Uganda Cancer Institute

THE REPUBLIC OF UGANDA

Cancer Information, Education and Communication Guide for Health Workers

First Edition
October 2017

Comprehensive Community Cancer Programme (CCCP)

Research is our resource

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CONTENTS

Part One: Using These Materials And Health Education Tips

SECTION ONE: USING THESE MATERIALS

These Materials are intended for use by:

- Health workers (Health Facility based, or Community based)
- Health care service supervisors
- Health provider trainers
- Community health mobilisers
- Teachers
- Social workers and community development officers

The materials are designed to be used at all levels of Health care, at community level, and for communicating to community leaders policy makers about cancer prevention and early detection. **The** primary **targets** are the health workers in health centre and district hospitals especially, health educators, clinicians (clinical and medical officers, public health nurse, health assistants, health inspectors, etc. It may also be of interest to community-based and tertiary-level health workers. A second target audience includes health workers and managers at the regional referral level whose responsibilities may include programme planning, implementation, monitoring and evaluating, and/or supervising and training other health workers in their region.

Language used in this guide

The language used throughout this guide has intentionally been adapted for the primary target audience: primary- and secondary-level workers whose ultimate beneficiaries are their clients, patients and communities. It avoids technical jargon when describing tertiary-level procedures and services provided by specialists. Instead, it provides the tools to explain what the client or the community may need to know or what need to be clarified based on evidence and discuss basic issues with patients and their support circles so they can understand and make informed decisions. Technical terms used in this guide that may be unfamiliar to the reader are defined in the text.

The purpose of this guide is to increase uptake of cancer prevention services and improve early detection and access to care through community and health facility based mobilization and cancer health education.

SECTION TWO: HEALTH EDUCATION & COUNSELLING ACTIVITIES AT THE VARIOUS LEVELS OF CARE

COMMUNITY:

- Assess gaps in knowledge, myths and negative attitudes about cancer in the community.
- Give heath talks tailored to specific audiences such as:
  - Adolescents/Young people
  - Women of different ages
  - Men
  - Public Events/ functions
  - Policy makers and community leaders
- Distribute information, Education & Communication (IEC) materials.
- Counsel women and men in the community about cancer especially cancer of the cervix, breast, prostate and Karposi Sarcoma (KS) focussing on prevention, screening & treatment, depending on specific needs.

HEALTH CENTRE III & IV:

- At every available opportunity, provide cancer information.
- Counsel individual men, women, couples on cancer prevention and early Detection and treatment.
- Health educates and counsel women between 25 - 60 years in waiting rooms, outpatient clinics and during community outreaches.
- Train and assist Community health workers (community health extension workers- CHEWs) to educate the Community using easy, agreed key messages.
- Screen women between 25 - 60 years for cancer of the cervix and breast and men 40 years and above as priority groups and refer to hospital for treatment all those with Pre-cancer or suspicious of cancer.
- Suspect any other types of cancer and refer to the appropriate level for further investigation and management.

HOSPITAL: (District/Regional Referral)

- Educate and counsel women men in waiting rooms, wards, outpatient and gynaecological clinic, ART clinic etc on cancer especially cervical, breast, KS, and prostate cancer, their prevention, early detection and treatment.
- Train and supervise health providers
- Support provision of health services for screening of all women between 25 – 60 years of age and provide appropriate referral.
- Support health educations in communities, health centres, ensuring messages on cancer and specific type of cancer prevention are consistent.

NATIONAL REFERRAL HOSPITAL:

- Carry out all the above activities.
- Produce and disseminate clear information and education materials for patients and families on cancer screening, diagnosis, treatment and palliative care.
- Inform and educate policy and decision-makers on the effects of cancer on the population, and the cost benefits of prevention, early detection and treatment.

SECTION THREE: TIPS FOR CONDUCTING HEALTH EDUCATION SESSIONS

An effective health educator must have a strong knowledge base of relevant information, as well as comfort with the topic and sensitivity in choice of words.

An effective health educator must also be proficient in presentation to ensure that his or her messages are fully understood and that participants remain engaged.

Some presentation tips include:

- Give accurate information in a sensitive and non-judgemental manner.
- Make sure the material is easy to understand and appropriate for the audience.
- Keep core messages consistent, regardless of the audience, but also strive to make messages both locally and culturally appropriate and tailor language to the audience using commonly understood terms whenever possible.
- Use feedback and advice from your audience to revise the messages to ensure they will be fully understood and effective.
- Address common fears and misconceptions, as well as the stigma sometimes attached to cancer
- Use the GATHER technique during all sessions at all levels.

G- Greet A- Ask T- Tell H- Help E - Explain R - Return (give appointment date)

  - Provide accurate information about cancer with emphasis on prevention and early detection of cancer of the cervix, breast, prostate and KS.
  - Explain briefly for each type of cancer what and where the organ is e.g. what and where the cervix is.
  - Explain what cancer is
  - Explain how the specific cancer presents.
  - Explain what causes cancer and what causes the specific type of cancer you are targeting.

- Describe screening tests and treatment options.
- Explain how the specific type of cancer e.g. Cervical cancer is prevented with emphasis on early detection of precancerous lesions.
- Correct any myths and misconceptions.
- Explain what to expect during screening and treatment.
- Explain what a positive or negative screening test means.
- Ensure your audience understands.

SECTION FOUR: PREPARING FOR COMMUNITY MOBILISATION & HEALTH EDUCATION SESSIONS

Community mobilization is a process of engaging communities and generating support for all those in need of health services (for example, cervical cancer prevention and control), resulting in sustainable community ownership and participation.

Community mobilization engages all sectors of the population in a community-wide effort to address a health, social, or environmental issue. It brings together policy makers and opinion leaders, local and central governments, professional groups, religious groups, businesses, and individual community members. Community mobilization empowers individuals and groups to take some kind of action to facilitate change.

Promotion of preventive services can be a challenge in any setting. People are often more likely to seek care if they or their family members are sick than to seek preventive services, and women often relegate their own preventive care to the lowest priority. Effective preventive care at health care facilities requires not only setting up the service, but – equally important – engaging the community so that they understand and utilize it.

Health-care providers are often overburdened with caring for patients, which makes it difficult to provide health education at health facility or get out into the community, however, this can be integrated during the routine health facility service provision units/ clinics like OPD, ART clinic, etc.

Community health workers, volunteers and facility managers can be mobilized to provide community education and outreach. Community partners – including community leaders, religious leaders, teachers and members of local women's groups – can all help to identify members of the target populations, and can also help to address barriers to access and treatment. Community mobilization efforts can expand the reach and impact of the limited resources of health centres and providers.

Why mobilize the community? It can:

- Contribute additional energy into an issue through community buy-in and support. Expand the base of community support for an issue or organization.
- Help a community overcome denial of a health issue.
- Promote local ownership and decision-making about a health issue.
- Encourage collaboration between individuals and organizations.

- Limit competition and redundancy of services and outreach efforts.
- Provide a focus for prevention planning and implementation efforts. Create public presence and pressure to change laws, policies, and practices —progress that could not be made by just one individual or organization.
- Bring new community volunteers together (because of increased visibility).
- Increase cross-sector collaboration and share resources.
- Increase access to funding opportunities for organizations and promote long-term, organizational commitment to social and health-related issues.

Who will you need to mobilize in the community?

For community mobilization efforts addressing health issues, it will be most effective to gather the support of those who have the most interaction and influence with the populations. They include:

CBO and FBO leaders,

Health workers, and

Local and central government policy makers and opinion leaders (support from policy makers and opinion leaders can be achieved through efforts of CBOs and FBOs)

Phases of community mobilization

Mobilizing your community to support cancer prevention & control efforts can be managed in a focused and systematic fashion when the following phases are followed.

