

- ▶ **Review (title slide)**

Training activity

Questions and answers

Take a few minutes to answer questions from this unit about cervicitis, vaginitis, the causal relationship between human papillomavirus (HPV) and the precursor lesions (CIN), the natural history of HPV infection, and progression to precursor lesions or cervical cancer. Participants may have questions about risk factors for infection or risk factors for developing cervical neoplasia. Discuss the importance of understanding the material in this unit, which lays the groundwork for screening and prevention.

- ▶ **Quiz**

What is different about countries that have higher incidence rates of cervical cancer ?

- ▶ **Answers**

- Most are developing countries.
- Most do not have screening to identify the precursors of cervical cancer early so that they can be treated.

Unit 3: Screening to detect the precursors of cervical cancer

► Unit 3: Screening to detect the precursors of cervical cancer (title slide)

Overview

This unit covers cervical cancer prevention and screening. Screening methods discussed include conventional Pap smear and visual methods—visual inspection with acetic acid (VIA) and visual inspection with Lugol’s iodine (VILI). The reasons that VIA and VILI are well-suited for screening in the developing world are presented. The unit also includes information about confirmatory methods, including colposcopy and biopsy, that can be used when the findings of visual inspection are positive.

Objectives

1. Understand why cervical cancer screening and detection should be increased, rather than focusing on other types of preventive activities.
2. Understand why condoms/sexually transmitted infection precautions do not protect a woman from HPV.
3. Define what is meant by a *screening program*.
4. Compare and contrast several methods used to detect cervical intraepithelial neoplasia (CIN; cervical cancer precursors).
 - Discuss the procedure, benefits, limitations, and findings of the Pap smear.
 - Discuss the procedure, benefits, limitations, and findings of VIA.
 - Discuss the procedure, benefits, limitations, and findings of VILI.
5. Discuss the methods that may be used to confirm positive findings from VIA and VILI, including colposcopy and biopsy.
6. Recognize that VIA and VILI are promising screening tests for use in a low-resource setting and that they provide results comparable to or better than those of the Pap smear.

Topics

1. Cervical cancer prevention and screening
 - Methods of prevention—vaccine
 - Definition of screening
 - Screening methods to detect CIN (the precursors of cervical cancer)
2. Pap smear: procedure, benefits, limitations, results
3. Visual inspection with acetic acid: procedure, benefits, limitations, results
4. Visual inspection with Lugol’s iodine: procedure, benefits, limitations, results
5. Confirmation methods: colposcopy

- Procedure, benefits, limitations, equipment
 - Colposcope, endocervical forceps, and cervical punch biopsy
6. Conclusions about use of VIA and VILI screening in low-resource settings

Audiovisual materials

- Powerpoint/slides for unit 3
- Photos
- Handout A: Learning guide for VIA and VILI

Teaching techniques/training exercises

- Interactive lecture
- Case discussion
- Interactive lecture, using the Powerpoint slides for unit 3
- Questions and answers

Teaching outline

(60 minutes)

Topic 1. Cervical cancer prevention and screening

▶ Topic 1. Cervical cancer prevention and screening (title slide)

▶ Cervical cancer prevention (questions)

Why don't we focus on prevention of human papillomavirus (HPV) infection, like other sexually transmitted infections (STIs), by:

- Promoting the use of condoms and barrier methods?
- Advising that people limit the number of sex partners?

Note to trainer: Ask these questions to generate discussion.

▶ Cervical cancer prevention (answers)

It's unclear whether standard STI precautions really protect women from getting HPV. HPV lives in the skin (squamous cells) covering the pubic area (vulva and shaft of the penis), as well as the interior lining of the vagina and cervix in women and the urethra and anus in both sexes.

▶ Cervical cancer prevention (answers, continued)

Condoms do not cover all the areas where HPV can be transmitted.

▶ **Cervical cancer prevention: case discussion**

A 32-year-old woman has had one sexual partner before marriage; she always had used condoms, but not with her husband.

Why is she at risk for HPV and future cervical cancer precursors?

▶ **Consider this . . .**

She could still be infected with HPV:

- Condoms do not protect well against HPV.
- Her husband may be infected with HPV through contact with his previous partners.

Note to trainer: Raise the following points, if participants do not discuss them spontaneously:

- The woman is in the higher-risk age group for precancerous lesions.
- She has had multiple sex partners (who also may have had multiple sex partners).
- Condoms don't protect against HPV.

▶ **Methods of prevention—vaccines**

The most effective prevention would be a protective vaccine, given at an early age, **before sexual activity begins.**

But even if a vaccine provides excellent protection, the benefits are not seen for 20–30 years (when the vaccinees reach ~40 years of age).

Screening and management would still be necessary for all of the unvaccinated women as they age.

▶ **Methods of prevention—vaccines**

An additional challenge for an HPV vaccine . . . it would have to be effective against **multiple types** of HPV.

▶ **Methods of prevention—vaccines**

Until a cost-effective vaccine is available, prevention must focus on educating women (and men) that screening by Pap smear or visual inspection methods with acetic acid (VIA) and/or Lugol's iodine (VILI) is important.

▶ **Cervical cancer screening**

Because HPV infection is asymptomatic and most sexually active women have already been infected, all sexually active women should be considered to be at risk.

Early identification and treatment of precursor lesions (cervical intraepithelial neoplasia; CIN) are the immediate needs.

Screening for early detection and treatment is essential.

▶ **Cervical cancer screening**

Next we will review how screening tests fit into a successful screening program, as well as the different methods of screening for cervical cancer and how they compare.

▶ **Screening in the context of a health care system (illustration)**

Note to trainer: Discuss the essential elements of a screening program for cervical cancer. Community involvement, an effective screening test, and timely treatment and follow-up are all essential.

▶ **An effective screening test is one part of a successful program (illustration)**

▶ **Screening**

Screening implies testing of a population without symptoms of a disease.

It identifies those at higher risk of developing a disease.

For screening to be worthwhile, effective treatment must exist and be available.

▶ **Positive screening results**

Depending on the setting, women who are screen-positive may be treated **or** referred for further testing to increase the certainty of the diagnosis.

Colposcopy is a diagnostic test used to obtain a directed biopsy to confirm the presence and severity of disease.

▶ **Management options after a positive screening test (VIA/VILI)**

Note to trainer: Several studies indicate that immediate treatment of women with positive results is an effective management strategy when using visual methods to screen for precancerous lesions.

▶ **Management options after a positive screening test (Pap smear)**

Note to trainer: There is very little research on the effectiveness of a program based on the immediate treatment of women with cytologic abnormalities (abnormal Pap smear results), and the use of immediate treatment cannot be supported. Pap smear results are not usually immediately available.

For practical reasons, such as the lack of a qualified laboratory person onsite, immediate treatment based on cytology is impossible in most settings.

▶ **Management options after a positive screening test (HPV test for detection of CIN)**

Note to trainer: A strategy based on primary screening with an HPV test is being researched and likely will be a promising alternative to Pap smear, once an inexpensive, simplified, acceptable, and accurate test is available and accessible. An HPV test that can use a vaginal

specimen, perhaps obtained by the woman herself, will have a clear advantage, because primary screening will not require a speculum examination. Similarly, if the test can be done within 2 hours and onsite, then results and treatment can be given at the same visit, so that women are not lost to follow-up. A rapid HPV test is under development. Researchers are currently exploring whether treatment of women who have no precursor lesion (CIN) but have positive results of an HPV test is effective and whether the cervix should also be examined (by VIA, VILI, or colposcopy) to identify the location of a lesion before treatment based on HPV testing.

So, let's look at the screening tests in more detail.

▶ **Screening methods to detect CIN (precursor lesions of cervical cancer)**

- Pap smear (cytology)
- VIA
- VILI
- HPV testing in the future?

Topic 2. Pap smear: procedure, benefits, limitations, results

▶ **Topic 2. Pap smear (title slide)**

▶ **Pap smear procedure**

Before Pap smear is done, the procedure should be described to the woman, including the reason for the test, what to expect, and what follow-up may be needed.

▶ **Pap smear procedure**

- Speculum is inserted and cervix is visualized.
- A spatula is used to “scrape” cells from the cervix (the transformation zone; TZ) and smear them on a glass slide. The spatula is turned 360 degrees while pressed against the cervix.
- Cells placed on the glass slide are “fixed” in alcohol to preserve them.

▶ **Cytology collection tools**

Note to trainer: This slide shows an endocervical brush, a wooden or plastic spatula, and a plastic brush or broom. Discuss the advantages and disadvantages of using the various tools for cytology collection. Some tools, such as the endocervical brush, are more likely to cause bleeding, which obscures the Pap slide and makes it difficult to interpret.

▶ **Pap smear procedure**

Cervical mucus containing cells is smeared onto a glass slide, and a fixative is applied to preserve the cells for examination.

▶ **Pap smear procedure**

Slide is then treated with Pap stains to color the cells.

Slide is read by a specially trained cytotechnologist and/or pathologist for signs of cellular changes.

▶ **Microscopic examination of cells in the Pap smear (illustration)**

▶ **Pap smear: benefits**

- Trusted, proven over 50 years.
- Given adequate resources and a screening program, it can be practical, affordable, and accurate.
- Slide serves as a permanent record.

▶ **Pap smear: limitations**

- Requires microscopes, laboratory, trained technicians, pathologists, transport of specimens, reporting, and supplies.
- Immediate results are not possible.
- Only about 50% of abnormal findings (CIN and cancers) are detected—relies on periodic re-scanning.

▶ **Pap smear: limitations**

Lesions may be missed if:

- They are not exfoliating.
- There is a barrier to exfoliation.
- Cells are not sampled properly from the squamocolumnar junction and transformation zone.
- Abnormal cells are not transferred to the slide.
- The slide cannot be read effectively because it is obscured by blood or pus.
- The technician misses the precancerous cells.

Note to trainer: These points are the Achilles' heel of Pap smear screening, because Pap smear is relatively insensitive when used once. A program that is based on Pap smear relies on women being screened repeatedly so that those with abnormal findings can eventually be identified.

Each step in the Pap smear procedure provides a possibility for missing abnormal cells and/or obtaining an inadequate specimen. Abnormal cells may not be exfoliating and may be below the surface and not be collected; collection may not yield adequate cellular material; inadequate cellular material may be transferred to the slide; or cellular material may dry out if not fixed properly. Human error can occur in the evaluation of the specimen. Results are not readily

available, and therefore women may have to return for further follow-up with resultant treatment delay.

► **Pap smear results**

- Normal
- Abnormalities of the squamous epithelium
 - Atypical
 - CIN 1 (low-grade)
 - CIN 2 or 3 (high-grade)
 - Cancer
- Abnormalities of the columnar epithelium, including abnormal glandular cells

► **Terminology of precursor lesions of cervical cancer**

Cervical intraepithelial neoplasia (CIN): Precancerous epithelial cellular changes on the cervix, where the ratio of the size of the cell nucleus to the size of the cell is increased. CIN is categorized as CIN 1, 2, and 3. CIN 1 denotes low-grade precursors of carcinoma, and CIN 2 denotes moderate-grade precursors. CIN 3 denotes high-grade precursors (including lesions previously categorized as “carcinoma in situ” in older terminology).

HPV is the primary cause of CIN. Among women with CIN, in 60%, the condition will regress; in 30%, the condition will persist; and in 10%, the condition will progress to CIN 3.

Cervical intraepithelial neoplasia (CIN): CIN is categorized as CIN 1, 2, or 3. CIN 1 denotes low-grade changes, whereas CIN 2 and CIN 3 denote progressively higher-grade precursors of cervical cancer. HPV is the primary cause of CIN. Among women with CIN 1, in 60%, the condition will regress; in 30%, the condition will persist; and in 10%, the condition will progress to CIN 3.

Low-grade squamous intraepithelial lesion: Includes mild dysplasia/low-grade CIN (CIN 1).

High-grade squamous intraepithelial lesion: Describes moderate and severe dysplasia (CIN 2 and 3).

► **Classifying cytologic abnormalities (photomicrographs)**

- Cell nuclei increase in density and size in comparison to the cell cytoplasm.
- Cell and nuclear shapes become irregular.

View of cells from Pap smear after staining as seen under magnification by the cytologist. Note the progressive change in the cell nuclei with CIN 1, 2, and 3. Cell nuclei increase in density and size in comparison to the cell cytoplasm. Cell and nuclear shapes become irregular.

Topic 3. VIA: procedure, benefits, limitations, results

▶ **Topic 3. Visual inspection with acetic acid (VIA) (title slide)**

▶ **Visual inspection with acetic acid**

VIA is visual examination of the ectocervix, TZ, and cervical os with the naked eye (unmagnified) after an acetic acid wash.

It allows identification of acetowhite areas that need further management.

VIA shows promise as a screening test—an alternative to Pap smear.

▶ **VIA procedure**

- Explain the reason for the test, what to expect, and what follow-up may be needed.
- Insert the speculum; gently clean cervix with a dry swab, if necessary.

▶ **VIA procedure**

- Wash the cervix with a 3%–5% acetic acid solution.
- Carefully inspect the cervix, especially the TZ, with the naked eye.

▶ **VIA: benefits**

- Accuracy is comparable to Pap smear.
- Results are immediately available.
- Requires only acetic acid, a speculum, and a light source (flashlight).
- Can be performed by nurses and midwives.
- Can be followed by VILI.

▶ **VIA: limitations**

- False-positives may overload the referral system and result in unnecessary treatment of women.
- Requires training to perform, inspect, and assess results.

▶ **VIA results**

- VIA positive
- VIA negative
- Suspicious for cancer

▶ **Additional testing**

- VIA can be repeated immediately if desired.
- Lugol's iodine can be applied after VIA, and the final assessment can be based on VILI.

- Referral for colposcopy may also be made after a screening test (Pap, VIA, VILI).

Topic 4. VILI: procedure, benefits, limitations, results

► Topic 4. Visual inspection with Lugol's iodine (VILI) (title slide)

► Visual inspection with Lugol's iodine

VILI is also promising as a visual method to screen for cervical cancer.

After the woman's cervix is examined using VIA, the cervix is painted with Lugol's iodine solution and examined again with the naked eye.

► Visual inspection with Lugol's iodine

Currently, VIA is done first to identify landmarks (squamocolumnar junction [SCJ], TZ) and any acetowhite areas on the cervix.

VILI shows promise and may become the standard method of visual assessment, used alone or after VIA.

► VILI and VIA—results of the first comparative study

The first study of VIA and VILI was done by different observers in a cross-sectional survey of 4,444 women, all of whom underwent colposcopy afterward.

Test performance for detection of CIN 2 or 3:

Screening test	Sensitivity, %	Specificity, %
VILI	87.2	84.7
VIA	82.6	86.5

Source: Data from Sankaranarayanan et al.¹³

► Sensitivity and specificity

- **Sensitivity**—percentage of women correctly classified by the test as having CIN or cervical cancer.
- **Specificity**—percentage of women correctly classified by the test as not having CIN or cervical cancer.

► How do VIA and VILI compare?

- The sensitivity of VIA is 82.6% and of VILI is 87.2%. The trend is for VILI to correctly identify more women with high-grade precursor lesions (CIN 2–3).
- The specificity of VIA is 86.5% and of VILI is 84.7%. Both tests are similar in correctly identifying women who do NOT have high-grade CIN.

Source: Data from Sankaranarayanan et al.¹³

► **Meta-analysis of 11 African and Indian studies**

Pooled data from multiple cross-sectional studies with 54,981 women 25–65 years of age show VILI is significantly more sensitive than VIA.

Screening test	Sensitivity, %	Specificity, %
VILI	91.7	85.4
VIA	76.8	85.5

Source: Data from Sankaranarayanan et al.¹⁴

► **Can you see the high-grade lesion? (photograph)**

A large portion of the cervix is acetowhite with VIA (a), while a smaller portion stains banana-yellow with VILI (b).

Note to trainer: Note yellow lesion and that the entire cervix fails to take up iodine, which may indicate inflammation or CIN.

► **Why does VILI have better sensitivity?**

The small high-grade lesion is easier to see within the larger low-grade area.

► **How VILI works**

Normal squamous epithelial cells have substantial stores of glycogen.

Glycogen stains mahogany-brown with iodine solution.

Abnormal areas of squamous epithelium (CIN or inflammation) do not contain glycogen to the same extent and do not stain brown.

► **VILI procedure**

- Finish VIA and leave the speculum in place.
- Wash the cervix with Lugol's iodine solution.
- Inspect the cervix carefully, paying particular attention to areas that were acetowhite or VIA positive.

► **VILI procedure**

- The results are positive if there are dense, bright, banana-yellow nonuptake areas in TZ, abutting the SCJ.
- Take care not to spill the Lugol's iodine or get it on the patient's clothes (washes out).
- After the examination, mop up excess iodine in the vagina with a dry cotton swab.

- ▶ **VILI results**
 - VILI positive
 - VILI negative
 - Suspicious for cancer
- ▶ **VILI: benefits**
 - VILI appears to offer improved accuracy *and* reproducibility over use of VIA alone.
 - Results are immediately available.
 - Requires only Lugol's iodine in addition to the equipment for VIA.
 - Can be performed by nurses and midwives.
- ▶ **VILI: limitations**
 - Lugol's solution stains underwear and other objects but is washable.
 - Requires training to inspect and assess.
 - Promising alternative to Pap smear but, like VIA, is still undergoing evaluation.
 - Lugol's iodine is more expensive than acetic acid, but less is needed for the test.
- ▶ **VILI is useful for identifying CIN (photographs)**
- ▶ **VILI is useful for identifying *Trichomonas vaginalis* infection (photographs)**

Topic 5. Confirmation methods: colposcopy

- ▶ **Topic 5. Colposcopy (title slide)**
- ▶ **Colposcopy**

Colposcopy is magnified visual examination of the ectocervix, SCJ, and endocervical canal using a special instrument called a *colposcope*.

It may be accompanied by a biopsy of any abnormal-looking tissue.

It is used not as a screening test, but as a **diagnostic test**.
- ▶ **Colposcope (photograph)**
- ▶ **Colposcopy procedure**
 - Explain the reason for the test, what to expect, and what follow-up may be needed.
 - Insert the speculum and inspect the cervix under magnification.
 - A Pap smear may be taken.

▶ **Colposcopy procedure**

- Wash the cervix with a 3%–5% acetic acid solution.
- Inspect the cervix under magnification (4× to 20×).
- Assess the entire TZ and any acetowhite areas; take a biopsy of any abnormal tissue.

▶ **Endocervical speculum (photograph)**

Note to trainer: An endocervical speculum is sometimes needed to inspect the endocervical canal. The next two slides show the endocervical speculum in place and the exposure of a CIN lesion in the endocervix.

▶ **Use of an endocervical speculum to inspect the endocervical canal (photograph)**

▶ **Endocervical speculum exposes a hidden SCJ . . . and a lesion! (photograph)**

▶ **Cervical punch biopsy forceps with sharp cutting edges (photograph)**

▶ **Colposcopy: benefits**

- Can be used as a diagnostic test when findings are confirmed by a biopsy of abnormal tissues.
- Permanent record possible with drawing of the findings or a photo.

▶ **Colposcopy: limitations**

- Depends on an expensive, fragile piece of equipment requiring maintenance, spare parts, and repair services.
- Requires electrical power, special training, instruments, and pathology services.
- Not always possible to see entire SCJ and TZ, sometimes making examination unsatisfactory and necessitating endocervical curettage.
- Reliance on biopsy requires a return visit.

Topic 6. Conclusions about use of VIA and VILI in low-resource settings

▶ **Topic 6. Conclusions**

▶ **Visual screening methods: conclusions**

VIA is an alternative way to do cervical cancer screening. It is ideally suited to low-resource settings.

- VIA is better than Pap smear for identifying CIN—especially if a woman is tested only once in her life.
- VIA is simple to perform and provides an immediate result without expensive equipment.

- Health providers with any level of skill can be trained to do it.

► **Visual screening methods: conclusions**

VILI is also a promising alternative way to do cervical cancer screening.

- VILI can be done after VIA.
- Large studies indicate that VILI is more accurate and more reproducible than VIA and better than a Pap smear for identifying CIN.
- VILI is simple to perform and provides an immediate result without expensive equipment.
- Health providers with any level of skill can be trained to do it.

Unit 4: Counseling and informed choice

Overview

This unit will help health workers focus on how they can communicate effectively (by talking, listening, and responding, and through tone of voice and posture) with their patients in the clinic. It is important to stress that how health workers communicate their attitudes toward the patient has a direct effect on the patient's satisfaction with the service provided. The unit provides information on what important points to cover when counseling women about cervical screening and treatment and how to use the support materials. Participants will get a chance to try out their counseling skills with role-playing. There are no slides for unit 4, because most of the training is interactive.

Objectives

1. Demonstrate active listening and interpersonal communication skills.
2. Provide unbiased information about cervical screening and possible treatments for positive results.
3. Help patients make an **informed choice** about participation in screening and treatment to prevent cervical cancer.
4. Identify the critical points in helping a client make an informed choice.
5. Use support materials to counsel and educate women about cervical screening and possible treatments.

Topics

Part 1 (day 2)

1. Counseling for cervical screening and treatment and effective use of support materials
2. Informed choice

Part 2 (day 6)

3. What is quality care?
4. Creating a private, comfortable atmosphere
5. Active listening
6. Asking effective questions

Audiovisual materials

(master copies of all handouts are included in section VI)

- Handout B: Counseling flip chart for VIA screening and treatment
- Handout C: Observation guide for counseling activities
- Handout D: Answers to questions frequently asked by women

- Facilitator’s aid: What does informed choice mean?
- Handout E: Key messages for helping clients make an informed choice
- Handout F: Information, education, and communication (IEC) brochure
- Handout G: Points to consider in creating a private atmosphere
- Handout H: How postcryotherapy clients described their health center and district hospital experiences
- Handout I: Types of questions

Teaching techniques/training exercises

- Interactive lecture
- Group and paired activities
- Role-playing: counseling women
- Using the handouts and IEC materials
- Using the flip chart

Teaching outline

Note to trainer: Unit 4 is divided into two subunits. Suggested time:

- 150 minutes on Day 2 for topics 1 and 2
- 180 minutes on Day 6 for topics 3 through 6

Be sure to allow sufficient time for group and paired role-playing exercises. These facilitated practice exercises are perhaps the most critical aspects of this unit.

Topic 1. Counseling for cervical screening and treatment and effective use of support materials

This exercise will take approximately 1 hour and 30 minutes. Explain to participants that women need information to make the decision to be tested. The following education and counseling points are all covered in handout B: “Counseling flip chart for VIA screening and treatment.”

Points to include in counseling:

1. Ask participants to work in small groups to read aloud the content of the counseling flip chart.
2. Once participants have all reviewed the material, pass out cards with one of the following questions on it. There should be one or more questions for each participant. Ask each participant to take on the role of a client at a group counseling session. Demonstrate the use of the flip chart in the counseling session and show how to answer the questions using the materials. If you have questions left over, you can then ask the participants to

take on the role of counselor, while you ask the questions and they demonstrate the use of the materials and beginning counseling skills.

3. Provide the participants with the following questions to ask at appropriate points in the counseling session:
 - What does the solution (acetic acid for –visual inspection with acetic acid [VIA] and Lugol’s iodine for visual inspection with Lugol’s iodine [VILI]) that is put into the vagina do?
 - Why should I get screened today when I am feeling healthy?
 - Am I being tested for HIV/AIDS?
 - Does this test treat sexually transmitted infections?
 - If my cervix has started to change, does that mean I have cancer?
 - Will you remove my womb during the exam?
 - Will the vinegar hurt?
 - What is the brown solution?
 - Will the brown solution soil my underwear?
 - Will the exam hurt?
 - What will happen if my provider finds a lesion (problem) during my exam today?
 - If I am told that I have to go to the district hospital for follow-up, does it mean that I have cancer?
 - If I have to go to the district hospital, how much will the examination cost?
 - Do I need to get permission from my husband to sign the form?
 - What if my husband does not want me to go to the district hospital?
4. After the presentation, ask participants to give feedback about what they felt was successful about the presentation and the responses to patient questions and about how the presentation and responses could be improved.
5. Give participants copies of handout C: “Observation guide for counseling activities” and handout D: “Answers to questions frequently asked by women.” Ask participants to work in groups of three, with one participant playing the role of the provider inviting the woman back to her exam and orienting her before screening, one playing the role of the client, and one observing the interaction. Tell the participant playing the role of the client to ask questions, and tell the observer to follow the checklist in handout C and prepare to give feedback to the counselor on what aspects of the counseling session were successful and how the session could be improved.

Here are some situations to try:

Group 1

Mrs. Y is a 39-year-old woman with three grown children and a new grandchild. Her daughter-in-law had come for the test, and the clinician found that there might be a problem and scheduled her to come back for a follow-up test to confirm the results. Mrs. Y is worried that her daughter-in-law may have cancer. She wants the test for herself now, but she also wants to know whether, if the clinician finds a problem using the VIA/VILI test, it means that she has cancer.

What would you tell her about VIA/VILI results and follow-up?

Group 2

Ms. B is a 30-year-old widow. She has had sexual intercourse but has no children. She is not interested in any test that messes with your womb. She is in the clinic complaining of vulvovaginal itching, when she hears about the test being offered.

How would you counsel her?

Should you advise her to defer the test until her vaginitis is cleared up?

Have each group discuss their findings with the group as a whole.

Topic 2. Informed choice

Note to trainer: The goal is to ensure that women make an informed choice about participating in any screening procedure. For the purposes of routine service delivery, an informed choice needs to be made by the client. Clients should understand the procedure and what might happen during and after. Depending on local practice, a client may be required to sign, make her sign, or make a thumbprint on an “informed consent” form to indicate that she understands a procedure and is consenting to it.

Take up to 45 minutes for this exercise, reviewing materials as needed. Participants must be able to ensure that before a woman undergoes visual inspection or Pap smear screening, she understands the screening procedure and consents to the screening and possible treatment. If facilities in your area use an informed consent form, you may want to bring a local example to share with participants during this discussion.

Familiarize participants with the concept of informed choice and its importance.

Step 1. Discuss the concept of “informed choice,” using the facilitator’s aid “What does informed choice mean?”

Key training message: One of a client’s most important rights is the right to decide whether to obtain health services. Clients who do seek services have the right to choose the method or procedure and must consent to the procedure. To be able to make a voluntary and well-considered decision, individuals must have options and must know what those options are, must have information about each one, and must understand the relevant issues. Providers can confirm

a client's understanding by asking open-ended questions and confirming the woman's interest in being screened and treated using available methods and procedures.

Skills for active listening and asking effective questions are addressed later in this unit.

Step 2. Distribute copies of informed choice key messages (handout E: "Key messages for helping clients make an informed choice").

Discuss the informed choice process with participants, focusing on the following points:

1. **Benefits of screening.** Point out that there are important benefits to being screened and, if needed, treated. Praise the woman for taking steps to ensure she is in good health. Benefits to the women include learning about cervical cancer prevention and being screened for cervical problems and, if necessary, referred for further testing and perhaps treatment.
2. **Voluntary participation and informed choice.** Explain that when a person freely makes a thought-out decision, a decision based on accurate and practical information, this is informed choice. Explain that for them to make a decision that feels right about being screened or to receive treatment, it is important that they understand why you are recommending screening and, if needed, treatment. Point out that the examination is voluntary and that the health facility does not require her husband's permission. However, if a woman wishes, she may talk to her partner first and return for screening later. Emphasize that client may choose to stop at any time during the examination and return at a later date.
3. **Examination procedures.** Using the flip chart or other visual aids, describe the screening and treatment procedures available according to services offered or recommended.
4. **Available options.** Discuss options available to the client:
 - She can return another day or at a different time if she so chooses.
 - She can be seen by either a male or female provider.
 - She can return with her husband or a male partner to be included in decision-making.
 - She can seek care at other facilities offering cervical screening services.
5. **Health information is confidential.** Explain that recorded health information from this examination is confidential. Make sure that the women understand that only the staff at this health center will know their names and have access to the information stored in the records. No one will discuss the details of the examination to people outside the clinic.
6. **Clinic fees.** Review any fees that clients will be expected to pay, as determined by ministry of health guidelines.

7. **Referrals.** Explain that, depending on the results of the initial exam, women may need to visit the district hospital one or more times and make one additional visit to this health center for screening and treatment services.
8. **VIA and VILI are not perfect tests.** Sometimes an examination will seem to show a problem even though the cervix is healthy. A woman may be asked to undergo additional tests that ultimately reveal no cervical problems. Although VIA and VILI are not perfect, they are the best options available.
9. **The test is very safe.** Make sure women know that if they have problems or questions after the exam, they can return to the health facility and talk with any VIA/VILI cervical screening provider.
10. **Test for comprehension.** An important part of making sure that a woman makes an informed choice is to determine whether she understands and remembers what you have told her. Before a client makes her decision and before the procedure is carried out, providers should ask the client to explain:
 - What informed choice is.
 - What will happen to her during the exam.

If available, give your client print or visual materials to take home. Such materials help remind the client what to do. Handout F: “Information, education, and communication (IEC) brochure” is an example of materials your client may find helpful.

Refer to topics 5 and 6 for further information.

Topic 3. What is quality care?

Take about 10 minutes to conduct this exercise. It will help participants define *quality of care*. Ask participants to close their eyes for a moment. With a gentle voice, ask them to imagine the following situation:

Remember the last time you visited a health worker at a clinic.

- What was your experience?
- Did you wait for a long or short time?
- Did you receive good treatment from your provider, or were you treated too quickly or impolitely?
- Were your doubts clarified, or did you still have questions and concerns after the visit?

Now take a few minutes to reflect on this experience or any other personal health care experience you may have had in the past.

- What makes a health care visit a positive experience for you?
- How would you like to be treated by your health care provider?

Ask participants to discuss their reflections as a group and define together what makes a health care visit a positive experience and how they would like to be treated.

Topic 4. Creating a private, comfortable atmosphere

Take about 10 minutes to conduct this exercise. It will help participants understand what constitutes a private and comfortable atmosphere for patients.

Ask participants to work in small groups from the same health center. Give participants a copy of handout G: “Points to consider in creating a private atmosphere,” and ask them to assess how well they are able to meet patients’ needs for a private, comfortable atmosphere for cervical cancer screening and treatment. Next, ask participants to brainstorm about what steps they can take in their own health centers to ensure privacy and comfort for their patients and how they could go about making those changes. Ask participants to make a list of the changes they would like to make in their health center, along with the names of individuals with whom they will need to discuss the ideas in order to implement them.

Topic 5. Active listening

Take about 10 minutes for this activity. It will help participants identify the behaviors and qualities of active listening. Explain that there are many ways that we communicate with our clients. In addition to verbal communication, there are many nonverbal ways messages are communicated. Ask participants:

“Do we sometimes show negative emotions or feelings to clients during counseling sessions?”
“How?”

Possible examples:

- Shuffling papers
- Not making eye contact
- Having a dirty office
- Looking at one’s watch during counseling
- Acting distracted
- Allowing interruptions

Conduct the following exercise:

Ask participants to form pairs. Tell half of the group that, during the exercise, they are to do a terrible job at listening. The other person in the pair should be asked to talk for 3 minutes about a topic that participants will be enthusiastic about sharing. Topics could include “my first romance,” “a favorite childhood memory,” or “what I like about my closest friend.” After 3 minutes, ask participants to switch roles.

Discuss the exercise with the group. Ask participants how they felt when they were trying to discuss their emotions. Ask what gestures or conduct showed attention or lack of attention to the person being listened to.

Ask participants:

“What can you do to make sure that the client feels concern and interest on your part?”

Have them give suggestions.

Possible responses

- Shake hands
- Introduce yourself
- Speak in the client’s language
- Be patient
- Don’t interrupt
- Make eye contact
- Don’t discuss other clients
- Keep the health center clean
- Say “mmmm” or “yes,” or in some other way show you are listening

We received specific feedback from a special study of Kenyan women who received treatment with cryotherapy about aspects of their experience that made them feel comfortable. (Give participants a copy of handout H: “How postcryotherapy clients described their health center and district hospital experiences” for a more detailed list of provider treatment that makes postcryotherapy clients feel comfortable or uncomfortable.)

That group of women appreciated a provider who:

- Welcomes and greets them warmly
- Speaks gently
- Uses kind words
- Treats them with respect
- Asks how they are feeling
- Appears to be concerned about their condition
- Takes time for questions and answers questions appropriately
- Takes the time to educate them about the treatment and disease
- Is friendly and humble

- Has a reassuring manner

Research also highlighted important provider skills for good interpersonal communication and counseling:

- Well groomed
- Knowledgeable
- Good listener
- Honest
- Confidential
- Timely
- Attentive
- Encouraging
- Observant
- Asks open-ended questions

Topic 6. Asking effective questions

Take about 10 minutes for this exercise. It will help participants ask appropriate questions when counseling women.

Explain to participants that good counseling requires that the provider ask effective questions. PATH's research in Kenya with women who received cryotherapy highlighted the importance of clinicians' ability to ask good questions. Women often feel that they are expected to be silent when they are relating to strangers, especially authority figures, such as doctors and nurses. Most women in our study indicated that they had questions that went unanswered. This means that clinicians need to learn how to anticipate client questions and learn how to draw women's concerns out of them, since women may not feel comfortable raising these issues otherwise. (You may want to give participants copies of handout I: "Types of questions" at this time.) Just because a clinician has explained the procedures does not mean that the women will understand.