Phase I: Planning for Community Mobilization

Phase II: Raising Awareness

Phase III: Building a Coalition

Phase IV: Taking Action

Phase V: Monitoring and Evaluating

Do the following before mobilization and health education session:

Determine the target audience for the health education session or counselling or mobilisation session.

- Determine what type of contact visit you will make (home, group talk, follow-up visit, public awareness campaign, health education talk at health facility...).
- Plan your communication strategy.
- Update the following information and write in your notebook:
  - Regular screening hours at health centre.
  - Regular screening hours at District or Regional referral Hospital
  - Regular health education hours in the health facility.
- Carry with you IEC materials (posters, brochures, etc where applicable), note book and pens

Be sure to show up for your appointment!

SECTION FIVE: TALKING TO THE TARGET AUDIENCE

Step 1. Find a suitable place for the health talk. Preferably give the talk while the audience is seated.

Step 1. Ask for permission to speak.

Step 3. Determine the best language to use, to achieve the best communication.

Step 4. Introduce yourself and establish trust.

- Give your names.
- Explain the purpose of your visit.
- Explain the cancer prevention program/services available in your community, in the health region of your catchment e.g. Jinja, Mbale, Mbarara, Gulu or Arua regional referral hospital or national referral hospital like Uganda Cancer Institute.

Step 4. Deliver key messages

- Use IEC materials as required.
- Stay focused on the type of cancer e.g. cervical cancer prevention program/services or general cancer awareness as the case may be.

Use good communication skills
– Be audible enough, Speak slowly and clearly – Listen carefully – Ask probing questions (questions that help someone think more deeply and comment more thoroughly about an issue). – Summarize and reflect – Test for understanding – Give clear and accurate instructions

Step 5. Use plain language and focus on action

- Convey the cervical cancer information clearly using common words that the target individuals can understand in both spoken and written messages and clearly state the required actions or behaviours.
- This can address the cancer literacy needs of most of the individuals.
- This include improving the tone and organization of the key cancer messages and using words that people use every day in their conversations with one another, thus presenting information in a user-friendly manner to explain the cervical cancer related health issues.

Step 6. Use teach-back technique during health education.

- Since some health information shared by health workers with clients or social group is forgotten immediately and some of the retained information is incorrect especially among individuals with limited health literacy, it is important to check understanding of the individuals.
- During cancer education sessions ask the participants to restate the key messages you have discussed with them it in their own words to ensure that the key messages are well understood

and remembered.

- When you find the key messages were not understood, misunderstood or not remembered then repeat the critical part of the sessions or the entire sessions until the receivers are able to demonstrate understanding of the intended key cervical cancer messages.
- Teach-back can improve the individuals understanding and retention of the key cancer messages, adherence and improved satisfaction and intended outcomes.

Step 7. Maintain confidentiality.

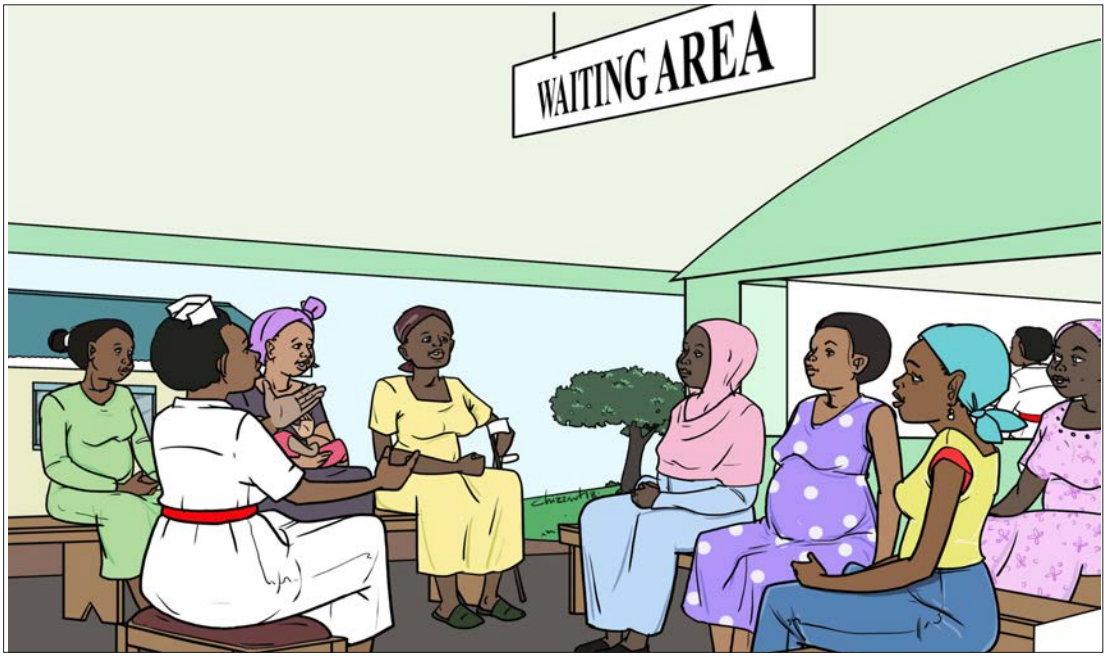
- Do not reveal any information you know about a client to anyone.
- Discourage participants from talking about another client.
- Do not make any reference about a client you know or have heard about.

Step 8. Answer all questions

- Acknowledge all questions.
- Refer to commonly asked questions on cancer or specific type of cancer
- Refer to your supervisor or other health provider any questions you cannot answer.

Step 9. Thank the audience

Step 10. Record necessary information



Health education and health communication resources

To assist education efforts, additional materials and resources can be developed. Communication strategies and materials are most effective when they have been adapted or created with input from members of the target audience.

Consider using the following tools and resources:

- Flipcharts are especially good for group education sessions. Pictures should be easy to see and understand. Telling a story of a woman going for screening and getting treatment can be more effective and easier to understand than complicated pictures of anatomy and viruses.

- Brochures can give simple information and prevention messages for community members to take home and discuss with their families and others.
- Drama and role-playing can occur in marketplaces or at community meetings and can capture people's attention and teach through storytelling. Peer experiences can be used either in live events or as case studies for drama and role-playing.
- Radio and TVs are effective for telling stories and for transmitting short messages or announcements. Taking part as a guest on a radio or television talk programme enables the presentation of a lot of information to reach many people at once. Local radio stations are particularly useful for announcing services and campaigns and reminding people on healthy behavior.

SECTION SIX: DELIVERING HEALTH EDUCATION

In health-care facilities

Whenever possible, cancer education (including information on HPV vaccination and screening) should be made available when people arrive at a health-care facility for any service, either for themselves or for a family member. Information can be provided to groups in waiting areas through posters, health talks, videos and/or written materials. Information and education on prevention of cervical cancer can be provided to more men and women by integrating it into health talks on antenatal and postnatal care, family planning, care for chronic illnesses, and sexually transmitted infections (STIs), including HIV/AIDS.

In the community

Community education may take place in a variety of settings, such as community centres, places of worship and schools, at sports activities, on local health awareness days, or in the context of a screening campaign. Selected members of the community can be trained to deliver key messages: health professionals, teachers, community leaders, community health workers,. Messages about the benefits of the HPV vaccine (if it is available) should be tailored for girls, boys and their parents or guardians, while messages about the benefits of cervical, breast, etc. cancer screening should be targeted at women and their partners.

Examples of community outreach activities include:

Community health education

Information sessions organized by health-care providers or trained CHWs can increase utilization of cancer prevention and control services. These are also very popular if they are done well and provided in location where people congregate or wait for a given community services.