It is also important to ask questions that confirm that the woman understands the screening and treatment procedures and is making an informed choice.

Ask participants what kinds of questions can be asked to encourage patients to share information.

Review the types of questions with participants and make sure participants understand the different types of questions.

Ask them to explain in what circumstances, if any, the type of question would be appropriate in counseling.

Ask participants, “How do you know that the woman understands the recommended procedure?” and “How do you know if the client is really making an informed choice?”. Test to see that the participants understand that asking effective questions can help them confirm that a woman understands the information covered and is making an informed choice.

Types of questions and possible uses:

Close-ended: Close-ended questions ask for specific, quantifiable information that has only one answer.

Example: “How many children do you have?”

Open-ended: Open-ended questions seek information about thoughts, perceptions, feelings, or experience.

Example: “What have you heard about screening and treatment to prevent cervical cancer?”

Probing: Probing questions are used to follow up a response—for example, to clarify the meaning of a comment.

Example: “What exactly concerns you about getting screened and, possibly, treated?”

Leading: Leading questions direct a respondent to answer a certain way or anticipate a certain answer. Avoid using leading questions.

Example: “Don’t you think you should get screened and, if needed, treated?”

Posttraining exercise

Ask participants to repeat the exercise described in topic 1 (in which one participant plays the role of the provider, one plays the role of the client, and one observes the interaction). Ask the participant posing as a client to ask questions. Ask the observer to follow the checklist in handout C and prepare to give feedback to the counselor on what aspects of the counseling session they perceived as successful. Ask how the counseling session could be improved.

This time, ask participants to use their active listening skills to ask effective questions and test client comprehension. Discuss improvements between the two sessions.

Unit 5: Vaginal speculum examination technique and infection prevention

- ▶ **Unit 5: Vaginal speculum examination technique and infection prevention (title slide)**

Overview

This unit covers the basic procedure and approach that health workers should use when performing a vaginal speculum examination. It will prepare participants to learn about procedures for visual inspection with acetic acid (VIA) and visual inspection with Lugol's iodine (VILI) in units 6 and 7. Safety procedures that can be used to protect both clients and health care workers from infection are also reviewed. This unit will prepare participants for the clinical practice sessions.

Objectives

1. Know what equipment is needed for a vaginal speculum examination.
2. Discuss positioning the patient and making the exam tolerable for the woman.
3. Know how to conduct an examination of the external genitalia.
4. Perform vaginal speculum examination.
5. Understand the need for hand washing, the proper handling of contaminated swabs, the use of gloves, and the proper use of instruments and equipment to protect the woman, the health care provider, and other clients from infection.

Topics

1. Vaginal speculum examination technique
 - Equipment needed
 - General considerations
 - Positioning the patient
 - Making the examination tolerable for the patient
 - Tips for conducting the examination
 - Examination of the vulva/external genitalia
 - Vaginal speculum examination
2. Infection prevention and safety issues
 - Protecting clients and health care workers
 - High-level disinfection
 - Storage of high-level disinfection instruments

- Sterilization
- Dry heat sterilization
- Storage of sterilized instruments

Audiovisual materials

- Slides/photos
- Vaginal speculums, if available

Teaching techniques/training activities

- Interactive lecture/slides
- Practice handling speculums, if available

Teaching outline

(45 minutes)

Topic 1. Vaginal speculum examination technique

- ▶ **Topic 1. Vaginal speculum examination technique (title slide)**
- ▶ **Equipment needed**
 - Exam table equipped with stirrups
 - Light source
 - Bivalved vaginal speculum
 - Clean water to lubricate speculum
 - Gloves
- ▶ **General considerations**
 - Ask the woman to empty her bladder.
 - Ensure privacy for the examination. Use a drape or the patient's own clothes to provide a cover.
 - Use gloves on both hands.
 - Properly dispose of soiled equipment and supplies.
- ▶ **General considerations**
 - Depending on the setting, male providers may need to be chaperoned by a female assistant.
 - Always tell the patient what you are about to do before you do it.

► **Take 5 minutes to discuss . . .**

What is appropriate for male providers in your setting—is a chaperone advisable during a speculum examination?

Training activity

Guidance for male providers

Take 5 minutes to discuss what is appropriate for male providers in your setting—is a chaperone advisable during a speculum examination?

► **Positioning the patient**

- Place a pillow in the middle of the table, so that the patient will be lying on the lower half of the table with her head on the pillow, for better eye contact.
- Help the patient place her heels in the stirrups. Adjust the angle and length to “fit” the patient, if possible.

► **Positioning the patient**

- Have the patient slide her hips down until she makes contact with your hand at the edge of the table.
- Have the patient relax her knees outward, just beyond the angle of the stirrups.
- Drape a sheet or the woman’s clothing so you can see her and the perineum is visible.

► **Making the examination tolerable for the patient**

Don’t say, “Spread your legs.”

Do say, “Let your legs relax—out to here,” and show her.

Do say, “Everything looks healthy” if that is true.

► **Making the examination tolerable for the patient**

Don’t talk about “blades” of the speculum (ouch).

Do call them “bills,” like a bird’s beak.

► **Tips for conducting the examination**

- Use firm pressure, not a light, tickling-type touch.
- Talk to the patient and tell her what you are doing.
- If you can, look at the patient when you ask her a question.
- Maintain eye contact and stay in touch with the patient’s response.
- Be sensitive to what the patient is experiencing and to her need for reassurance.

▶ **Examination of the vulva**

- Announce what you are going to do and then touch the patient on the thigh with the back of your hand before proceeding.
- Inspect the outer genitalia for redness, swelling, tenderness, lesions, masses, and infection.

▶ **External genitalia/vulva (illustration)**

Note to trainer: An examination should include observation of the labia, mons, Bartholin ducts, Skene's glands, and urethral opening. The examination should also include the anal area.

▶ **Vaginal speculum examination**

- Assemble all equipment needed ahead of time.
- Warm the speculum by holding it in your gloved hand.
- If available, clean water can be used to lubricate speculum.

▶ **Vaginal speculum examination**

- Announce what you are going to do and then touch the patient on the thigh with the speculum before proceeding.
- Hold the speculum in your dominant gloved hand with the bills closed. Place the speculum between the index and middle fingers.

▶ **Vaginal speculum examination**

- Expose the introitus by spreading the labia from below using the index and middle fingers of the nondominant gloved hand ("peace sign").
- Insert the speculum with bills horizontal, pointing and pressing slightly downward.
- Avoid putting pressure on the anterior structures, catching the skin, or pulling hairs, which can cause discomfort.

▶ **Vaginal speculum examination**

- Once past the introitus, open the bills of the speculum slightly to keep the vaginal walls in sight.
- Aim downward.
- Continue insertion until the cervix is seen or the handle is almost flush with the perineum.

▶ **Speculum in place (illustration)**

Note to trainer: Note downward angle.

▶ **Vaginal speculum examination**

- Position the speculum's bills so that the cervix is centered between the bills. The speculum is positioned so one bill is above the cervix and one is below.
- Open the bills of the speculum 2–3 cm using the thumb lever.

▶ **Speculum (illustration)**

Note to trainer: Identify the thumb lever, which opens the bills of the speculum.

Training activity

Handling and adjusting a vaginal speculum

A speculum consists of two bills and a handle. The posterior bill is usually fixed, while the anterior bill is hinged and moveable with the thumb lever. The thumb lever opens the anterior bill of the speculum at the cervical end. The thumb nut or thumb screw is used to hold the anterior bill in place and lock it. The entire anterior bill can be elevated, making the tubelike space within the speculum larger, by manipulating the thumb screw on the handle.

Inexperienced providers should practice manipulating the speculum and know how it is adjusted and put together. This kind of practice eliminates the possibility of hurting the woman by mishandling the speculum during an exam. It is also not uncommon for speculums to come apart during cleaning and storage, so providers should know how to put them back together. If you have some speculums available, it would be helpful to have participants handle them, especially if they are inexperienced.

▶ **Vaginal speculum examination**

- Secure the speculum by turning the thumb nut.
- Do not move the speculum while it is locked open.
- Perform visual inspection with acetic acid (VIA) or Lugol's iodine (VILI), carefully observing the cervix and vaginal walls for lesions or discharge.

▶ **Vaginal speculum examination**

- When the exam is complete, withdraw the speculum slightly to clear the cervix.
- Loosen the thumb screw on the speculum and allow the bills to fall together.

▶ **Vaginal speculum examination**

- Continue to withdraw the speculum with the bills closed. Again, avoid pressure on the anterior structures.
- As you withdraw the speculum, observe the side walls of the vagina that had been covered by the bills.

▶ **Vaginal speculum examination**

- Reassure the woman—if the exam is normal, say so.

▶ **Quiz**

On the vaginal speculum shown at the left, what are the two adjustment screws for?

Answers:

- One is the thumb screw on the thumb lever, which locks the anterior bill of the speculum in place.
- The second one is the thumb lever on the handle, which allows for the entire anterior bill to be elevated or removed.

▶ **Quiz**

What do you say to the woman before touching her during the examination?

Answers:

- Tell her to let her legs relax, “out to here.”
- Refer to the speculum “bills,” not “blades.”
- Tell her what you are doing—“I am going to touch you now.”

Topic 2. Infection prevention and safety issues

▶ **Topic 2. Infection prevention (title slide)**

▶ **Infection prevention is a safety issue**

Consideration should be given to infection prevention to:

- Protect clients.
- Protect health care workers.
- Provide a safe environment and clean instruments.

▶ **Protecting clients and health care workers**

The current spread of bloodborne diseases, including hepatitis B and HIV infection, makes it imperative for health care workers to think about infection prevention strategies.

▶ **Tips for preventing infection**

- Wash hands with soap and water before and after each client contact.
- Wear gloves.
- Use instruments that have been sterilized.

▶ **Protecting clients and health care workers**

Any exposure to blood or other bodily fluids through needlesticks, eye splashes, or other injuries brings with it the possibility of infection.

Wear gloves whenever touching anything wet (blood or other bodily fluids, mucous membranes, or soiled items).

▶ **Protecting clients and health care workers**

Use **physical barriers** such as plastic aprons and face masks when anticipating splashes.

Practice safe work practices:

- Take care handling sharps; **do not recap**, reuse, break, or bend needles.
- Dispose of medical waste in the proper containers.

▶ **Protecting clients and health care workers**

Decontaminate instruments in 0.5% chlorine bleach solution for 10 minutes—this makes them safe to handle during cleaning.

Then **clean** with detergent and a brush, wearing gloves.

Sterilize or use high-level disinfection (HLD).

▶ **Corrosive effect of chlorine bleach overexposure—a cause of instrument breakage (photograph)**

▶ **Overexposure to chlorine bleach—instrument breakage (photograph)**

Note to trainer: Bleach has a corrosive effect and causes instrument breakage with overexposure.

▶ **High-level disinfection**

HLD requires boiling or using chemicals for final processing of instruments and surgical gloves used for VIA or VILI and cryotherapy.

Metal instruments and surgical gloves should be steamed or boiled for 20 minutes and allowed to dry.

▶ **Boiling instruments for 20 minutes (photograph)**

▶ **HLD—alternative methods**

Instruments can be soaked for 20 minutes in:

- 0.1% chlorine solution prepared with boiled water
- 2%–4% glutaraldehyde
- 8% formaldehyde

Soaking should be followed by thorough rinsing in boiled water and air-drying.

▶ **Storage of HLD instruments**

After HLD, instruments can be used immediately or stored for up to 1 week in a dry, HLD container with a tight-fitting lid.

After 1 week of storage, an instrument such as a speculum is still safe to use in the clinic, but it cannot be considered HLD (that is, it could not be used in the operating theater).

▶ **Sterilization**

Sterilization requires that instruments be autoclaved.

Steam sterilization requires 121 degrees C (250 degrees F) at 106 kpa (15 lb/sq in.) pressure for 20 minutes for unwrapped items and 30 minutes for wrapped items. Allow all items to dry thoroughly before removing.

▶ **Sterilization—large autoclave (photograph)**

▶ **Sterilization—small autoclave and heater (photograph)**

▶ **Dry heat sterilization**

Dry heat may also be used for sterilization—of instruments only:

- 179 degrees C (340 degrees F) for 1 hour in an oven and then cooling for 2.5 hours.
- 160 degrees C (320 degrees F) for 2 hours and then cooling for 1.5 hours.

▶ **Storage of sterilized instruments**

Unwrapped instruments may be used immediately or stored in dry, sterile containers for 1 week only.

Wrapped instruments may be stored for up to 1 week if the package remains dry and intact and for up to 1 month if sealed in a plastic bag.

▶ **Quiz**

What are the three main steps taken to disinfect an instrument?

What is the reason for each step?

Which step may cause corrosion if instruments are left too long?

Answers:

What are the three main steps taken to disinfect an instrument?

- Decontamination in 0.5% bleach for 10 minutes.
- Cleaning with detergent and a brush, wearing gloves.
- High-level disinfection (boiling or using chemicals) or sterilization in autoclave.

What is the reason for each step?

- Decontamination makes the instruments safe to handle.
- Cleans instrument; removes blood, fluids, tissue.
- Kills bacteria and HIV, which protects patients and providers.

Which step may cause corrosion if instruments are left too long?

- Decontamination.

► **Quiz**

What are two methods for HLD?

What is the length of time that an HDL speculum can be stored until it is used for VIA or VILI?

Answers:

What are two methods for HLD?

- Boiling instruments for 20 minutes.
- Using chemicals for 20 minutes (0.1% chlorine, 2%–4% glutaldehyde, or 8% formaldehyde).

What is the length of time that HDL speculum can be stored until it is used for VIA or VILI?

- One week if unwrapped in a dry sterile container or wrapped in a dry package.
- One month if sealed in a plastic bag.

► **Quiz**

What are two methods for sterilization?

How long can a sterilized instrument be stored?

Answers:

What are two methods for sterilization?

- Steam sterilization in an autoclave.
- Dry sterilization in an oven (instruments only).

How long can a sterilized instrument be stored?

- One week if unwrapped in a dry sterile container or wrapped in a dry package.
- One month if sealed in a plastic bag.

Unit 6: Visual inspection with acetic acid (VIA)

► Unit 6: Visual inspection with acetic acid (VIA)

Overview

This section of the course will go through the step-by-step procedure for performing VIA. Recording the findings will also be discussed. This section will prepare participants for the clinical practice sessions. Participants will take a slide quiz at the end of this unit to assess VIA skills.

Objectives

1. Understand how and why the acetowhite reaction, in which cervical lesions are exposed to 3%–5% acetic acid, occurs.
2. Identify who should be tested.
3. Know when to perform VIA.
4. Identify the equipment needed to perform VIA.
5. Know how to prepare the woman to be tested in terms of positioning, comfort, and privacy.
6. List the steps in performing VIA.
7. Record findings of the VIA test.
8. Discuss the findings with the woman and answer any questions:
 - If the test is negative.
 - If the test is positive.
 - If cancer is suspected.

Topics

1. The VIA procedure
 - How VIA works
 - Identifying who should be tested
 - When to perform VIA
 - Reproductive health history
 - Equipment needed for VIA
 - Steps in VIA procedure
2. Reporting VIA results
 - Describing acetowhite lesions

- What to do if unsure of VIA results
- VIA reporting
- Things to note about VIA screening

Audiovisual materials

- Handout A: Learning guide for VIA and VILI
- VIA screening results forms—Handout K: “Sample client register” and handout L: “Sample client card”
- Handout M: “Sample cervical photos and line drawings”
- Handout N: “Visual inspection with acetic acid (VIA)” one-page photo atlas
- Slides/photos of VIA
- Visual inspection with acetic acid (VIA) one-page atlas

Teaching techniques/training activities

- Interactive lecture/slides
- Use of handouts
- Review of cervical images/quiz 1

Teaching outline

(2 hours; 30 minutes for assessment)

Topic 1. The VIA procedure

▶ **Topic 1. The VIA procedure (title slide)**

▶ **VIA—how it works**

Normal squamous epithelium is light pink in color. Normal columnar epithelium is red.

The color comes from the blood vessels in the underlying stroma.

▶ **VIA—how it works**

Abnormal epithelial tissue, especially cervical intraepithelial neoplasia (CIN), turns white after the application of acetic acid. This is called the *acetowhite reaction*.

▶ **Acetowhite reaction**

Acetowhite reaction refers to the whitening of an area of the cervical epithelium, when the tissue reacts with 3%–5% acetic acid (normal table vinegar).