Home visits

- Health educators, Health Inspectors, Health assistants, CHWs or other community or social workers can provide information about cancer preventive health services, address concerns and questions, and assist people in making arrangements to attend the health-care facility. If a partner and/or other family members are present, and all present agree, they can be included in the discussion.

Client word of mouth

- Satisfied clients can be encouraged to discuss HPV vaccination and cervical cancer screening with their friends and family members. A brochure with pictures can serve as a visual aid.

Community social activities

- Information tables and/or announcements at community events, fairs or festivals are useful opportunities to present messages to the wider community. Market days, too, where both the merchants and buyers are predominantly women, lend themselves to community education.

Managing misinformation and preventing stigma during health education session on cancer

- Stigma relating to cancer especially HPV can interfere with access to care and treatment. Often there is stigma related to diseases of the reproductive tract, particularly STIs, including HPV. Parents may be concerned about vaccinating their daughters with a new vaccine.
- Women may fear that screening will be painful and may be embarrassed about genital examinations, as well as having concerns about lack of privacy and confidentiality, which may keep them from attending services.
- Educating parents on the safety of the vaccine and its effectiveness in protecting their daughters from cervical cancer in the future reduces concerns. Educating a woman privately about what is involved in screening and reassuring her that the screening procedure is safe and painless is a key way of addressing any fears and misconceptions.
- If such information is followed by skillful, respectful provision of services, women and their families will be more likely to utilize prevention services and will be more likely to recommend vaccination and screening to their friends and family.
- Health-care providers play an important role in preventing misinformation and stigma about cancer prevention. The table below shows how to talk to co-workers and community members about common local misconceptions and how to share information about cancer prevention in a way that does not create stigma or fear.

Messages about cancer that can cause stigma, and suggestions for better messages

Messages that may cause problems	Unintended results	Better to say
Message that can create stigma: Cervical cancer is caused by HPV, which is a sexually transmitted infection (STI). Women who have cervical cancer or pre-cancer have an STI.	Talking about cervical cancer and pre-cancer as a STI may create stigma for the screening programme and for women who test positive and receive treatment. It may make women less willing to be tested and may cause problems in her relationship with her partner, including causing gender-based violence.	Cervical cancer is caused by a virus called HPV that is passed through sexual contact and most people get it at some time in their life. • Most HPV infections go away on their own without the person knowing they were infected. • In some women, the infection does not go away and after years may cause a precancerous lesion. If not detected and treated, it can develop into cervical cancer. • All women should be screened for cervical cancer at least once between the ages of 30 and 49 years, or in accordance with national guidelines. • Women living with HIV are at higher risk for cervical cancer. They should be screened as soon as they are diagnosed with HIV.
Inaccurate information: Screening is a test for cervical cancer.	When it is labelled a test for cervical cancer, it is logical for people to think that a positive test means that a woman has cancer. This creates great stress and fear.	Screening uses a simple test (Pap smear, VIA or an HPV test) to detect very early changes in the cervix (also called pre-cancer), before cancer develops.

Misinformation: There is no point in going for cervical cancer screening. If a woman tests positive, it means she has a fatal condition and she will die.	Few women will go for a screening test if they don't think there is a solution.	• Cervical cancer can be prevented when early changes in the cervix, called pre-cancer (lesions that may become cancer), are found using a simple test. • If a woman has these early changes, there is safe and simple treatment that she can receive. • If women are screened at the right ages, between 25 and 49 years, then cervical cancer can be prevented. • Cervical cancer, if detected early, can be cured.
Misinformation: Intrauterine devices (IUDs) and birth control pills cause cervical cancer.	Women will be afraid to use contraception, even though this is not true.	IUDs do not increase a woman's risk of cervical cancer. Birth control pills can cause a very slight increase in risk, but the benefits of preventing pregnancy are much greater than the very small increased risk of developing cervical cancer.
Misinformation: The screening test is painful and a part of a woman's body is removed.	Women will be afraid to go for a screening test. Her family might be afraid and stop her from going.	The speculum examination may make some women uncomfortable but the test is not painful. • During the test, a soft swab or brush gently touches a woman's cervix. • The test is simple and just takes a few minutes. • Screening is not the same as taking a biopsy or having surgery. There is no cutting involved in screening tests.

Working with teachers and school officials on cancer awareness & HPV vaccination

Some days (or weeks) before a scheduled vaccination session for schoolgirls, a meeting should be held with the objective of educating the school staff about the HPV vaccine. It can be suggested that they adapt some of what is discussed using appropriate language when talking with their pupils / students (boys and girls) before the first vaccination session. Make an appointment for this meeting through the school administration and suggest that all teachers be invited. The following suggestions for meeting preparation, presentation and follow up may be helpful.

What the health worker needs to carry for cancer mobilisation and health education activities

- Cancer Information and education materials like booklets, flip charts etc.
- Copies of the frequently asked questions and answers to distribute

Topics and activities for the meeting

After introductions, divide into subgroups of 4–6 participants; if possible have one school administration staff representative in each group.

Distribute one or both FAQ sheets to each group and ask a volunteer in each group to lead a discussion on the topics covered.

A volunteer from each group can then give a summary of what was not understood in their group.

Provide information to address these issues.

If everything was understood, ask if there are any other questions, and discuss them.

Continue with A or B (below), as appropriate.

A. If the school is not going to be a vaccination venue, before thanking those present and closing the meeting, provide information on where and when the vaccinations will take place and who should attend (girls aged 9–13 years, with consent from a parent/guardian).

B. If the school is going to be a vaccination venue (and it is assumed that this has been previously discussed and agreed between the school administrative staff and the health service representatives), then add the following to the meeting:

- Have an interactive/participatory discussion on:
- when the vaccination sessions will be conducted (i.e. dates of the two sessions as well as mop-up sessions after each of the main sessions, if possible);
- who the providers will be;
- who will assist during the sessions (e.g. one or two volunteers from the school staff); and
- where at the school the vaccination session should take place (including requirements for space and furniture).

In some schools, the teachers may be trained to help enroll the girls and check that they meet eligibility criteria, that they have parental consent and that they assent to receive the vaccine.

- Leave a copy of the practice sheets on what needs to be in place before the vaccination session
- Before thanking those present and leaving, inform them that you would appreciate it if you can come the day before the session and meet with one of the school volunteers to visit the site and ensure that everything is in place as required.

Part Two: General Cancer Information, Education And Communication Guide for Health Workers

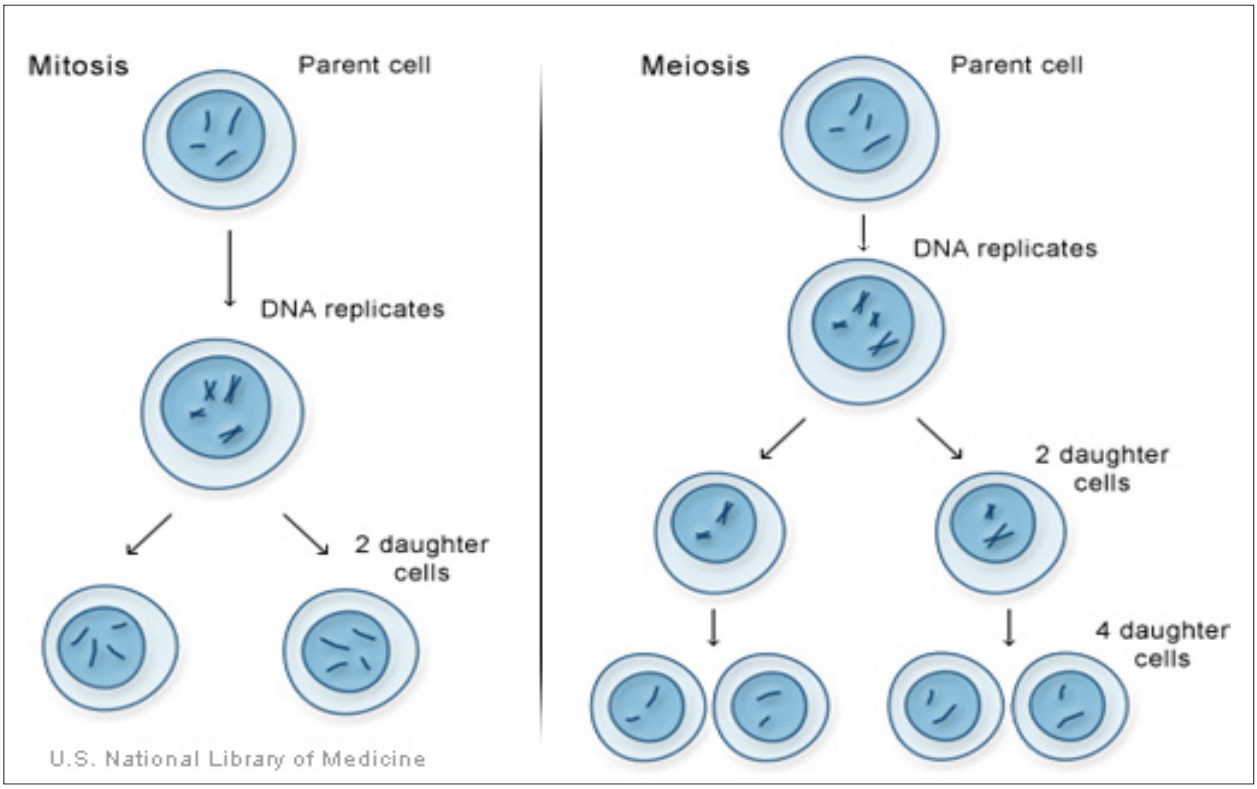
SECTION ONE: WHAT IS CANCER?

- Cancer is the disease caused by uncontrolled growth of certain cells in the body, causing tumours or growths. Not all growths are cancer. When a cancer is allowed to grow and spread it can interfere with the normal functions of the body.
- A tumor is a mass of abnormal tissue. There are two types of tumors: those that are non-cancerous, termed 'benign', and those that are cancerous, which are termed 'malignant'.
- Benign Tumors- When a tumor is diagnosed as benign, doctors will usually leave it alone rather than remove it. Even though these tumors are not generally aggressive toward surrounding tissue, occasionally they may continue to grow, pressing on organs and causing pain or other problems. In these situations, the tumor is removed, allowing pain or complications to subside.
- Malignant tumors- Malignant tumors are cancerous and aggressive because they invade and damage surrounding tissue. When a tumor is suspected to be malignant, the doctor will perform a biopsy to determine the severity or aggressiveness of the tumor.
- Metastatic cancer- Metastatic cancer is when cancer cells of a malignant tumor spread to other parts of the body, usually through the lymph system, blood or enlargement and form a secondary tumor.

How Cancer develops

Cancer is a genetic disease—that is, it is caused by changes to genes that control the way our cells function, especially how they grow and divide.

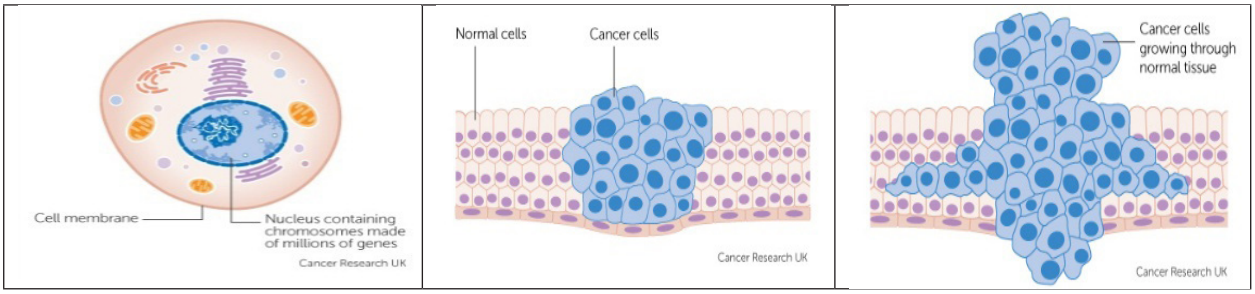
Cell division: Somatic & germ (reproductive) cells respectively



Genetic changes that cause cancer can be inherited from our parents or can also arise during a person's lifetime as a result of errors that occur as cells divide or because of damage to DNA caused

by certain environmental exposures. Cancer-causing environmental exposures include substances, such as the chemicals in tobacco smoke, and radiation like exposure to excess ultraviolet rays from the sun (especially among the albinos).

The abnormal and uncontrolled growth of body cells can lead to a lump/ swelling called a **tumour** (for example in breast, prostate, liver, intestine, brain etc.) or an abnormal number of abnormal cells as in **leukaemia** (a type of blood cancer).



What are the different types of Cancer?

There are more than 100 types of cancer. Types of cancer are usually named for the organs or tissues where the cancers form. For example, breast cancer starts in the cells of the breast, lung cancer starts in cells of the lung, and brain cancer starts in cells of the brain.

Cancers also may be described by the type of cells they started from for example:

Carcinoma – cancer that begins in the skin or in tissues that line or cover internal organs. There are a number of subtypes, including adenocarcinoma, basal cell carcinoma, squamous cell carcinoma, and transitional cell carcinoma

Sarcoma – cancer that begins in the connective or supportive tissues such as bone, cartilage, fat, muscle, or blood vessels

Leukaemia – cancer that starts in blood forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced and go into the blood

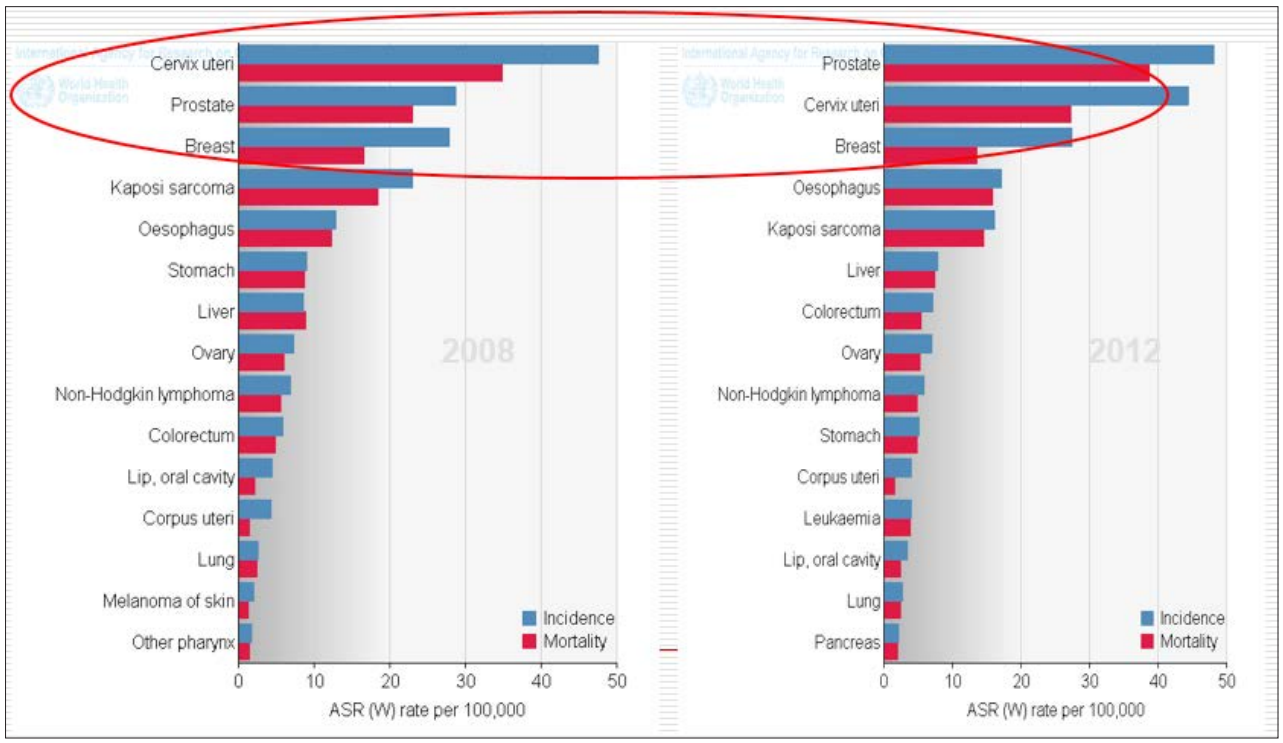
Lymphoma and myeloma – cancers that begin in the cells of the immune system