This reaction is caused by the coagulation of cellular proteins, which appear opaque.

▶ **Acetowhite reaction**

Human papillomavirus (HPV)–infected cells are more active and contain more proteins, which causes them to appear more opaque than surrounding normal tissues.

▶ **VIA—who should be tested?**

In the beginning, programs may focus on women 30–39 years of age who have had sex in the past. As resources permit, screening can expand to include women 25–65 years.

Screening can be done at any point in the menstrual cycle (it may be difficult to see, if menstrual blood flow is heavy—in such cases, you may need to reexamine).

Recent sexual intercourse does not affect VIA.

▶ **Why limit screening to women 30–39 years of age?**

Waiting until 30 years of age allows many preexisting CIN lesions to regress (to eventually become normal).

HPV prevalence also falls with age.

The peak of cervical cancer incidence is usually later in life.

▶ **VIA—when to perform?**

- For women who are more than 20 weeks pregnant, it may be easier to screen at 6 weeks postpartum.
- At a postabortion checkup.
- When a woman is suspected of having or is known to have a sexually transmitted infection or HIV/AIDS.
- During a visit for other conditions.

▶ **VIA—preparation of the woman**

- Greet the woman.
- Reestablish why the test is being done.
- Describe the procedure.
- Tell the woman what the findings might be and what follow-up treatment might be necessary.
- Take a reproductive health history.

▶ **Common questions**

Is shaving necessary?

Are the instruments safe for use?

What happens if a problem is found?

▶ **VIA—reproductive health history**

Health history should include:

- Age
- Parity
- Menstrual bleeding pattern (irregular or postcoital?)
- Currently pregnant/current contraceptive method

▶ **VIA—equipment needed**

- Report form, client card, or register to record result
- Examination table
- Good light source (halogen flashlight)
- Instrument tray
 - Cotton swabs
 - Vaginal speculum
 - Examination gloves
 - 3%–5% acetic acid (or white vinegar)

▶ **Instrument tray for VIA (photograph)**

▶ **VIA—equipment needed**

The examining table or surface should allow the clinician to insert a speculum and see the cervix.

A bright flashlight is best to see the cervix at the end of the vagina. Light from a window is insufficient.

▶ **VIA—equipment needed**

A vaginal speculum can remain in place by itself—without being held—while the cervix is being examined. The examiner’s hands will be free to swab the cervix and to adjust the light or the speculum to see better.

▶ **VIA—equipment needed**

A condom with a cut tip can be placed over the speculum bills before insertion to hold back the walls of the vagina, if needed.

New exam gloves or high-level-disinfected surgical gloves should always be used.

▶ **VIA—procedure**

- Remember to change the covering on the exam table.

- The exam table surface should be cleaned with disinfectant by wiping with 0.5% chlorine bleach solution or 60%–90% ethyl or isopropyl alcohol before the next woman is examined.

▶ **VIA—procedure**

- It is easier if the woman has emptied her bladder.
- Tell the woman what is happening, encourage her questions, and ensure that she is comfortable.
- Ask the woman to undress from the waist down, to remove her underwear, and to pull her dress up.
- Help her onto the exam table and drape her appropriately.

▶ **VIA—procedure**

- Wash your hands thoroughly with soap and water; dry them.
- Put on gloves.
- Arrange equipment on tray.
- Tell the woman you will touch her.

▶ **VIA—procedure**

- Inspect external genitalia for a preview of what may be going on.
Look for:
 - Lesions, such as papules, vesicles, ulceration, or warts; discharge.
 - Redness, swelling, excoriation.
 - Swelling in the inguinal/femoral area.

▶ **VIA—procedure**

- Lubricate the speculum, preferably with warm water.
- Tell the woman she will feel some pressure.
- Slowly and carefully insert speculum without scraping the cervix; adjust so the whole cervix is in view.
- Adjust light as needed.

▶ **VIA—procedure**

- Look for signs of infection.
Look for signs of cervicitis or vaginitis.
 - Greenish-yellow or mucopurulent discharge from the cervical os.

- Thick, white, curdy vaginal discharge.
- Milky-grey, foul-smelling discharge.

▶ **VIA—procedure**

Use a dry cotton swab to wipe away any discharge, blood, or mucus from the cervix.
Dispose of used swabs in the wastebasket.

▶ **VIA—procedure**

Identify the anterior and posterior lips of the cervix, red columnar epithelium, pink squamous epithelium, the squamocolumnar junction (SCJ), and the transformation zone (TZ).

The inner limit of the TZ is the new SCJ.

The TZ is usually pale pink-white in color.

The outer limit of the TZ is formed by the original SCJ; in many women, it cannot be seen with the naked eye.

▶ **VIA—procedure**

Remember that CIN occurs in the TZ near the SCJ.

▶ **Cervical anatomy quiz**

Note to trainer: Show the unlabeled diagram of the cervix and ask participants to write the numbers 1 through 4 on a piece of paper and then add the labels for the anatomical parts of the cervix. You can collect the quizzes to tally how many of the participants identified cervical anatomy correctly.

Answers:

1. Transformation zone
2. Distal crypt opening
3. Squamocolumnar junction
4. Ectopy/columnar epithelium

▶ **Cervical anatomy quiz (photograph)**

Note to trainer: Show the photo of the cervix and ask participants to point out the following structures: the squamocolumnar junction, the transformation zone, columnar epithelium, squamous epithelium, and metaplastic epithelium. Answer the following questions: Is ectopy present? Any abnormal discharge present? Any lesions present?

You can do this as a group. A pointer would be helpful.

▶ **VIA—procedure**

Observe for ectropion/ectopy, Nabothian follicles, polyps, healed lacerations, leukoplakia, condyloma, and signs of infection/inflammation (cervicitis).

Look for vesicles, small papules, and ulcers on the cervix and vagina.

Is there any bleeding from the cervix, especially where it has been touched?

▶ **Cervix with button-like acetowhite area with ill-defined margins (photograph)**

Note to trainer: This photograph shows a Nabothian cyst. There are several other areas of ill-defined acetowhite areas resulting from squamous metaplasia.

▶ **VIA—procedure**

- Observe all four vaginal fornices to see whether they are free of any growth.
- Record any abnormal visual findings.
- Soak a clean swab in 3%–5% acetic acid and apply to the cervix liberally.

▶ **VIA—procedure**

Tell the woman she might feel a slight burning sensation. Wait **one full minute** for the acetic acid to be absorbed (use a watch).

Check the TZ carefully, close to the SCJ, for any dense, nonmoveable acetowhite areas in the epithelium.

▶ **Depending on the screening program, VIA may or may not be followed by VILI**

At this point in the procedure, VIA may be followed with VILI.

If VIA is used as the only screening test, then the screening assessment is **based on VIA** and the woman is managed accordingly.

If VIA is followed by application of Lugol's iodine, assessment and management are **based on VILI**.

▶ **VIA—procedure**

- If VIA is complete, use a fresh cotton swab to remove any remaining acetic acid from the posterior vaginal fornix.
- Gently remove speculum. Tell the woman you are going to do this, and release the tension on the bills before removing.
- Place the speculum in 0.5% chlorine solution for 10 minutes of decontamination.

▶ **Management based on a VIA screening program**

Assure the woman that you will discuss the findings with her after she gets dressed and that she can return any time for advice or care.

Ask the woman if she was uncomfortable at any time and whether she has any suggestions to improve the services provided.

▶ **Management based on a VIA screening program**

If **VIA results are negative**, the examination is complete, and the woman can be told that she should undergo screening again in 5 years.

▶ **Management based on a VIA screening program**

If **VIA results are positive or suspicious for cancer**, the examination is complete, and the woman should be managed appropriately—with further management at the same visit or with a referral for further management.

▶ **VIA—procedure**

- If referral is required for further management, explain this and make arrangements with the woman before she leaves the health center.
- Complete the screening referral/client card, note findings in the client register/log, and make a note in client’s book (if she has one).

Topic 2. Reporting VIA results

You may find the following handouts useful during the following discussion of VIA results: Handout K: “Sample client register” and handout L: “Sample client card” are examples of forms used to record VIA/VILI results. Handout M: “Sample cervical photos and line drawings” can be used as an example during practice drawing VIA results. Handout N: “Visual inspection with acetic acid (VIA),” is a one-page photo atlas of common VIA results. Participants may find it helpful as a handout during the discussion of VIA results or as a job aid during clinical practice.

▶ **Topic 2. VIA results (title slide)**

▶ **VIA—reporting**

Results of VIA are reported as:

- Negative
- Positive (acetowhite lesions present)
- Suspicious for cancer

▶ **Describing acetowhite lesions**

Look around the entire SCJ for any raised and thickened white plaques or acetowhite lesions.

Note the following if acetowhite areas are identified:

- Extension
- Intensity of whiteness

- Borders and demarcations
- Size
- Location

▶ **Describing acetowhite lesions**

Extension of the lesion:

- Does it extend into the endocervical canal?
- Does it extend out toward the vaginal fornix?

▶ **Describing acetowhite lesions**

Intensity of color:

- Is it shiny white, cloudy white, pale white, or dull white?
- Are the lesions uniform in color?
- Does the color intensity vary across the lesion?
- Are there areas of erosion within the lesion?

▶ **Describing acetowhite lesions**

Borders and demarcations:

- Are the borders clear and sharp or indistinct and diffuse?
- Are the borders raised or flat?
- Are the borders regular or irregular?

▶ **Describing acetowhite lesions**

Size:

- Extent or dimensions of the lesion
- Number of lesions

▶ **Describing acetowhite lesions**

Location of the lesion:

- Is it far away from the SCJ?
- Is it abutting or touching the SCJ?
- Does it occupy the entire or part of the TZ?

▶ **What to do if unsure of VIA results**

If you are in doubt about the description or the outcome of the test, you can gently repeat the test a few times without inducing bleeding. Tell the woman what you are doing.

If you are still unsure, it is better to classify the result as positive and refer the woman for further management.

▶ **Our main challenge!**

Knowing and applying the definition of *VIA negative*.

▶ **VIA—reporting**

Negative:

- NO acetowhite lesions.
- Bluish-white lesions, faint patchy lesions, or doubtful lesions without definite margins.
- A polyp protruding from the os taking up acetowhitening.
- Nabothian follicles taking up acetowhitening.

▶ **VIA—reporting**

Negative:

- Faint line-like acetowhitening at the junction of columnar and squamous epithelium.
- Acetowhite lesions far away from the TZ.
- Streak-like acetowhitening.
- Dot-like areas in the endocervix, which are due to grape-like formations of columnar epithelium staining with acetic acid.

Training activity

A series of nine slides/photos are included next to show participants various VIA-negative findings. Review each slide and point out the findings. A pointer may be helpful.

- ▶ **VIA-negative cervix with Nabothian follicle (photograph)**
- ▶ **VIA-negative cervix with immature metaplasia (photograph)**
- ▶ **VIA-negative cervix with mucus plug (photograph)**
- ▶ **VIA-negative cervix with a polyp (photograph)**
- ▶ **VIA-negative cervix with chronic cervicitis (photograph)**
- ▶ **VIA-negative with streaks of acetowhite (photograph)**
- ▶ **VIA-negative cervix with squamous metaplasia (photograph)**

▶ **VIA-negative cervix: congenital TZ (photograph)**

▶ **VIA-negative normal cervix**

▶ **VIA—reporting**

Positive:

- Sharp, distinct, well-defined, dense (opaque/dull or oyster-white) acetowhite areas—with or without raised margins.
- Lesions close to SCJ in the TZ.
- Dense acetowhite lesions in the columnar epithelium or near the os.
- Condyloma and leukoplakia close to the SCJ that turn intensely white with acetic acid.

Training activity

A series of six slides/photos are included next to show participants various VIA-positive findings. Review each slide and point out the findings. A pointer may be helpful.

▶ **VIA-positive cervix (series of six photographs)**

▶ **VIA—reporting**

Suspicious for invasive cancer:

- Clinically visible ulcerative-proliferative growth.
- Oozing and/or bleeding on touch.

Training activity

A series of five slides/photographs are included next to show participants VIA findings that are suspicious for cancer. Review each slide and point out the findings.

▶ **VIA findings: suspicious for cancer (series of five photographs)**

▶ **Things to note about VIA screening**

- On average, about 20% of women are VIA positive (and require further management).
- The ability of those performing VIA to identify a normal cervix correctly (specificity) seems to improve with practice.

▶ **More things to note about VIA screening**

- The ability to identify abnormal cervical findings (sensitivity) does not change much with practice.

- About one in seven VIA-positive women has a serious lesion that should be treated.

▶ **Quiz: List the findings associated with a VIA-negative cervix**

Note to trainer: Give participants time to list these findings on paper before showing the next slides.

▶ ***VIA negative includes:***

- NO acetowhite lesions.
- Bluish-white lesions, faint patchy lesions, or doubtful lesions without definite margins.
- A polyp protruding from the os taking up acetowhitening.
- Nabothian follicles taking up acetowhitening.

▶ ***VIA negative also includes:***

- Faint line-like acetowhitening at the junction of columnar and squamous epithelium.
- Acetowhite lesions far away from the TZ.
- Streak-like acetowhitening.
- Dot-like areas in the endocervix, which are due to grape-like formations of columnar epithelium staining with acetic acid

▶ **Quiz: List the findings associated with a VIA-positive cervix**

▶ ***VIA positive includes:***

- Sharp, distinct, well-defined, dense (opaque/dull or oyster-white) acetowhite areas—with or without raised margins.
- Lesions close to SCJ in the TZ.
- Dense acetowhite lesions in the columnar epithelium or near the os.
- Condyloma and leukoplakia close to the SCJ that turn intensely white with acetic acid.

▶ **Quiz: List the findings that are suspicious for cancer**

▶ ***Suspicious for cancer includes:***

- Ulceroproliferative growth—which means a visibly raised surface area that is bumpy and bleeds easily when touched. Such an area turns densely acetowhite after application of dilute 3%–5% acetic acid.

Assessment of VIA skills/cervical photo pretest

▶ **Assessment of VIA skills/cervical photo pretest (title slide)**

Note to trainer: The pretest is next. This may be a good time to practice VIA assessment with cervical photos. Tell participants that the cervical photo test will be repeated after they have done VIA in the clinical setting. Ask participants to write the numbers 1 through 10 down the left side of the paper and, for each cervical photo, to write the VIA assessment beside the corresponding number. Provide a review of the three categories and how they are interpreted. Go through the slides slowly, allowing about 1 minute per slide. Participants should turn in their papers once finished.

▶ **The pretest is next—this may be a good time to practice VIA assessment with cervical photos.**

▶ **Assessment of VIA skills**

Write the numbers 1–15 down the left side of a piece of paper.

For each cervical photo, write your VIA assessment beside the corresponding number.

▶ **Assessment of VIA skills**

Use one of these three categories for each photo:

- Negative
- Positive
- Suspicious for cancer

▶ **Review of VIA categories**

- Negative: no acetowhite area or pale acetowhite area that may or may not abut the SCJ.
- Positive: dense acetowhite area, sharp border, abuts the SCJ.
- Suspicious for cancer: mass with irregular surface, with or without mucosal bleeding.

▶ **Quiz photographs (15 slides)**

Answers:

1. Suspicious for cancer
2. VIA negative
3. VIA negative
4. VIA positive
5. VIA positive
6. VIA negative
7. Suspicious for cancer

8. VIA positive
9. VIA negative
10. Suspicious for cancer
11. Suspicious for cancer
12. VIA positive
13. Suspicious for cancer
14. VIA positive
15. VIA negative

Review the quiz photos with participants and explain the correct answers. Participants may find it helpful to practice drawing VIA results during the review. Have them draw a circle with “crosshairs” to represent the cervix, and then draw lesions and other key features as you review each slide. Handout M: “Sample cervical photos and line drawings” can be used as an example during practice drawing VIA results.

After participants turn in their papers, create a table with participants’ names across the top and the numbers 1 through 15 down the left side. Mark each participant’s answers and compare to the correct answers. You can use this table to look for patterns of responses and depending on areas of weakness, provide further review, if necessary. You can also use this table to compare with participants’ answers when they take the quiz again on the final day of training. A sample table is provided in section VI of this manual.

Unit 7: Visual inspection with Lugol's iodine (VILI)

► Unit 7: Visual inspection with Lugol's iodine (VILI) (title slide)

Overview

This section of the course will go through the step-by-step procedure for performing VILI. Recording the findings will also be discussed. This section will prepare participants for the clinical practice sessions. Participants will take a slide quiz at the end of this unit to assess VILI skills.