Brain and spinal cord cancers – these are known as central nervous system cancers

Cancers can be classified as solid e.g., Breast, cervical, prostate, colorectal, liver, e.t.c. The liquid category of cancers may include, Leukeamia, Hogkins lymphomas, Non-Hogkins lymphomas, e.t.c.

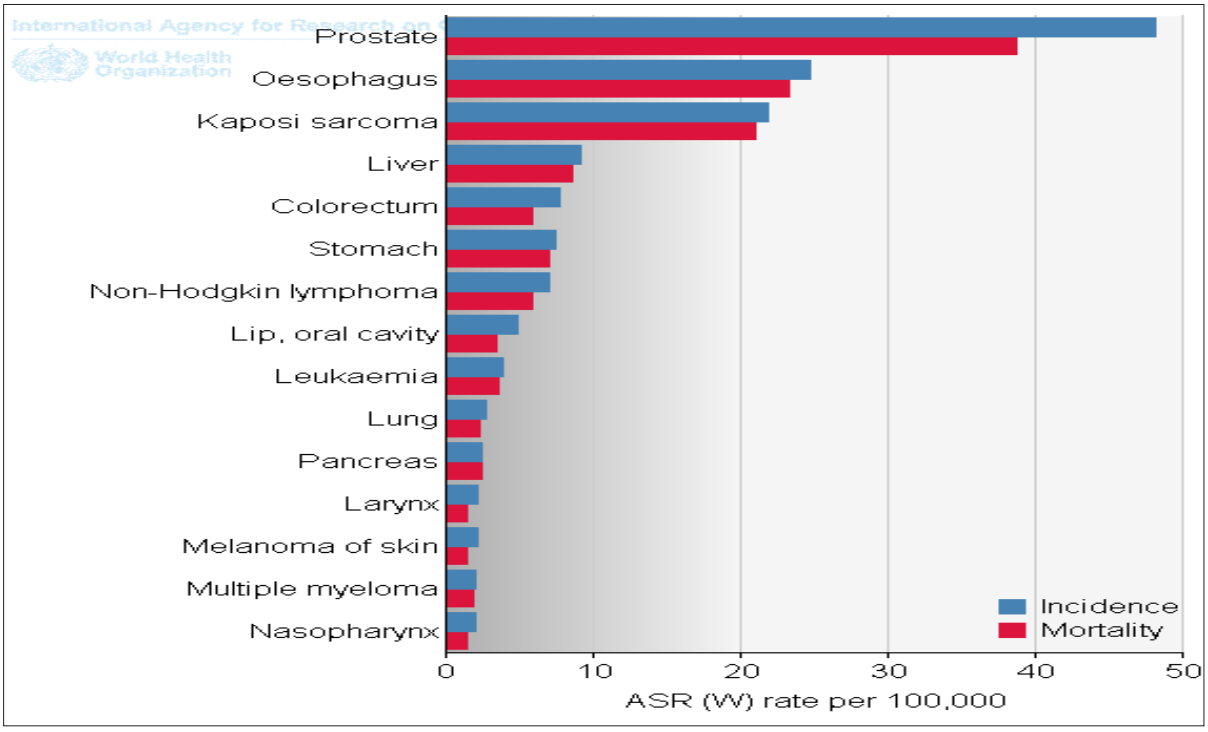
SECTION TWO: HOW COMMON IS CANCER IN UGANDA?

The top Cancers in Uganda according to WHO Globocan report of 2008 and 2012 respectively (www.globocan.iarc.fr)), the estimated new cases of cancer (incidence) & death (mortality) in both men and women were as indicated in figure below. The top three types of cancer were Prostate, Cervical and Breast cancer.



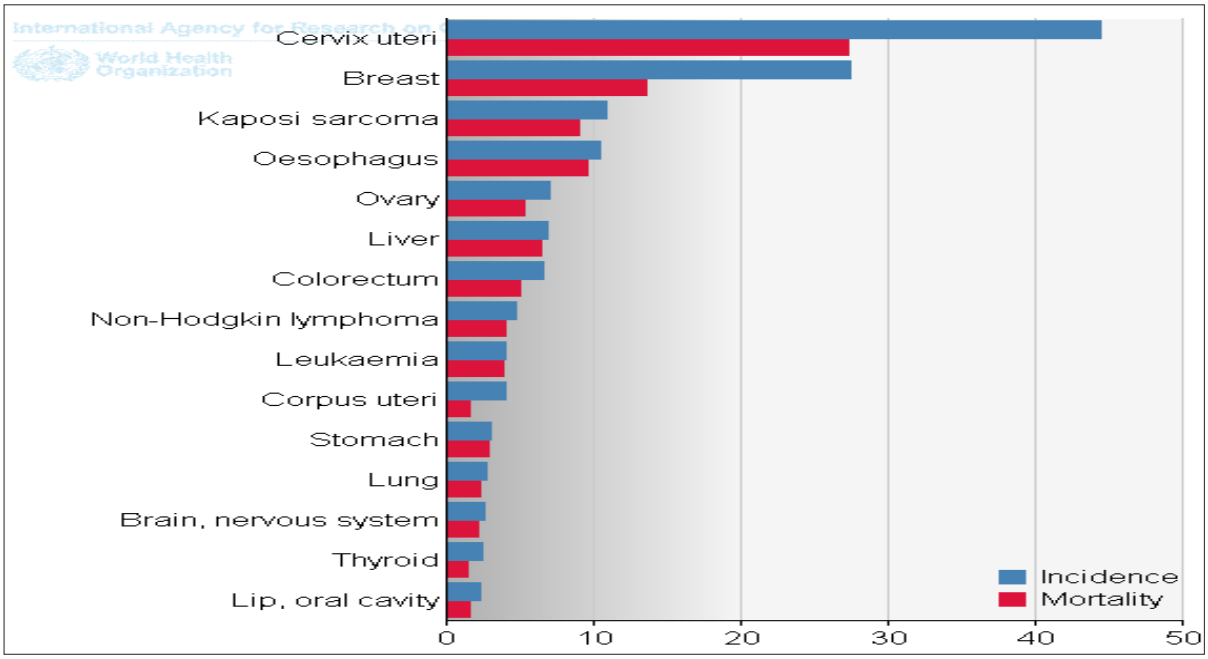
Top cancers among men in Uganda

According to WHO report of 2012, Cancer of the Prostate, oesophagus and Kaposi sarcoma are the leading cause of cancer death among men in Uganda (**See Figure** below)



Top cancers among women in Uganda

According to WHO report of 2012, Cancer of the cervix and breast are the leading cause of cancer death among women in Uganda (**See Figure** below)



SECTION THREE: WHAT ARE THE RISK FACTORS FOR CANCER?