Objectives

1. Understand how and why cervical lesions react when exposed to Lugol's iodine.
2. Identify who should be tested.
3. Know when to perform VILI.
4. Identify the equipment needed to perform VILI.
5. Know how to prepare the woman to be tested in terms of positioning, comfort, and privacy.
6. List the steps in performing VILI.
7. Record findings of the VILI test.
8. Discuss the findings with the woman and answer any questions:
 - If the test is negative.
 - If the test is positive.
 - If cancer is suspected.

Topics

1. The VILI procedure
 - How VILI works
 - Identifying who should be tested
 - When to perform VILI
 - Reproductive health history
 - Equipment needed for VILI
 - Steps in VILI procedure
2. Reporting VILI results
 - Describing VILI negative
 - Describing VILI positive

- What to do if unsure of VILI results
- VILI reporting
- Things to note about VILI screening

Audiovisual materials

- Handout A: Learning guide for VIA and VILI
- VIA screening results forms—Handout K: “Sample client register” and handout L: “Sample client card”
- Handout M: “Sample cervical photos and line drawings”
- Handout N: “VILI” one-page photo atlas
- Slides/photos of VILI

Teaching techniques/training activities

- Interactive lecture/slides
- Use of handouts
- Review of cervical images/quiz 2

Teaching outline

(90 minutes; 30 minutes for assessment)

Topic 1. The VILI procedure

► Topic 1. The VILI procedure (title slide)

► VILI and an unanswered question

Research findings in 2004 are based on VILI that has been immediately preceded by visual inspection with acetic acid (VIA).

Part of the improved accuracy of VILI may be due to some effect of VIA, so it still may be prudent to recommend performance of VIA before VILI.

Ongoing research is designed to answer the question of whether VILI performs well without prior VIA.

► VILI—how it works

Normal squamous epithelium is light pink in color. Normal columnar epithelium is red. The color comes from the blood vessels in the underlying stroma.

► VILI—how it works

The original and mature metaplastic epithelium of the cervix contains glycogen.

The columnar epithelium does not contain glycogen.

Newly formed metaplastic epithelium may not contain glycogen or may be only partially glycogenated.

Cells of precursor (cervical intraepithelial neoplasia; CIN) and cancer lesions contain little or no glycogen.

▶ **VILI—how it works**

Iodine is glycophilic. When it is applied to the cervix, it is absorbed by the glycogen-containing epithelium.

Normal epithelium turns mahogany-brown or black after application of Lugol's iodine.

▶ **Iodine reaction**

Columnar epithelium does not take up iodine but may look slightly discolored due to a thin covering with iodine solution.

Immature metaplastic epithelium may be partially stained dark or remain colorless.

▶ **Iodine reaction**

Areas of CIN or invasive cancer do **not** take up iodine but appear as thick mustard- or saffron-yellow areas.

▶ **Iodine reaction**

Condylomata may sometimes partially stain with iodine.

If an inflammatory condition of the cervical epithelium is present (for example, cervicitis), these areas may be unstained with iodine and may remain colorless, surrounded by a dark brown or black background.

▶ **Normal cervix: VILI negative (photograph)**

The squamous epithelium is black due to uptake of the iodine, and the columnar epithelium is slightly discolored and does not take up iodine. The squamocolumnar junction (SCJ) is fully visible.

Source: Reprinted from Sankaranarayanan,¹⁵ with permission.

▶ **Normal cervix: VILI negative (photograph)**

The squamous epithelium is black due to uptake of iodine, and the columnar epithelium is slightly discolored after iodine application. The SCJ is fully visible.

Source: Reprinted from Sankaranarayanan,¹⁵ with permission.

▶ **Normal cervix: VILI negative (photograph)**

The squamous epithelium is black due to uptake of iodine, and the columnar epithelium is slightly discolored after iodine application. The SCJ is fully visible and is located closer to the external os.

Source: Reprinted from Sankaranarayanan,¹⁵ with permission.

▶ **VILI-positive cervix**

Note the yellow lesion on the anterior lip with no iodine uptake.

Source: Reprinted from Sankaranarayanan,¹⁵ with permission.

▶ **VILI-positive cervix**

Note the yellow lesion with no iodine uptake arising from the SCJ and pushing into the ectocervix. The stippled appearance is due to *Trichomonas vaginalis* infection.

Source: Reprinted from Sankaranarayanan,¹⁵ with permission.

▶ **VILI—who should be tested?**

In the beginning, programs may focus on women 30–39 years of age who have had sex in the past. As resources permit, screening can expand to include women 25–65 years.

Screening can be done at any point in the menstrual cycle (it may be difficult to see, if menstrual blood flow is heavy—in such cases, you may need to reexamine).

Recent sexual intercourse does not affect VILI.

▶ **Why choose women 30–39 years of age?**

- Waiting until 30 years of age allows many preexisting CIN lesions to regress (to eventually become normal).
- HPV prevalence also falls with age.
- The peak of cervical cancer incidence is usually later in life.

▶ **VILI—when to perform?**

- For women who are more than 20 weeks pregnant, it may be easier to screen at 6 weeks postpartum.
- At a postabortion checkup.
- When a woman is suspected of having or is known to have a sexually transmitted infection or HIV/AIDS.
- During a visit for other conditions.

▶ **VILI—preparation of the woman**

- Greet the woman.

- Reestablish why the test is being done.
- Describe the procedure.
- Tell the woman what the findings might be and what follow-up treatment might be necessary.
- Take a reproductive health history.

▶ **Common questions**

Is shaving necessary?

Are the instruments safe for use?

What happens if a problem is found?

▶ **VILI—reproductive health history**

Health history should include:

- Age
- Parity
- Menstrual bleeding pattern (irregular or postcoital?)
- Currently pregnant/current contraceptive method

▶ **VILI equipment**

The equipment needed is the same as for VIA, with the addition of Lugol's iodine:

- Report form, client card, or register to record result
- Examination table
- Good light source (halogen flashlight)
- Instrument tray
 - Cotton swabs
 - Vaginal speculum
 - Examination gloves
 - 3%–5% acetic acid (or white vinegar)
 - Lugol's iodine

▶ **Preparation of Lugol's iodine**

Dissolve 10 g of potassium iodide in 100 ml of water.

Add 5 g of iodine crystals after the potassium iodide is fully dissolved

Filter and store in a tightly stoppered bottle for up to 1 month.

▶ **VILI—procedure**

- Tell the woman what you are doing and invite questions.
- Apply dilute acetic acid and note the landmarks on the cervix and any acetowhite areas.
- Carefully apply Lugol's iodine to the cervix with a cotton swab.
- Take care to avoid staining the woman's clothing or your own with iodine!

▶ **VILI—procedure**

- After removing the swab, look at the cervix for iodine-nonuptake areas (nonstaining areas) that appear yellowish-white, especially in the transformation zone (TZ) close to the SCJ.

▶ **VILI—procedure**

- Decide whether the outcome is:
 - Negative: absence of nonstaining areas in the TZ, near the SCJ.
 - Positive: presence of nonstaining—mustard- or saffron-yellow—areas on the cervix.
 - Suspicious for cancer.
- Once the exam is over, mop up excess iodine in the vagina with dry cotton.

▶ **VILI—procedure**

- Gently remove speculum. Tell the woman you are going to do this, and release the tension on the bills before removing.
- As you remove the speculum, inspect the vaginal walls for any nonuptake areas.

▶ **VILI—procedure**

- Place the speculum in 0.5% chlorine solution for 10 minutes of decontamination before cleaning and sterilizing.
- Conclude the procedure by disposing of contaminated swabs, gauze, or other materials.

▶ **VILI—procedure**

- Help the woman up and assure her that you will discuss the findings with her and that she can return any time for advice or care.
- Ask the woman whether she was uncomfortable at any time and whether she has any suggestions to improve the services provided.

▶ **VILI—procedure**

- The sheet on the exam table should be changed
- The exam table surface should be cleaned with disinfectant by wiping with 0.5% chlorine bleach solution or 60%–90% ethyl or isopropyl alcohol before the next woman is examined.

▶ **VILI—procedure**

- If referral is required for further management, explain this and make arrangements with the woman before she leaves the health center.
- Complete the screening referral/client card, note findings in the client register/log, and make a note in client’s book (if she has one).

Topic 2. Reporting VILI results

Note to trainer: You may find the following handouts useful during the following discussion of VILI results: Handout K: “Sample client register” and handout L: “Sample client card” are examples of forms used to record VIA/VILI results. Handout M: “Sample cervical photos and line drawings” can be used as an example during practice drawing VILI results. Handout N: “VILI” is a one-page photo atlas of common VILI results. Participants may find it helpful as a handout during the discussion of VILI results or as a job aid during clinical practice.

▶ **Topic 2. Reporting VILI results (title slide)**

▶ **VILI-negative findings:**

- Normal cervix where the epithelium turns mahogany-brown or black after iodine application and the columnar epithelium does not change color.

▶ **VILI-negative cervix (photograph)**

Note to trainer: In this photograph, the entire ectocervix is black due to the uptake of iodine. There is a small area of columnar epithelium seen within the external os.

▶ **VILI-negative findings**

- With ectopy, an extensive area of columnar epithelium with regular margins is observed on the ectocervix and does not change color.

▶ **VILI-negative cervix with ectopy (photograph)**

A large ectropion due to eversion of the columnar epithelium into the ectocervix is seen. The squamous epithelium is black or deep brown due to iodine uptake, and the columnar epithelium does not take up iodine and remains slightly discolored due to a thin film of iodine solution. The SCJ is fully visible.

▶ **VILI-negative findings**

- Patchy, indistinct, colorless, or partially brown areas appear (immature or new squamous metaplasia).

▶ **VILI-negative cervix (photograph)**

The squamous epithelium remains brown. There are patchy areas of no or partial uptake of iodine in the TZ, corresponding to areas of immature squamous metaplasia and inflammation.

▶ **VILI-negative findings**

- No or partial uptake of iodine by polyps or Nabothian follicles that corresponds with observations made before the application of iodine.

▶ **VILI-negative cervix with a polyp visible in the os (photograph)**

Note to trainer: A polyp is visible in the os. The patchy areas of partial or no iodine uptake are the result of chronic inflammation and squamous metaplasia.

▶ **VILI-negative findings**

- Stippling or a “leopard skin” appearance on the cervix after applying iodine is usually associated with *T. vaginalis* infection or chronic cervicitis.

▶ **VILI-negative cervix with stippled or “leopard skin” appearance (photograph)**

“Leopard skin” appearance due to chronic *T. vaginalis* infection.

▶ **VILI-negative findings**

- Pepper-like iodine-nonuptake areas in the squamous epithelium, far away from the SCJ.

▶ **VILI-negative cervix**

Note the patchy iodine-nonuptake areas, scattered all over the cervix, not restricted to the TZ. This is characteristic of chronic cervicitis.

▶ **VILI-negative findings**

- Thin, yellow iodine-nonuptake areas with angular or digitating margins, resembling geographic areas, seen far from the SCJ.

▶ **VILI-negative cervix with irregular yellow iodine-nonuptake areas (photograph)**

Irregular, yellow iodine-nonuptake areas detached from the SCJ constitute satellite lesions.

▶ **VILI-positive findings**

- Dense, thick, bright mustard- or saffron-yellow iodine-nonuptake areas in the TZ, abutting the SCJ.
- ▶ **VILI-positive cervix (photograph)**
Note the yellow lesion in the anterior lip with no iodine uptake.
- ▶ **VILI-positive cervix (photograph)**
Note the yellow lesion with no iodine uptake arising from the SCJ and pushing into the ectocervix. The stippled appearance is due to infection with *T. vaginalis*.
- ▶ **VILI-positive cervix (photograph)**
Note the yellow lesion arising from the SCJ in the anterior lip.
- ▶ **VILI-positive cervix (photograph)**
Note the mustard-yellow lesion in continuity with the SCJ.
- ▶ **VILI-positive cervix (photograph)**
Note the thin, pale-yellow geographical type of lesion arising from the SCJ in the anterior lip of the cervix.
- ▶ **VILI findings: suspicious for cancer**
 - Clinically visible ulceroproliferative growth.
 - Oozing and/or bleeding on touch.
 - Irregular surface turns densely yellow on application of Lugol's iodine.
- ▶ **Cervix with findings that are suspicious for cancer (photograph)**
Irregular, large, thick yellow iodine-nonuptake lesion.
- ▶ **Cervix with findings that are suspicious for cancer (photograph)**
Note the large, irregular, thick, yellow lesion.
- ▶ **Cervix with findings that are suspicious for cancer (photograph)**
Note the large, thick, irregular, nodular mustard-yellow lesion suggestive of invasive cancer.
- ▶ **VILI (photographs)**

Source: Reprinted from Sankaranarayanan and Wesley,¹⁶ with permission.

Note to trainer: The pictures of the cervix on this slide show VILI-negative and VILI-positive findings.

▶ **Things to note about VILI screening**

- On average, about 16% of women are VILI positive and require further management.
- About one in seven VILI-positive women has a serious lesion that should be treated.

▶ **VILI reporting**

Document findings for your own records and for referral, if necessary.

A record that includes a labeled drawing is best.

▶ **Quiz: List the findings associated with a VILI-positive cervix**

Answers:

▶ **VILI-positive cervix**

- Thick bright mustard- or saffron-yellow iodine-nonuptake areas are seen in the cervix.
- The yellow areas touch the SCJ or the external os (if SCJ not seen).
- A circumferential yellow area surrounds the os, or the entire cervix appears mustard-yellow.

▶ **The pretest is next—this may be a good time to practice VILI assessment with cervical photos.**

Note to trainer: Tell participants that the cervical photo test will be repeated after they have performed VILI in the clinical setting. Ask participants to write the numbers 1 through 15 down the left side of the paper and, for each cervical photo, to write the VILI assessment beside the corresponding number. Provide a review of the three categories and how they are interpreted. Go through the slides slowly, allowing about 1 minute per slide. Participants should turn in their papers once finished.

Assessment of VILI skills/cervical photo pretest

▶ **Assessment of VILI skills/cervical photo pretest (title slide)**

▶ **Assessment of VILI skills**

Write the numbers 1–10 down the left side of a piece of paper.

For each cervical photo, write your VILI assessment beside the corresponding number.

▶ **Assessment of VILI skills**

Use one of the three categories for each photo:

- Negative

- Positive
- Suspicious for cancer

► **Review of VILI categories**

- **Negative:** normal cervix, where the epithelium turns mahogany-brown or black after iodine application and the columnar epithelium does not change color.
- **Positive:** dense, thick bright, mustard- or saffron-yellow iodine-nonuptake areas in the TZ, abutting the SCJ.
- **Suspicious for cancer:** mass with irregular surface, with or without mucosal bleeding.

► **Quiz photographs (10 slides)**

Answers:

1. VILI negative. A large ectropion due to eversion of columnar epithelium into the ectocervix is seen. The squamous epithelium is black or deep brown as a result of iodine uptake; the columnar epithelium does not take up iodine and remains slightly discolored by a thin film of overlying iodine solution. The SCJ is fully visible.
2. VILI negative. A large ectropion due to eversion of columnar epithelium into the ectocervix is seen. The squamous epithelium is black or deep brown as a result of iodine uptake; the columnar epithelium does not take up iodine and remains slightly discolored by a thin film of overlying iodine solution. Note the rugae in the columnar epithelium. The SCJ is almost at the outer limit of the cervix.
3. VILI positive. Note the yellow lesion on the anterior lip with no iodine uptake.
4. VILI positive. Note the mustard-yellow lesion in continuity with the SCJ.
5. VILI negative. Note the stippled appearance typical of *T. vaginalis* infection.
6. VILI positive. Note the large, dense, saffron-yellow, iodine-nonuptake area in the cervix, involving all four quadrants.
7. Suspicious for cancer. Irregular, large, thick, yellow iodine-nonuptake lesion.
8. VILI positive. Note the large, thick, mustard-yellow iodine-nonuptake areas on the upper and lower lips of cervix, extending into the cervical canal.
9. VILI positive. Note the thin, pale-yellow geographical type of lesion arising from the SCJ on the anterior lip of the cervix.
10. VILI negative. The iodine-negative, irregular yellow areas are detached from the SCJ and constitute “satellite” lesions.

Review the quiz photos with participants and explain the correct answers. Participants may find it helpful to practice drawing VILI results during the review. Have them draw a circle with “crosshairs” to represent the cervix, and then draw lesions and other key features as you review

each slide. Handout M: “Sample cervical photos and line drawings” can be used as an example during practice drawing VILI results.

After participants turn in their papers, create a table with participants’ names across the top and the numbers 1 through 10 down the left side. Mark each participant’s answers and compare to the correct answers. You can use this table to look for patterns of responses and depending on areas of weakness, provide further review, if necessary. You can also use this table to compare with participants’ answers when they take the quiz again on the final day of training. A sample table is provided in section VI of this manual.