When a person is told that she or he has cancer, it's natural to wonder what may have caused the disease. But no one knows the exact causes of most cancer. Doctors may not know exactly why one person develops breast cancer and another person doesn't, and most people who have cancer will never be able to pinpoint an exact cause. What we do know is that cancer is always caused by damage to a cell's DNA.

People with certain risk factors are more likely than others to develop cancer. A risk factor is something that may increase the possibility of developing a disease. Some risk factors can be avoided, while other risk factors cannot or are difficult to avoid. Having a risk factor does not mean that a person will develop breast cancer. Many people who have risk factors for a particular type of cancer may never develop the cancer.

The causes of cancer could be genetic or environmental and lifestyle factors, or in most cases, a combination of both. But most patients will never know exactly what caused their cancer. However, there are certain established risk factors that are associated with cancer.

Cancer risk factors that cannot be changed or avoided (Genetic Factors) include:

- **Sex & gender:** Some types of cancer are common in a specific sex for, example, Breast cancer occurs nearly 100 times more often in women than in men.
- **Age:** Two out of three women with invasive cancer are diagnosed after age 55, breast cancer is diagnosed more in women aged 40 years and above. Prostate cancer is in most cases diagnosed in men 50 years of age and above.
- **Family History and Genetic Factors:** If your mother, sister, father or child has been diagnosed with breast or ovarian cancer, or prostate cancer, you have a higher risk of being diagnosed with breast cancer in the future. Your risk increases if your relative was diagnosed before the age of 50.
- **Personal Health History:** If you have been diagnosed with cancer like breast cancer for example in one breast, you have an increased risk of being diagnosed with breast cancer in the other breast in the future. Also, your risk increases if abnormal breast cells have been detected before.
- **Menstrual and Reproductive History:** Early menstruation (before age 12), late menopause (after 55), having your first child at an older age, or never having given birth can also increase your risk for breast cancer.
- **Genetic Changes:** Mutations in certain genes, such as BRCA1 and BRCA2, can increase your risk for cancer like breast cancer and prostate cancer. Individuals with these gene mutations can pass the gene mutation onto their children.
- **Dense Breast Tissue:** Having dense breast tissue can increase your risk for breast cancer and make lumps harder to detect.

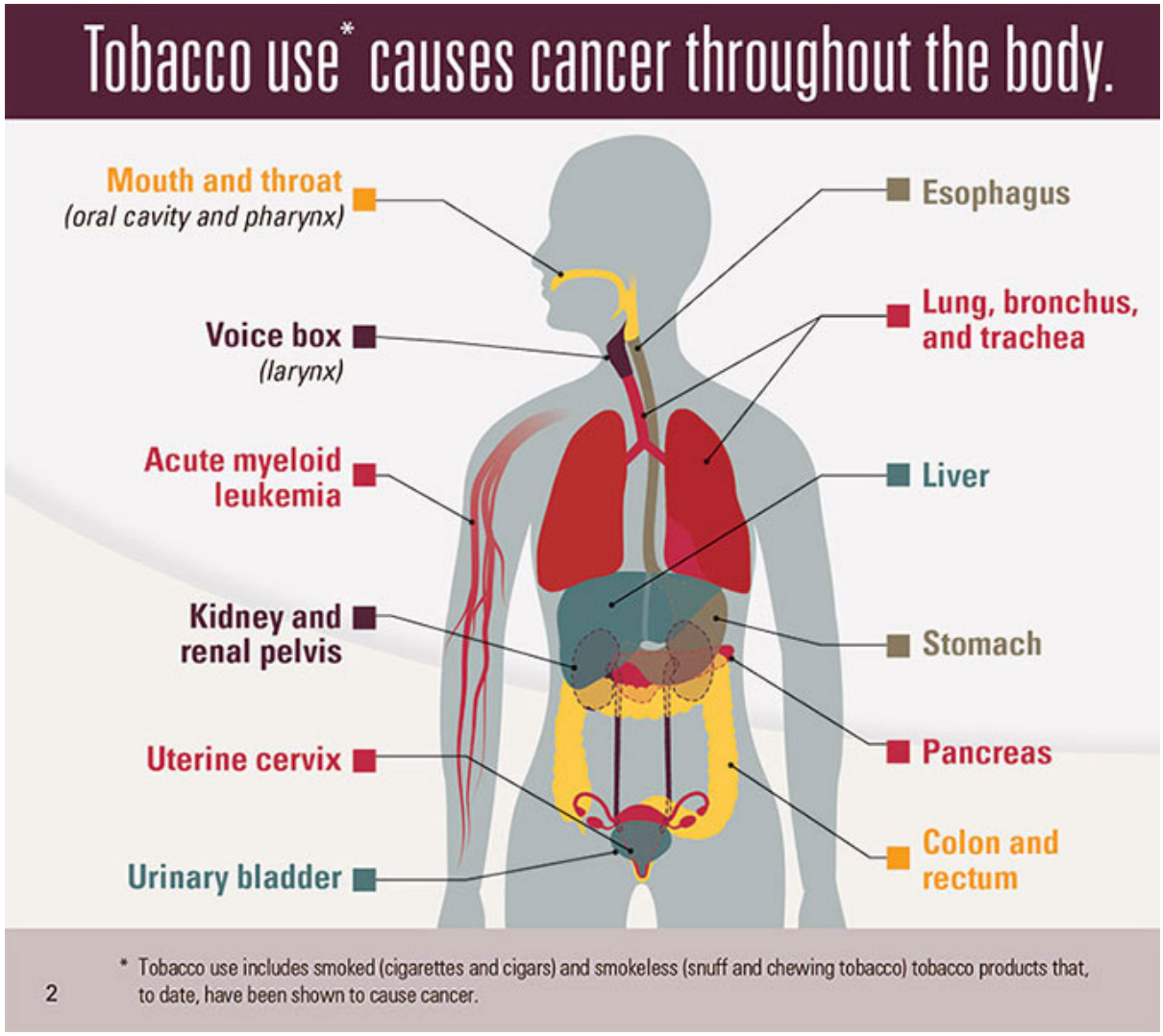
Cancer risk factors that can be changed or avoided (Environmental and Lifestyle risk factors) include:

1. **Infections:** Certain infectious agents, including viruses, bacteria, and parasites, can cause cancer or increase the risk that cancer will form. Some viruses can disrupt signalling that normally keeps cell growth and multiplication in check. The commonest infections include:
   - Human Papillomaviruses (HPVs)- Infection with high-risk types of HPV cause nearly all cervical cancers. They also cause most anal cancers and many oropharyngeal, vaginal, vulvar, and penile cancers. High-risk HPVs spread easily through direct sexual contact, including vaginal, oral, and anal sex.
   - Hepatitis B Virus and Hepatitis C Virus (HBV and HCV)- Chronic infections with HBV or HCV can cause liver cancer. Both viruses can be transmitted via blood (for example, by sharing needles or through blood transfusions) and from mother to baby at birth. In addition, HBV can be transmitted via sexual contact.
   - Human Immunodeficiency Virus (HIV)- HIV is the virus that causes acquired immunodeficiency syndrome (AIDS). HIV does not cause cancer itself, but infection with HIV weakens the immune system and makes the body less able to fight off other infections that cause cancer. People infected with HIV have increased risks of a number of cancers, especially Kaposi sarcoma, lymphomas (including both non-Hodgkin lymphoma and Hodgkin disease), and cancers of the cervix, anus, lung, liver, and throat.
   - Epstein-Barr Virus (EBV)- EBV, a type of herpes virus, causes mononucleosis as well as certain types of lymphoma and cancers of the nose and throat. EBV is most commonly transmitted by contact with saliva, such as through kissing or by sharing toothbrushes or drinking glasses. It can also be spread by sexual contact, blood transfusions, and organ transplantation
   - *Helicobacter pylori (H. pylori)- H. pylori* is a type of bacterium that can cause noncardia gastric cancer (a type of stomach cancer) and a type of lymphoma in the stomach lining, gastric MALT lymphoma. It can also cause stomach ulcers. The bacterium is thought to spread through consumption of contaminated food or water and direct mouth-to-mouth contact
   - *Schistosoma hematobium-* This parasitic flatworm (fluke), which lives in certain types of freshwater snails found in Africa and the Middle East, can cause bladder cancer. People become infected when infectious free-swimming flatworm larvae burrow into skin that has come into contact with contaminated fresh water. Antiparasitic drugs are used to treat the infection
   - Human T-Cell Leukemia/Lymphoma Virus Type 1 (HTLV-1)- HTLV-1 can cause an aggressive type of non-Hodgkin lymphoma called adult T-cell leukemia/lymphoma (ATLL). This virus spreads via blood (by sharing needles or through transfusions), through sexual contact, and from mother to child in the womb or via breastfeeding.