Unit 8: Referral and treatment after screening

► Unit 8: Referral and treatment after screening (title slide)

Overview

This part of the curriculum discusses referral, possible treatments, and follow-up for women after visual inspection with acetic acid (VIA) or visual inspection with Lugol's iodine (VILI) screening. Women need counseling by the health care provider to assist them in discussing results of screening with the people close to them and in eliciting their support, especially if further confirmatory testing and treatment is needed. Health care providers need to be knowledgeable about the referral networks and treatments available so that they can prepare women for the next step. Cervical cancer precursors and cancer, like other illnesses, may be a taboo or inappropriate subject in some communities or cultures. Women may not be accustomed to discussing the subject with their health care provider, partner, or family members.

Objectives

1. Understand ways to communicate and counsel women regarding VIA or VILI findings and next steps, including further testing and the possibility of treatment.
2. Identify women who need referral.
3. Explain diagnostic tests, including colposcopy and biopsy.
4. Understand the basic treatments for precancerous lesions, most importantly, cryotherapy.
5. Understand treatment measures for cervical cancer, including cone biopsy and hysterectomy.
6. Understand what treatment measures are available for cervical cancer that has spread beyond the reproductive organs, including pelvic surgery, radiation, and palliative care.
7. Understand the need for a monitoring system that includes, at a minimum, a client record and a reminder system for follow-up screening and posttreatment check-ups.

Topics

1. Counseling women about VIA and VILI results
2. Referral for diagnosis and treatment—what happens at the district hospital?
 - Confirmatory procedures
 - Cryotherapy
 - LEEP/LLETZ
 - Cone biopsy
 - Hysterectomy
 - Stages of cancer of the cervix

- Extensive pelvic surgery and radiation
 - Palliative care
3. Follow-up of patients—record-keeping systems
- Client cards
 - Follow-up
 - A basic card file for follow-up with clients
 - Regional/national cancer registry and database
 - A cancer registry database

Audiovisual materials

- Interactive lecture
- Powerpoint/slides
- Handout L: Sample client card
- Handout O: Postcryotherapy instructions

Teaching techniques/training activities

- Interactive lecture/slides
- Role-playing

Teaching outline

(75 minutes)

Topic 1. Counseling women about VIA and VILI results

- ▶ **Topic 1. Counseling women about VIA and VILI results (title slide)**
- ▶ **Group or individual counseling is conducted before screening (photograph)**
- ▶ **Using a thumbprint to sign an informed consent document (photograph)**

Note to trainer: Informed consent must be obtained before screening. Women may sign an informed consent document with a thumbprint.

- ▶ **Counseling patients about the results of screening**
 - While performing visual inspection with acetic acid (VIA) or Lugol's iodine (VILI), continually reassure the woman and inform her of what you are doing.
 - Invite her to ask questions throughout.
 - Allow the woman to get dressed in private before you discuss her results with her.

▶ **Discuss the results of screening after the client has dressed**

▶ **Counseling patients with negative results**

- If the woman is VIA or VILI negative, explain the meaning of the test results and tell her to return for another screening in 5 years.
- Assure the woman that she can return for advice or medical attention at any time.
- Thank her for coming to be screened.

▶ **Counseling patients about the results of screening**

- During prescreening counseling, discuss with the woman the possibility of referral if test results are abnormal.
- If the screening test findings are abnormal, discuss referral for further management.

▶ **Provider counseling a woman (photograph)**

▶ **Counseling patients with abnormal results**

If a woman is VIA or VILI positive, or has findings suspicious of cancer, empathize with her:

- Explain in a nonthreatening manner and use language the woman can understand.
- Refer her for further management.
- Allow time for and encourage questions and discussion about the woman's condition.

▶ **Counseling patients about the results of screening**

If referral is required, a woman has the right to freely decide whether she wants to undergo further testing and/or and treatment.

A woman may want to think more about it and come back to ask more questions, or she may want to wait and discuss her decision with her family or a friend.

▶ **Counseling patients with abnormal results**

- Help the woman to problem-solve.
- Encourage her to discuss this with her partner and to invite him to accompany her to the next visit.
- Provide written instructions for her about when and where she should go (use client card or book).

Topic 2. Referral for diagnosis and treatment—what happens at the district hospital?

▶ **Topic 2. Referral for diagnosis and treatment (title slide)**

▶ **Increasing our understanding of the referral process**

What happens when a woman is referred to a hospital?

▶ **Counseling patients about the results of VIA or VILI**

A referred woman will be counseled and written permission will be obtained by the health care providers in the hospital before any procedure, such as cryotherapy, is performed.

▶ **Confirmatory procedures at the hospital (diagnosis)**

Colposcopy may be performed, if available.

Biopsy may be performed, if required (taking a tiny piece of cervix, about the size of a millet seed, for testing).

The uterus is not involved in either biopsy or colposcopy and is not touched.

▶ **Procedures at the hospital (treatment)**

If appropriate, cryotherapy may be used to destroy a lesion on the cervix.

Important: if the lesion is too large to be covered by the cryoprobe tip or extends into the endocervical canal or if cancer is suspected—**referral to a gynecologist is required.**

▶ **Cryotherapy (title slide)**

▶ **What is cryotherapy?**

- Low-temperature metal probe applied to the cervix to freeze the abnormal area.
- Does not require electricity.
- Requires highly pressurized refrigerant gas (nitrous oxide or carbon dioxide).
- Simple and low-cost procedure.
- 90%–95% effective in treating even high-grade precursor lesions (cervical intraepithelial neoplasia 2–3).

▶ **Cryotherapy procedure**

Cryotherapy begins with a pelvic exam similar to VIA or VILI. Acetic acid or Lugol's iodine is used to visualize the cervical anatomy and any lesions.

A metal probe that is cooled by a freezing gas is placed on the cervical opening.

The area is frozen (3 minutes), thawed (5 minutes), and frozen again (3 minutes) during procedure to get rid of the lesion.

Note to trainer: This slide describe a freeze-thaw-freeze cycle, consisting of 3 minutes of freezing followed by 5 minutes of thawing and another 3 minutes of freezing. After the last freeze, the provider must wait until thawing has occurred to remove the cryotherapy probe,

because the tip usually adheres to the cervix during freezing. A stopwatch should be used to monitor the treatment time.

▶ **Cryotherapy equipment components (illustration)**

Source: Reprinted from Sellors and Sankaranarayanan,¹ with permission.

▶ **Cryotherapy equipment and cryoprobes (photographs)**

Source: Reprinted from Sellors and Sankaranarayanan,¹ with permission.

▶ **Counseling before cryotherapy**

Describe the treatment and explain why it is recommended.

Verify that the client is **not** pregnant.

Inform the woman about the side effects to expect and about alternatives to cryotherapy.

▶ **Expected side effects of cryotherapy**

- Mild cramping
- Profuse, watery vaginal discharge for about 1 month
- Spotting, light bleeding for 1–2 weeks

▶ **Cervix immediately after cryotherapy (photograph)**

Source: Reproduced from Sellors and Sankaranarayanan,¹ with permission.

▶ **Cervix 2 weeks after cryotherapy (photograph)**

Source: Reproduced from Sellors and Sankaranarayanan,¹ with permission.

▶ **Cervix 3 months after cryotherapy (photograph)**

Source: Reproduced from Sellors and Sankaranarayanan,¹ with permission.

Note to trainer: Refer participants to handout O: “Postcryotherapy instructions” so that they can follow along in the discussion of postcryotherapy counseling and care.

▶ **Cryotherapy follow-up care**

- Analgesic may be used to relieve cramping.
- To allow healing to take place, strongly advise nothing in the vagina:
 - **No** sexual intercourse for 4 weeks.
 - Advise condom use, if abstinence is unlikely, to prevent pelvic infection.

- Give at least a 1-month supply of condoms.
- No douching or tampon use.

▶ **Cryotherapy follow-up care**

As with intrauterine device (IUD) insertion, antibiotics may be prescribed after treatment to protect the cervix from infection (based on local policy and prevalence of sexually transmitted infections).

Follow-up visits at:

- 1–3 months for discussion of any problems or questions.
- 12 months for test-of-cure examination.

▶ **Counseling after cryotherapy**

Women are told to return if they have:

- Fever for more than 2 days.
- Foul-smelling discharge.
- Severe lower abdominal pain.
- Heavy bleeding for more than 2 days.

▶ **Other treatments may be necessary but require referral to a gynecologist**

▶ **Loop electrosurgical procedure (LEEP) and large loop excision of the transformation zone (LLETZ) (title slide)**

▶ **LEEP/LLETZ**

Loop electrosurgical excision procedure (LEEP) is sometimes referred to as large loop excision of the transformation zone (LLETZ).

▶ **What is LEEP/LLETZ?**

LEEP/LLETZ is an excisional method, using a thin electric wire to remove the entire transformation zone and thus remove the affected tissue.

This is a key feature of LEEP—it removes tissue that can be examined further, rather than destroying the tissue by freezing.

▶ **Characteristics of LEEP/LLETZ**

- Requires more equipment, including an electricity source, a smoke evacuator, and local anesthetic.
- 90% effective in treating women for precancerous lesions the first time used.
- More side effects for the patient.

- Relatively higher cost.

▶ **LEEP of an ectocervical lesion with one pass (illustration)**

Source: Reproduced from Sellors and Sankaranarayanan,¹ with permission.

- ▶ **Equipment needed to perform LEEP (photograph)**
- ▶ **Types of loops used to excise affected tissue in the TZ (photograph)**
- ▶ **LEEP of an ectocervical lesion with one pass (illustration)**

Source: Reproduced from Sellors and Sankaranarayanan,¹ with permission.

- ▶ **Cervix immediately after LEEP (photograph)**
- ▶ **LEEP—adverse effects**
 - Possible side effects of LEEP are similar to cryotherapy, but chance of severe bleeding is slightly higher.
 - Fewer than 2% of women have moderate-to-severe postprocedure bleeding.
 - As with cryotherapy, antibiotics may be indicated to prevent infection.
 - Women may have a brown or black discharge for up to 2 weeks after LEEP.

▶ **LEEP follow-up care**

Advise women that they will have brown or black discharge for up to 2 weeks and possible discomfort from the local anesthetic on the cervix.

They should report back if:

- The discharge lasts >2 weeks.
- The discharge becomes malodorous.
- Lower abdominal pain develops.
- Profuse bleeding occurs.

▶ **LEEP follow-up care**

Instruct women not to have intercourse, douche, or use tampons for 1 month after the procedure.

Advise them that LEEP may increase the transmissibility of HIV and that condoms should be used during intercourse for 6–8 weeks.

Provide the woman with a 1-month supply of condoms.

Schedule a follow-up visit at:

- 1–3 months to address any concerns.
- 12 months for the test-of-cure examination.

Note to trainer: It is helpful to give women written instructions to take home.

▶ **Cone biopsy (title slide)**

▶ **Cone biopsy—what is it?**

Cone biopsy is a surgical procedure that is done in the hospital by a gynecologist while the patient is under general anesthesia.

Cone biopsy removes the entire circumference of the TZ and most of the cervical canal.

▶ **Cone biopsy (illustration)**

▶ **Cone biopsy**

- Useful to determine whether a very small (microinvasive) cancer is present—if so, it can be treated with just a hysterectomy (removal of the uterus and cervix).
- Also used to examine the tissue in the endocervical canal if there is concern about disease there.

▶ **Cone biopsy: removal of TZ and endocervical canal (illustration)**

▶ **Cone biopsy—possible serious side effects**

- Bleeding
- Infection

▶ **Cone biopsy—possible sequelae**

Most women can have a normal pregnancy and delivery after cone biopsy.

In rare cases, cone biopsy can cause problems with subsequent pregnancies, such as spontaneous miscarriage (premature opening of the cervix), or with labor, such as long labor due to a stenotic cervix.

▶ **Hysterectomy (title slide)**

▶ **Hysterectomy—what is it?**

Hysterectomy is surgical removal of the uterus; it renders the woman incapable of having any more pregnancies.

It can be done vaginally or abdominally.

It requires a specially trained physician.

▶ **Hysterectomy**

Hysterectomy is done in the hospital and requires general anesthesia.

It is usually done for cancer that has not spread beyond the cervix.

▶ **Hysterectomy—possible side effects**

- Bleeding, infection, accidental injury to other organs, such as the bowel or bladder.
- Ovaries may also be removed, creating a menopausal state.

▶ **Extensive pelvic surgery, radiation, and chemotherapy**

When cancer has extended beyond the cervix and uterus, additional surgical procedures, radiotherapy, or chemotherapy may be used.

Such procedures can be costly, and availability is limited.

In Kenya, at the present time, the only hospital offering this type of treatment is in Nairobi.

▶ **Female reproductive system (illustration)**

▶ **Cervical cancer, stage I (illustration)**

Note to trainer: Stage I cancer is limited to the cervix and can be treated with hysterectomy.

▶ **Cervical cancer, stage IIA (illustration)**

Note to trainer: Stage IIA cancer has extended beyond the cervix but does not go beyond the pelvic wall. It also involves the vagina, but not the lower third.

▶ **Cervical cancer, stage IIB (illustration)**

Note to trainer: Stage IIB cancer has additional involvement in the parametrium, but not into the pelvic side wall.

▶ **Cervical cancer, stage IIIA (illustration)**

Note to trainer: Stage III is carcinoma that has extended to the pelvic sidewall. The cancer also involves the lower third of the vagina.

Stage IIIA includes no extension into the side wall but does include involvement of the lower part of the vagina.

▶ **Cervical cancer, stage IIIB (illustration)**

Note to trainer: Stage IIIB also involves the pelvic sidewall and possibly the kidney.

▶ **Cervical cancer, stage IVA (illustration)**

Note to trainer: Stage IVA is cancer that has extended into adjacent pelvic organs, usually involving the mucosa of the bladder and rectum.

Stage IVB is cancer that has spread to distant organs beyond the pelvic area.

▶ **Palliative care (title slide)**

▶ **Palliative care**

For women with late-stage cervical cancers that are beyond hope of cure, palliative care, including counseling and pain control, is extremely helpful.

▶ **Definition of palliative care**

The active total care of patients whose disease is not responsive to curative treatment. Control of pain, other symptoms, and psychological, social, and spiritual problems is paramount.

The goal of palliative care is achievement of the best possible quality of life for patients and their families.

Source: World Health Organization.¹⁷

▶ **Palliative care**

The cost of medications can be very expensive, and families and villages may need to help out.

This makes finding and treating precursor lesions all the more urgent.

Topic 3. Follow-up of patients—record-keeping systems

▶ **Topic 3. Record-keeping systems (title slide)**

▶ **Recording accurate data on clients is important:**

- To ensure appropriate care and follow-up of clients.
- To evaluate the performance of a cervical cancer prevention program.

▶ **Client cards**

A client card or book should be completed with:

- The date tested
- The VIA or VILI results (record one or the other, not both)
- The referral information (if screening was positive)

The woman then has her own copy of the test results and the date on which she had the last test.

Note to trainer: You may refer participants to handout L: “Sample client card” as an example.

▶ **Follow-up**

Women who have negative results should come for repeat screening every 5 years. They should also be instructed to return for other health care as needed.

Women who have had treatment should return for a posttreatment check-up and test of cure at 1 year.

▶ **A basic card file for follow-up of clients**

Effective information and outreach systems should be put in place to ensure that patients receive periodic screening and appropriate follow-up after treatment.

A simple card file, organized by month and year, can be set up in a health center or hospital to serve as a reminder for the recall of patients for follow-up visits or screening visits.

▶ **Regional/national cancer registry and database**

Eventually there may be a regional or national database for cervical cancer screening, diagnosis, and treatment.

Clinicians would collect the required data and send in reports to the regional or national database at the recommended intervals.

▶ **A cancer registry/database:**

- Can be used for monitoring participation of a population in screening, follow up of abnormal findings, and treatment successes.
- Monitors trends in cervical cancer incidence and mortality to evaluate how screening and treatment programs are working over the longer term.

Unit 9: Sexually transmitted infections (STIs)

► Unit 9: Sexually transmitted infections (STIs) (title slide)

Overview

In a screening program for cervical cancer, clinicians will encounter women who have cervicitis and/or vaginitis due to an infection. Clinicians must be able to identify and treat women on the basis of the signs and symptoms observed. They should also be prepared to counsel women about the prevention of STIs, including HIV. In this unit, syndromic management of STIs will be briefly reviewed, using a case-based approach.

Objectives

1. Review the syndromic approach to the management of STIs.
2. Identify the key signs and symptoms of STIs.
3. Learn to integrate the syndromic management of STIs into existing services for women.

Topics

1. Key signs and symptoms of STIs in women
 - Syndromic STI management in women
 - Common infections of the vagina and/or cervix
 - Symptoms
 - Cervicitis
 - Vaginitis
 - Vaginal discharge or pruritus
2. Clinical assessment and treatment of STIs
 - Assessment of the woman with vaginal discharge
 - Treatment of women with vaginal discharge
 - Treatment of women with vaginitis
 - Syndromic treatment of cervicitis
 - Other signs and symptoms: genital ulcer disease (GUD)
 - Genital herpes
 - Treatment for herpes simplex virus
 - Other genital ulcer disease: chancroid
 - Other genital ulcer disease: syphilis

- Assessment of women with genital ulcers
- Treatment for GUD
- Assessment of women with lower abdominal pain
- Pelvic inflammatory disease
- Counseling women with STIs: the 4 Cs
- The fishbowl exercise/STI case presentation

Audiovisual materials

- Handout P: Management of sexually transmitted infections (STI)

Teaching techniques/training activities

- Interactive lecture/slides
- Case discussion
- Fishbowl game/case presentations

Teaching outline (120 minutes)

Topic 1. Key signs and symptoms of STIs in women

- ▶ **Topic 1. Key signs and symptoms of STIs in women (title slide)**
- ▶ **Syndromic STI management in women**

The syndromic approach relies on assessing the **clinical features** of a patient:

- Symptoms with which the person presents.
- Clinical signs and symptoms that a clinician uses to arrive at a diagnosis.

Note to trainer: Refer participants to handout P: “Management of sexually transmitted infections (STI)” so that they can follow along in the discussion of signs and symptoms of STIs and treatment options for each.

- ▶ **Key signs and symptoms of STIs in women**
 - Vaginal discharge (color, amount, consistency) or pruritus (itching)
 - Genital ulcer
 - Lower abdominal pain
- ▶ **Vaginal discharge or pruritus**

Inflammation is the most common pathological condition of the cervix and vagina. It is usually caused by an infection.

Discharge can be due to **cervicitis** (inflammation of the cervix) or **vaginitis** (inflammation of the vagina).

▶ **Common infections of the vagina and/or cervix**

- Anaerobic bacteria overgrowth (bacterial vaginosis)
- *Candida albicans* (candidiasis)
- *Trichomonas vaginalis* (trichomoniasis)
- *Chlamydia trachomatis*
- *Neisseria gonorrhoeae*
- Herpes simplex virus (genital herpes)

▶ **Symptoms of cervicitis and vaginitis**

Women with cervicitis or vaginitis may have one or more of the following symptoms:

- Excessive and/or malodorous discharge
- Spotting
- Itching, swelling, or pain of the vagina or vulva
- Pain or burning with intercourse or urination

▶ **Cervicitis**

Cervicitis is characterized by inflammation of the tissue of the cervix.

The cervix may look swollen, reddened, and “beefy.”

There may be mucopurulent or copious discharge seen in the cervical os.

Cervical mucosa may bleed easily when touched with a swab.

▶ **Cervicitis—chlamydia or gonorrhea (photograph)**

Note mucosal bleeding where purulent discharge has been wiped away.

▶ **Vaginitis**

In **vaginitis**, there is swollen and inflamed tissue in the vagina or on the vulva; copious discharge may be present.

Some infections have a characteristic discharge (for example, greenish discharge of trichomoniasis may contain small bubbles and may be blood-tinged).

▶ **Vaginal discharge or pruritus**

Vaginal discharge or pruritus may be due to a vaginal or cervical condition.

Vaginitis usually is the result of candidiasis or trichomoniasis.

Vaginosis (“*osis*” = no inflammation) usually is the result of bacterial vaginosis.

Cervicitis usually is the result of gonorrhea or chlamydia.

▶ **Vaginitis/vaginosis prevalence estimates from North America**

Bacterial vaginosis: 35%–45%

Yeast infections: 20%–35%

Trichomoniasis: 10%

▶ **Gonorrhea/chlamydia prevalence**

Prevalences vary, but chlamydia is generally less common than gonorrhea in developing countries.

Topic 2. Clinical assessment and treatment of STIs

▶ **Topic 2. Clinical assessment and treatment of STIs (title slide)**

▶ **Assessment of the woman with vaginal discharge**

Does the woman have lower abdominal pain?

Examine for lower abdominal tenderness.

If yes, follow syndromic management guidelines for lower abdominal pain.

▶ **If a microscope is available**

Place two drops of vaginal fluid side by side on a single microscope slide.

Mix a drop of saline with one.

Mix a drop of potassium hydroxide (KOH; 10% solution) with the other and sniff for any foul or fishy odor.

Examine both drops microscopically.

▶ **Testing—two drops of vaginal fluid on a slide (photograph)**

Note to trainer: The following equipment is needed for this test: microscope, glass slide, pH paper, saline.

Instruct participants as follows:

1. Place two drops of saline on a slide and add the vaginal fluid by rolling the cotton-tipped applicator in the saline drops. A cover slide may be used if available.

Wear gloves during this procedure or exert care not to come in contact with the vaginal fluid.

2. Put the slide on the stage of the microscope and adjust the light source so it reflects through the specimen. Some find it easier to identify the specimen using the low-power magnification first, locating the specimen, and then switching to the higher-power lens.
3. With the higher-power lens, adjust the focus of the microscope with the coarse-adjustment knob, then switch to the fine-adjustment knob.
4. When the specimen is in focus, examine it carefully. Go back and forth with the fine-adjustment knob as needed and observe the slide systematically until you have viewed the entire specimen or seen enough to make a diagnosis.
5. Dispose of the slide and vaginal fluid in a contaminated-waste receptacle.

► **Microscopic examination**

Saline mixture

- Reveals clue cells, polymorphic neutrophils (pus cells), lactobacilli (normally abundant), and *T. vaginalis*.

KOH mixture

- Allows the “sniff test” to be done immediately.
- KOH destroys everything except *Candida* species.

► **Microscopic observation of clue cells in bacterial vaginosis (photomicrograph)**

► **Microscopic observation of hyphae and buds in candidiasis (photomicrograph)**

► **Microscopic observation of *T. vaginalis* (photomicrograph)**

► **Testing vaginal fluid pH—litmus paper (photograph)**

Note to trainer: Instruct participants as follows:

1. Place a small amount of the vaginal secretion sample on litmus paper.
2. Compare the color of the litmus paper with the color chart to determine the vaginal pH. The normal vaginal pH is 4 to 4.5, or acidic. The pH is higher—greater than 4.5—with vaginitis.

► **Rapid office diagnosis—vaginitis**

Symptom/sign	Candidiasis	Trichomoniasis	Bacterial vaginosis
Pruritus	+	+	–
Odor	–	+	+
Discharge	Cheesy	Purulent	Grey
Inflammation	+	+	–
pH	≤4.5	>4.5	>4.5
KOH test result	–	–/+	+
Specific findings	Yeast hyphae	<i>T. vaginalis</i>	Clue cells

	and buds		
Polymorphonuclear leukocytes	++	+++	—
Lactobacilli	+	—	—

► **Treatment of the woman with vaginal discharge**

If the woman is not experiencing abdominal pain, then treat for vaginitis.

Candidiasis appears as a white, thick, curdy discharge. Women may complain of vulvar and vaginal itching. They may have red and swollen vulvar and vaginal tissue.

► **Treatment of the woman with vaginal discharge**

Trichomoniasis causes intense itching, sometimes pain with intercourse, and a greenish-grey or watery discharge. The discharge may be frothy or contain small bubbles.

A reddened cervix (often with red spots, called a “strawberry cervix”) is common.

► **Syndromic treatment of the woman with vaginal discharge (presumed candidiasis, trichomoniasis, or bacterial vaginosis)**

- Nystatin, one pessary, pushed up high in the vagina, every day for 5 days, AND metronidazole, 2 g orally stat.
- If the woman is pregnant: clotrimazole, one 100-mg tablet, pushed up high in the vagina, for 6 nights. Metronidazole should not be administered to women in early pregnancy.

► **Syndromic treatment of cervicitis (presumed chlamydia or gonorrhea)**

If there is no improvement in vaginal discharge after 7 days of treatment, treat for cervicitis:

- Norfloxacin, 800 mg orally stat, **and** doxycycline, 100 mg orally b.i.d. for 7 days.
- If the woman is pregnant: amoxicillin, 3 g orally, probenecid, 1 g orally, and amoxicillin/clavulanate (Augmentin), 375-mg tablet orally stat; **and** erythromycin, 500 mg orally q.i.d. for 7 days.

If there is no improvement after 7 days of cervicitis treatment, refer for further investigations.

► **Other signs and symptoms—genital ulcer disease (GUD)**

On examination, women may have signs of GUD, such as vesicle formation or ulceration on the cervix or vulva.

► **Genital ulcer disease**

GUD is usually caused by:

- Chancroid
- Syphilis

- Genital herpes

GUD is associated with an increased risk of HIV infection.

▶ **Genital herpes**

Genital herpes is characterized by multiple, painful vesicles grouped together. It is bilateral in the first episode and unilateral in recurrences.

Often there is a history of recurrence. There may be a only single vesicle with recurrence.

▶ **Types of genital herpes episodes**

- First episode: primary infection, nonprimary infection
- Recurrent episode
- Asymptomatic episode

▶ **Genital herpes—first episode (photograph)**

▶ **Genital herpes—recurrent (photograph)**

▶ **Cervicitis—recurrent genital herpes (photograph)**

▶ **Genital herpes—recurrence on the buttocks (photograph)**

▶ **Treatment for herpes simplex virus infection**

- No curative treatment for the chronic infection.
- Treat symptomatically with cool salt-water compresses, sitz baths, and analgesics.
- If a patient can afford it, oral acyclovir effectively prevents or shortens the duration and severity of episodes.

Note to trainer: Acyclovir (400 mg orally t.i.d. for 7 days) and famciclovir (250 mg t.i.d. for 7 days), if the patient is not pregnant, are effective in treating episodes. However, these medications are very expensive and may not be available.

▶ **Other GUD: chancroid**

Chancroid, caused by *Haemophilus ducreyi*, is characterized by single or multiple ulcers on the labia, vagina, or rectum with or without swollen inguinal lymph nodes and cervicitis.

Patients may be co-infected with HIV, herpes simplex virus, or *Treponema pallidum*.

▶ **Chancroid—“dirty” ulcer (photograph)**

Note to trainer: “Dirty” refers to the presence of a layer of necrotic tissue on the surface of the ulcer crater.

▶ **Other GUD: syphilis**

Syphilis, another GUD, is caused by *T. pallidum*.

Primary syphilis is also characterized by an ulcer or chancre at the site of infection, usually the vulva, labia, vagina, or cervix in women.

Co-infection with HIV is common.

▶ **Primary syphilis—“clean” ulcer on penis (photograph)**

Note to trainer: “Clean” refers to the absence of any debris or pus in the ulcer crater.

▶ **Assessment of women with genital ulcers**

Examine for ulcers on the vulva, vagina, and cervix.

If the woman appears to be infected with herpes simplex virus, treat symptomatically and watch for healing to begin within 7 days.

▶ **Assessment of women with genital ulcers**

If no healing has occurred after 7 days, presume it is a GUD other than herpes. Consider counseling patient about undergoing HIV testing, and treat for other GUD.

GUD heals slowly, and persons with HIV infection respond even more slowly to treatment.

▶ **Treatment for GUD other than genital herpes (syndromic diagnosis is now syphilis or chancroid)**

- Erythromycin, 500 mg orally t.i.d. for 7 days, **and** benzathine penicillin G, 2.4 MU intramuscularly stat.
- If the woman is allergic to penicillin: erythromycin, 500 mg orally q.i.d. for 14 days.

▶ **Treatment for GUD other than genital herpes**

- If there is **no** improvement (decreased pain, healing) after 7 days, try the alternative treatment: ciprofloxacin, 500 mg orally stat.
- If there is **no** improvement after 7 days of alternate treatment, refer for further investigations.

▶ **Assessment of the woman with lower abdominal pain**

Causes of lower abdominal pain in women include:

- Pelvic inflammatory disease (PID), caused by gonorrhea, chlamydia, and/or anaerobes.
- Surgical conditions, such as appendicitis.
- Obstetric emergency, such as ectopic pregnancy.

- Urinary tract infection.

▶ **Assessment of the woman with lower abdominal pain**

Take a good history:

- Last menstrual period
- Last coitus
- Partner's health

To differentiate the causes, do abdominal and bimanual examinations.

▶ **Abdominal examination**

Check each quadrant of the abdomen to locate the site and source of the pain:

- Right lower quadrant—can be appendicitis or ovarian problem.
- Right upper quadrant—can be hepatitis, gallbladder disease.
- Left lower quadrant—can be related to the bowel or ovaries.
- Left upper quadrant—can be related to the spleen, especially if the patient has been subject to trauma.

▶ **Abdominal examination**

If the pain is suddenly worse when the examiner removes the hand, this is **rebound tenderness**. Rebound tenderness is a sign of peritonitis and requires immediate referral.

▶ **Bimanual examination**

- Check for pain when cervix is moved (cervical motion tenderness).
- Check size, shape, consistency, and position of the uterus (assess for pregnancy or uterine abnormality).
- Assess adnexae for pain or enlargement.

▶ **Abdominal pain—important to first rule out surgical emergencies**

- Ectopic pregnancy (always suspect this and do a pregnancy test)
- Appendicitis
- Torsion of ovarian cyst
- Other . . .

▶ **Abdominal pain—surgical or obstetric causes**

If women have any of the following, **refer for urgent surgical and/or gynecologic** evaluation:

- Rebound tenderness

- Guarding
- Last menstrual period overdue
- Recent abortion or delivery
- Menorrhagia—profuse or prolonged menses
- Metrorrhagia—irregular bleeding

▶ **Pelvic inflammatory disease**

Sometimes infection can cause endometrial or tubal infection (PID).

The signs and symptoms of PID include:

- Lower abdominal pain
- Pain during intercourse; pain with motion of the cervix during examination
- Fever, temperature >38 degrees C
- Vaginal discharge

▶ **Pelvic inflammatory disease**

Prompt antibiotic treatment should be instituted for PID and the patient followed closely.

▶ **PID treatment**

- Norfloxacin, 800 mg orally stat, **and** doxycycline, 100 mg orally b.i.d. for 7 days, **and** metronidazole, 400 mg orally b.i.d. for 10 days.
- If the woman is pregnant: refer for obstetric evaluation if PID is suspected.

▶ **PID—follow-up is important**

Reassess client in 7 days.

If no improvement, refer for gynecologic or surgical consultation.

▶ **Counseling women with STIs: the 4 Cs**

- **Counsel:** Empathize with and talk with your client.
- **Contact treatment:** Your client should tell all of her sexual partners to seek health care.

▶ **Counseling women with STIs: the 4 Cs**

- **Compliance:** Tell your client to avoid self-treatment, to take the full course of medication, and not to share the medication with anyone.
- **Condoms:** Give condoms to your client, and tell her to use them or avoid sexual intercourse during treatment. Explain and demonstrate the proper use of condoms.

Review

▶ Review (title slide)

Training activity

The fishbowl exercise/STI case presentations:

This exercise is to help participants learn or recall the STIs, the symptoms with which they present, and the treatment or referral needed.

Position the group in a semicircle if possible. Trainers should facilitate the discussion by presenting the case and directing the discussion. Provide participants with handout P: “Management of sexually transmitted infections (STI)” for reference.

▶ STI case 1

Mrs. T comes to the health center complaining of a malodorous vaginal discharge that has persisted for the last 3 weeks. She also has pruritus and pain with intercourse. On examination, you see a very red cervix with copious greenish, frothy discharge. The discharge has a slightly fishy odor.

▶ Appearance of Mrs. T’s cervix (photograph)

▶ STI case 1—questions

What is your diagnosis?

What are the signs and symptoms commonly associated with this STI?

Can you differentiate between the different STIs on the basis of the color and smell of the discharge?

▶ STI case 1

Diagnosis: Trichomoniasis (caused by *T. vaginalis*).

Signs and symptoms: vulvovaginal pruritus or irritation.

Differentiation: Greenish discharge with bubbles and inflamed cervix.

▶ Mrs. T’s cervix after application of Lugol’s iodine

Note to trainer: On visual inspection with Lugol’s iodine, the cervix has a “leopard skin” or stippled appearance.

▶ Rapid office diagnosis—vaginitis

Sign/symptom	Candidiasis	Trichomoniasis	Bacterial vaginosis
Pruritus	+	+	–
Odor	–	+	+

Discharge	Cheesy	Purulent	Grey
Inflammation	+	+	–
pH	≤4.5	>4.5	>4.5
KOH test result	–	–/+	+
Specific findings	Yeast hyphae and buds	<i>T. vaginalis</i>	Clue cells
Polymorphonuclear leukocytes	++	+++	–
Lactobacilli	+	–	–

► **STI case 1**

What additional assessments would you make? What additional risks do you think this patient has?