2. **Tobacco use-** Tobacco use is a leading cause of many types of cancer. People who use tobacco products or who are regularly around environmental tobacco smoke (also called second-hand smoke) have an increased risk of cancer because tobacco products and secondhand smoke have many chemicals that damage the DNA.

There is no safe level of tobacco use. People who use any type of tobacco product are strongly urged to quit. People who quit smoking, regardless of their age, have substantial gains in life expectancy compared with those who continue to smoke. Also, quitting smoking at the time of a cancer diagnosis reduces the risk of death. Tobacco smoke contains many chemicals that are harmful to both smokers and nonsmokers. Breathing even a little tobacco smoke can be harmful.

Of the more than 7,000 chemicals in tobacco smoke, at least 250 are known to be harmful, including hydrogen cyanide, carbon monoxide, and ammonia. Among the 250 known harmful chemicals in tobacco smoke, at least 69 can cause cancer.



Source: *CDC*

3. **Lack of adequate physical Activity:** A sedentary lifestyle with little physical activity can increase your risk for cancer, therefore, have regular physical activity like brisk walking, running or gardening for at least 30 minutes per day for at least 5 days a week.

How might physical activity be linked to reduced risks of cancer?

Exercise has a number of biological effects on the body, including:

Lowering the levels of hormones, such as insulin and estrogen, and of certain growth factors that have been associated with cancer development and progression.

- Helping to prevent obesity and decreasing the harmful effects of obesity, particularly the development of insulin resistance (failure of the body's cells to respond to insulin)
- Reducing inflammation
- Improving immune system function
- Altering the metabolism of bile acids, resulting in decreased exposure of the gastrointestinal tract to these suspected carcinogens
- Reducing the amount of time it takes for food to travel through the digestive system, which decreases gastrointestinal tract exposure to possible carcinogens.

How much physical activity is recommended for general health benefits?

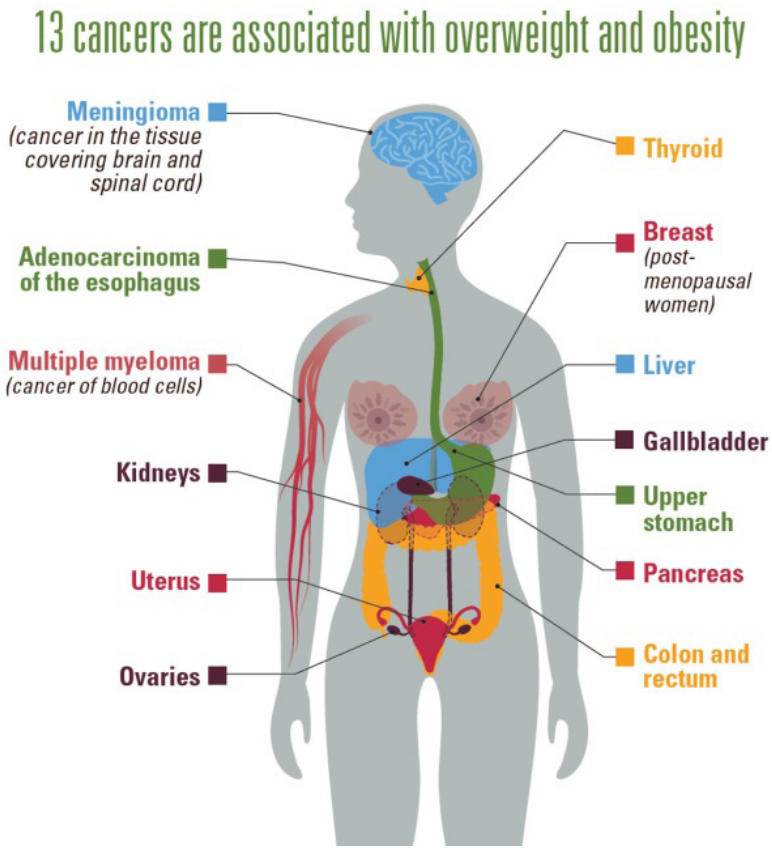
The Uganda physical activity guideline (PAG) is being developed, however, the WHO physical activity guideline recommends for adults aged 18–64, for substantial health benefits, adults need to engage in at least 150 minutes (2 hours and 30 minutes) of moderate-intensity aerobic physical activity, 75 minutes (1 hour and 15 minutes) of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity, every week. Aerobic physical activity should be performed in episodes of at least 10 minutes, preferably spread throughout the week.

For children and adolescents, the guidelines recommend at least 60 minutes (1 hour) of physical activity daily. Most of the 60 or more minutes a day should be either moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week. As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week and bone-strengthening physical activity on at least 3 days of the week.

Is physical activity beneficial for cancer survivors?

Physical activity has beneficial effects for several aspects of cancer survivorship--specifically, weight gain, quality of life, cancer recurrence or progression, and prognosis (likelihood of survival).

4. **Poor Diet:** A diet high in saturated fat and lacking fruits and vegetables can increase your risk for cancer. Therefore, eat a variety and right amount of food.
5. **Being Overweight or Obese:** Being overweight or obese can increase your risk for cancer. Your risk is greater if you have already gone through menopause, therefore, maintain healthy weight.



Source: CDC

It is therefore, advisable for every person to determine their weight status by use of body mass index (BMI).

Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in metres (kg/m2). For example, an adult who weighs 70kg and whose height is 1.75m will have a BMI of 22.9

That is, BMI = 70 kg /(1.75 m2) = 70 /3.06 = 22.9

BMI	CLASSIFICATION
<16.00	Severe thinness
16.00 - 16.99	Moderate thinness
17.00 - 18.49	Mild thinness
<18.50	underweight
18.50 - 24.99	Normal
25.00 - 29.99	Over weight
≥30.00	Obese
30.00 - 34.99	Obese class I
35.00 - 39.99	Obese class II
≥40.00	Obese class III

6. **Drinking Alcohol especially excess alcohol consumption:** Frequent consumption of alcohol can increase your risk for cancer. The more alcohol you consume, the greater the risk. Therefore, do not drink alcohol or avoid excess amount of alcohol intake. Alcohol is produced by the fermentation of sugar and starch in the presence of yeast. The main types of alcoholic drinks and their alcohol content are as follows:

   - Beers and hard ciders: 3-7 percent alcohol
   - Wines, including sake: 9-15 percent alcohol
   - Wines fortified with liquors, such as port: 16-20 percent alcohol
   - Liquor, or distilled spirits, such as, gin, rum, vodka, and whiskey, which are produced by distilling the alcohol from fermented grains, fruits, or vegetables: usually 35-40 percent alcohol (70-80 proof), but can be higher. Other locally produced alcohol have unknown amount of alcohol concentration.