How would you treat this? Look at the flowchart on handout P.

How would you counsel Mrs. T?

Points to discuss:

- Bimanual and abdominal assessment are necessary to rule out pelvic inflammatory disease. Look for ulcers to rule out coexistence of GUD.
- Treatment for vaginitis is nystatin, 1 pessary b.i.d. for 5 days, **and** metronidazole, 2 g orally stat. If the patient is pregnant, use clotrimazole, 1 tablet intravaginally daily for 6 days, instead.

Remember the 4 Cs:

Counsel her: Discuss your findings and treatment plan. It is not a serious condition, it is sexually transmitted, and she should be cured if she finishes her medications and ensures that her partner(s) are treated also.

Contact treatment: Tell Mrs. T to instruct Mr. T and any other sexual partners to seek health care, or treat Mrs. T's partners at the same time.

Compliance: Tell her to avoid self-treatment, to take the full course of medication, and not to share with anyone. She should avoid alcohol for at least 1 week after she has taken her dose of metronidazole (the combination of alcohol and metronidazole can produce a severe drug reaction).

Condoms: Give her condoms and show her how to use them, if needed.

► **STI case 1—answers**

Remember, this infection will likely recur if the partner is not treated.

► **STI case 2**

Sarah, a young woman (20 years old) walks slowly into the health center complaining of multiple “bumps” and swelling on the vulva, burning with urination, and pain for the last 3 days. She had sex with a new partner several weeks ago.

▶ **STI case 2**

When you examine her, you find she has multiple vesicles, grouped near each other, on both of the labia majora. They are tender and swollen. There are a few small ulcers. She has never had this before, and she is very worried and uncomfortable.

▶ **STI case 2 (photograph)**

She has multiple vesicles on a reddened base and a slightly swollen vulva.

Note to trainer: Herpes simplex virus, first episode, is the most likely diagnosis. The number, type, and location of ulcers provide a clue that this is herpes simplex virus. Some GUDs have a single lesion, and it is impossible to accurately differentiate genital herpes, chancroid, and syphilis by observation alone.

▶ **STI case 2—questions**

What is your diagnosis?

What are the signs and symptoms commonly associated with this STI?

Can you differentiate between GUDs on the basis of the signs and symptoms?

▶ **STI case 2—questions**

What additional assessments would you make? What additional risks do you think this patient has?

How would you treat this? Look at the flowchart on handout P.

How would you counsel this young woman?

Points to discuss:

- Any other signs or symptoms?
- Does she want an HIV test?
- There is no real treatment, although you can help relieve the symptoms, shorten the course, and lessen the pain with cool salt-water compresses and analgesics.

Remember the 4 Cs:

Counsel her: Tell her that this may be the first episode of genital herpes. If it is, then it may recur a few times every year but will be much milder. There is no cure. It is sexually transmitted, and she is more likely to transmit it when she has a recurrence. Counsel about STI prevention (she may be putting herself at risk for other STIs) and contraception.

Contact treatment: No treatment is available, but she should tell her partner(s).

Compliance: Tell her to use symptomatic treatment, as above. Try comfort measures, such as cool salt-water compresses.

Condoms: Give her condoms and show her how to use them, if needed.

▶ **STI case 3**

Mrs. J, 25 years old, is nursing her 6-month-old baby. She has four other children. She has vague complaints of abdominal discomfort on the lower left side of her abdomen. She is a little constipated and just doesn't feel well. She has had "pelvic infections" several times in the past and feels it might be back again.

▶ **STI case 3—questions**

What additional history would you like to obtain from Mrs. J?

What assessments would you do? Why?

Mrs. J tells you she has not had a period since her 6-month-old was born and feels she is protected from pregnancy until she starts bleeding again. She has not been using any contraception.

▶ **STI case 3—answers**

Ask Mrs. J how long the pain has been present.

Assess her for abnormal vaginal discharge and pain on intercourse.

▶ **STI case 3**

On examination, you notice tenderness over the left adnexa and slight tenderness with motion of the cervix, and the uterus feels soft. There is normal vaginal discharge.

How would you manage this? Look at the flowchart on handout P.

Points to discuss:

- She could have an ectopic pregnancy—refer for pregnancy test.
- Possibly PID, but pregnancy test is important to rule out ectopic pregnancy.

Section III. Course summary and feedback instructions

On the last day of the course, time is allowed in the schedule for the participants to summarize what was learned and provide feedback to the trainers on their performance.

During this time, the trainer and participants should review the overall course objectives and the objectives for each unit of the course (listed in the course overview in section I of this manual).

Were these objectives met? Ask participants to discuss why or why not.

It would also be helpful to ask participants what the main points were of each unit. Participants might want to comment on the training exercises. Did they like or dislike any of the training exercises? Did they work or not work to help with learning? Why or why not? Help the participants summarize their comments.

Gathering feedback about the course and trainers:

Participants can provide valuable feedback to the trainers about teaching methods, as well as about the content of the course. Section VI of this manual includes the “Visual methods for cervical cancer screening course evaluation form”; please distribute a copy of this form to each participant and ask them to take 5 minutes to fill it out or, if necessary, to return it by mail. Engage the participants in discussion about teaching techniques. Encourage positive feedback, but welcome constructive criticism as well. Ask:

- What did the trainers do best?
- How did that help you learn?
- Was there anything that needed to change or improve?
- What?
- Do you have suggestions for improvement?

Thank the participants for their work and their feedback.

Section IV. Sample schedule of activities

Day 1—morning

Activity	Training methods	Time allotted	Sample schedule
<p>Welcome Instructor and participants discuss their experiences and their expectations of the course.</p>	Group participation	45 minutes	8:30–9:15
<p>Agenda and logistics Course overview—goal, objectives, topics to be covered, teaching methods to be used, and evaluation methods to be used. Explain why it is important to screen using visual methods.</p>	<ul style="list-style-type: none"> • Lecture and handout of agenda/schedule of activities • Questions and answers • Lecture • Introduction slides 	45 minutes	9:15–10:00
<p>Pretest (multiple-choice questions)</p>	Paper and pencil test	30 minutes	10:00–10:30
<p>Tea break</p>		15 minutes	10:30–10:45
<p>Unit 1: Normal anatomy and physiology of the vulva, vagina, and cervix</p> <ol style="list-style-type: none"> 1. Examination of the female patient 2. The vulva 3. The vagina 4. The cervix 	<ul style="list-style-type: none"> • Interactive lecture • Unit 1 slides • Questions and answers • Slides/pictures of female anatomy, the normal cervix, and normal variations • Slide quiz with participant identification of normal and variations • Homework: <ul style="list-style-type: none"> ○ Quiz 1: Gross anatomy of the female genitourinary system ○ Quiz 2: Gross Anatomy of the uterus, cervix, and vagina ○ Quiz 3: Cervical anatomy ○ Quiz 4: Detailed cervical anatomy 	2 hours, 15 minutes	10:45–13:00

Day 1—afternoon

Activity	Training method	Time allotted	Sample schedule
Lunch		1 hour	13:00–14:00
Unit 2: Abnormal vagina and cervix; natural history of cervical cancer 1. Cervical and vaginal infection and inflammation 2. HPV and cervical cancer 3. Screening programs	<ul style="list-style-type: none"> • Interactive lecture • Unit 2 slides • Handshake game • Questions and answers • Short quiz • Slides/photos of abnormal cervixes 	1 hour, 30 minutes	14:00–15:30
Tea break		15 minutes	15:30–15:45
Unit 2 continued 4. Identifying precursor lesions	<ul style="list-style-type: none"> • Interactive slides/photo review • Questions and answers 	15 minutes	15:45–16:00
Unit 3: Screening to detect the precursors of cervical cancer 1. Cervical cancer prevention and screening 2. Pap smear 3. VIA 4. VILI 5. Confirmation methods: colposcopy 6. Conclusions about use of VIA and VILI screening in low-resource settings	<ul style="list-style-type: none"> • Interactive lecture • Unit 3 slides • Case discussion • Questions and answers • Handout A: Learning guide for VIA and VILI 	1 hour	16:00–17:00

Day 2—morning

Activity	Training methods	Time allotted	Sample schedule
Recap Day 1	Review the key points in the first three units; involve the participants as much as possible	30 minutes	8:30–9:00
Unit 4: Counseling and informed choice <i>(1st of two parts—2nd part to be continued on Day 6)</i> 1. Counseling for cervical cancer screening and treatment and effective use of support materials 2. Informed choice	<ul style="list-style-type: none"> • (No slides) • Interactive lecture • Group and paired activities • Role-playing: counseling women • Using handouts B–I • Using the counseling flip chart 	1 hour, 45 minutes	9:00–10:45
Tea break		15 minutes	10:45–11:00
Unit 4 continued 1. Counseling for cervical cancer screening and treatment and effective use of support materials 2. Informed choice	<ul style="list-style-type: none"> • (No slides) • Interactive lecture • Group and paired activities • Role-playing: counseling women • Using handouts B–I • Using the counseling flip chart 	1 hour, 15 minutes	11:00–12:15
Unit 5: Vaginal speculum examination technique and infection prevention 1. Vaginal speculum examination technique 2. Infection prevention and safety issues	<ul style="list-style-type: none"> • Interactive lecture • Unit 5 slide • Demonstration and practice using vaginal speculum, if available • Quiz on infection prevention 	45 minutes	12:15–13:00

Day 2—afternoon

Activity	Training methods	Time allotted	Sample schedule
Lunch		1 hour	13:00–14:00
Unit 6: Visual inspection with acetic acid (VIA) 1. The VIA procedure 2. Reporting VIA results	<ul style="list-style-type: none"> • Interactive lecture • Unit 6 slides (A pointer is helpful.) • Handout A: Learning guide for VIA and VILI • Handout J: VIA one-page atlas • VIA screening results forms— Handout K: Sample client register and Handout L: Sample client card • Handout M: Sample cervical photos and drawings 	120 minutes	14:00–16:00
Tea break		15 minutes	16:00–16:15
Assessment of VIA skills	<ul style="list-style-type: none"> • Oral quiz—list findings of VIA negative, VIA positive, and suspicious for cancer • VIA skills/cervical photo pretest (15 slides; participants need a sheet of paper and pencil) (Trainer completes table of participants' responses) 	30 minutes	16:15–16:45
Unit 7: Visual inspection with Lugol's iodine (VILI) 1. The VILI procedure 2. Reporting VILI results	<ul style="list-style-type: none"> • Interactive lecture • Unit 7 slides • Handout A: Learning guide for VIA and VILI • VILI screening results forms— Handout K: Sample client register and Handout L: Sample client card • Handout M: Sample cervical photos and drawings • Handout N: VILI one-page atlas 	90 minutes	16:45–18:15

Day 3—morning

Activity	Training methods	Time allotted	Sample schedule
Recap Day 2 1. VIA procedure 2. VILI procedure	Questions and answers	30 minutes	8:30–9:00
Assessment of VILI skills	<ul style="list-style-type: none"> • Oral quiz—list findings of VILI negative, VILI positive, and suspicious for cancer • VILI skills/cervical photo pretest (10 slides; participants need a sheet of paper) (Trainer completes table of participants' responses)	30 minutes	9:00–9:30
Unit 8: Referral and treatment after screening 1. Counseling women about VIA and VILI results 2. Referral for diagnosis and treatment 3. Follow-up of patients—record-keeping systems	<ul style="list-style-type: none"> • Interactive lecture • Unit 8 slides • Handout L: Sample client card • Handout O: Postcryotherapy instructions • Role-play (if there is time) 	1 hour, 15 minutes	9:30–10:45
Tea break		15 minutes	10:45–11:00
Unit 9: Sexually transmitted infections (STIs) 1. Key signs and symptoms of STIs in women 2. Clinical assessment and treatment of STIs	<ul style="list-style-type: none"> • Interactive lecture • Case discussion • Unit 9 slides • Fishbowl game/STI case presentations • Handout P: Management of sexually transmitted infections (STI) 	2 hours	11:00–13:00

Day 3—afternoon

Activity	Training methods	Time allotted	Sample schedule
Lunch		1 hour	13:00–14:00
Clinical Practice Observation and practice in health center (Participants will be divided into two groups and transported to the health center.)	<ul style="list-style-type: none"> • Orient to health center • Gather equipment needed for VIA, VILI • Practice speculum insertion and locating cervix • Observe/perform at least 3 VIA exams including counseling • Use forms—Handout A: Learning guide for VIA and VILI • Can use Handout J: VIA one-page atlas and Handout N: VILI one-page atlas 	3 hours	14:00–17:00

Day 4—morning

Activity	Training Methods	Time allotted	Sample schedule
Clinical practice Observation and practice in health center	<ul style="list-style-type: none"> • Observe/perform at least 10 VIA and/or VILI exams, including counseling • Use forms—Handout A: Learning guide for VIA and VILI • Can use Handout J: VIA one-page atlas and Handout N: VILI one-page atlas 	4 hours, 30 minutes	8:30–13:00

Day 4—afternoon

Lunch		1 hour	13:00–14:00
Clinical practice Observation and practice in health center	Continue morning activities	2 hours, 45 minutes	14:00–16:45
Wrap-up Day 4	<ul style="list-style-type: none"> • Review clinical practicum experiences • Review drawing abnormal cervixes (can use Handout M: Sample cervical photos and drawings) • Problem-solve • Seek feedback from participants • Review self- and peer evaluations recorded on Handout A: Learning guide for VIA and VILI 	1 hour, 15 minutes	16:45–17:00

Day 5—morning

Activity	Training methods	Time allotted	Sample schedule
Clinical practice Observation and practice in health center	<ul style="list-style-type: none"> • Perform at least 10 VIA and/or VILI exams • Use forms—Handout A: Learning guide for VIA and VILI • Can use Handout J: VIA one-page atlas and Handout N: VILI one-page atlas 	4 hours, 30 minutes	8:30–13:00

Day 5—afternoon

Activity	Training methods	Time allotted	Sample schedule
Lunch		1 hour	13:00–14:00
Clinical practice Observation and practice in health center	<ul style="list-style-type: none"> • Perform at least 5 VIA and/or VILI exams • Use forms—Handout A: Learning guide for VIA and VILI • Can use Handout J: VIA one-page atlas and Handout N: VILI one-page atlas 	2 hours, 45 minutes	14:00–16:45
Wrap-up Day 5	<ul style="list-style-type: none"> • Review clinical practicum experiences • Review drawing abnormal cervixes (can use Handout M: Sample cervical photos and drawings) • Problem-solve • Review trainer evaluations of participants 	45 minutes	16:45–17:30

Day 6—morning

Activity	Training methods	Time allotted	Sample schedule
Recap Day 4 and Day 5	<ul style="list-style-type: none"> • Review key points in the clinical practice training • Answer questions about recording results/forms • Review drawing abnormal cervixes (use slides to show examples of abnormal cervixes; can also use Handout M: Sample cervical photos and drawings) • Discuss the key messages for promoting VIA or VILI to lay audiences or other providers 	1 hour	8:30–9:30
Unit 4: Counseling and informed choice (<i>2nd of two parts</i>) 1. What is quality care? 2. Creating a private and comfortable atmosphere 3. Active listening 4. Asking effective questions	<ul style="list-style-type: none"> • (No slides) • Interactive lecture • Group and paired activities • Role-playing: counseling women and answering frequently asked questions • Using handouts B–I 	1 hour, 15 minutes	9:30–10:45
Tea break		15 minutes	10:45–11:00
Continue unfinished counseling and informed choice activities		2 hours	11:00–13:00

Day 6—afternoon

Activity	Training methods	Time allotted	Sample schedule
Lunch		1 hour	13:00–14:00
Wrap-up of the course	<ul style="list-style-type: none"> • Recap of lessons learned by participants and trainers • Feedback on course objectives 	30 minutes	14:00–14:30
Posttest (multiple-choice questions)	<ul style="list-style-type: none"> • Paper and pencil test (repeat pretest) • Repeat VIA and VILI photo quizzes from units 6 and 7 (Trainer completes table of participants' responses) 	45 minutes	14:30–15:15
Discussion Group discussion of the answers to the posttest and cervical photo quiz	Interactive discussion of the posttest and cervical photo slides	1 hour	15:15–16:15
Tea break		45 minutes	16:15–16:30
Evaluation	<ul style="list-style-type: none"> • Self-/peer evaluation of performance • Trainer evaluation of performance for each participant (summarized from Day 5 observations) • Hand out certificates of achievement • Evaluation of course and suggestions for improvement from participants 	1 hour	16:30–17:30

Section V. References and resources

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