The more alcohol a person drinks—particularly the more alcohol a person drinks regularly over time—the higher his or her risk of developing an alcohol-associated cancer.

How does alcohol increase the risk of cancer?

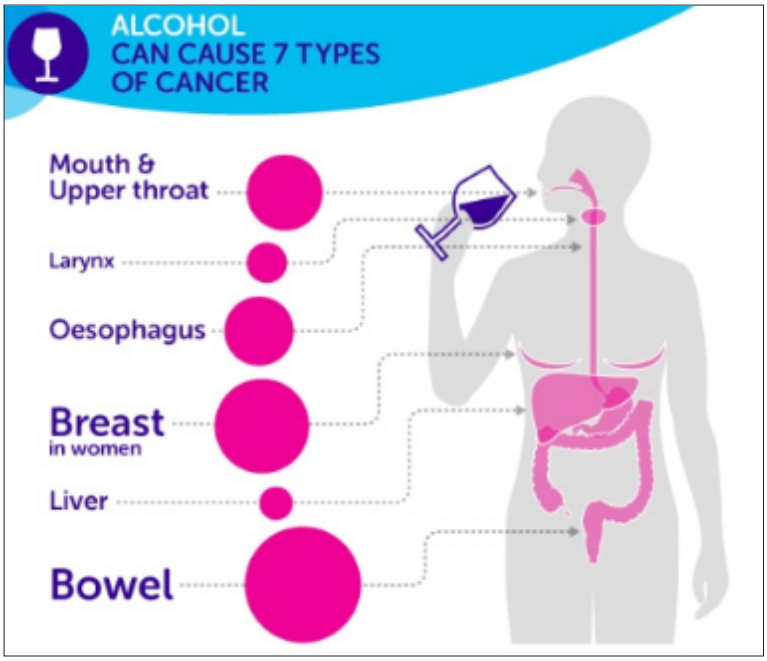
There are many ways that alcohol may increase the risk of developing cancer, these include:

- breaking down ethanol in alcoholic drinks to acetaldehyde, which is a toxic chemical and a probable human carcinogen; acetaldehyde can damage both DNA(the genetic material that makes up genes) and proteins.
- generating chemically reactive molecules that contain oxygen, which can damage DNA, proteins, and lipids (fats) through a process called oxidation
- impairing the body's ability to break down and absorb a variety of nutrients that may be associated with cancer risk, including vitamin A; nutrients in the vitamin B complex, such as folate; vitamin C; vitamin D; vitamin E; and carotenoids
- increasing blood levels of estrogen, a sex hormone linked to the risk of breast cancer

Alcoholic beverages may also contain a variety of carcinogenic contaminants that are introduced during fermentation and production, such as nitrosamines, asbestos fibers, phenols, and hydrocarbons.

So what amount of alcohol a person can drink safely?

The amount of alcohol a person can drink safely depends on the types of alcohol, health status and sex of the person, for example, the American National institute of health (NIH) recommends that a man should not drink more than two drinks (serving size) per day and women not more than one drink per day- this is only if you are not pregnant, lactating, have alcohol dependencies, diseases or are taking medications. One drink contains 14 grams of alcohol, meaning one 12 oz of beer (5% alcohol), one 5 oz of glass of wine (12%), and one 1.5 oz of hard liquor (40%) – each of these is one drink/ one serving.

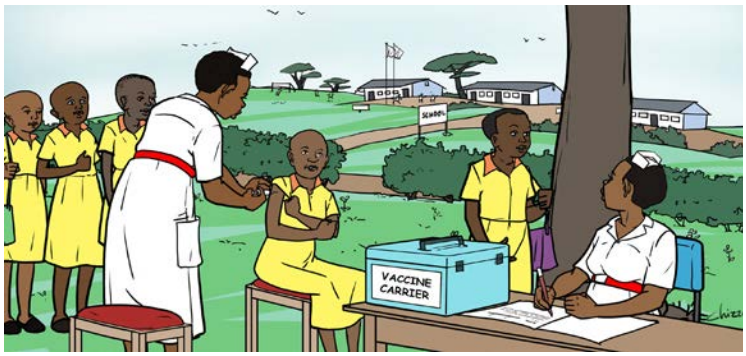


Source: CDC

7. **Chemicals in our environment–** certain chemicals where we work and live may lead to cancer for example, exposure to *carcinogens* (cancer-causing agents) such as asbestos, uranium, nickel, radon, cadmium, vinyl chloride and benzene in the workplace may increase a person's risk for developing cancer. You can get carcinogens from air, water and soil. For example, pesticides that are known carcinogens have been found in sources of food and drinking water
8. **Radiation:** Having radiation therapy or exposure to radiation in workplaces especially before the age of 30 can increase your risk for cancer.
9. **Combined Hormone Replacement Therapy (HRT):** Taking combined hormone replacement therapy, as prescribed for menopause, can increase your risk for breast cancer and increases the risk that the cancer will be detected at a more advanced stage.

What can a person do to reduce the risk of developing cancer?

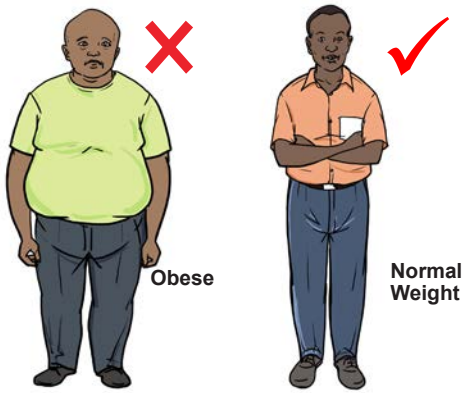
By practicing healthy habits and teaching them to your family members, you can help reduce your family's risk for cancer. Start making an effort to reduce your risk now by following these suggestions.

❖ **Avoid infections** like HIV, HPV, Hepatitis B through safe sex practices like not having more than one sexual partners, use of condoms, etc,	
❖ **Vaccination-** against HPV for girls 9-13 years, Hepatitis vaccination	

❖ **Regular check can prevent some cancers like cervical cancer.** Visit health centres for regularly check-up as advised by your health worker.

❖ **Don't use tobacco.** Reject tobacco, and if you smoke, consider seeking help to quit.

❖ **Maintain a healthy weight.** Balancing the amount of food you eat with daily exercise will help maintain a healthy weight and reduce the risk of cancer. Maintaining a healthy weight also reduces risk for other chronic diseases such as diabetes and heart disease.



❖ **Be active.** Get at least 30 minutes of physical activity each day. This can be as simple as a brisk walk 15 minutes twice a day. Any amount of physical activity is better than none.

❖ **Limit alcohol consumption.** Choose non-alcoholic beverages like juice, water) and seek professional help to limit alcohol (if needed).

❖ **Eat healthy diet**- eat enough fruits and vegetables, avoid eating too many foods that are high in saturated fats (fried foods, red meat).

SECTION FOUR: EARLY DETECTION OF CANCER

Early detection of cancer greatly increases the chances of cancer survival.

There are two major components of early detection of cancer are health education to promote early detection and screening and recognizing possible warning signs of cancer and taking prompt action leads to early diagnosis (detection).

Increased awareness of possible warning signs of cancer, among physicians, nurses and other health care providers as well as among the general public, can have a great impact on the disease

Early detection of cancer is possible through regular check-up (screening) usually once every year or as advised by your health worker and visiting health facility immediately when you notice any unusual changes in your body.

Cancer screening

- Cancer screening means looking for cancer before a person has any symptoms. There are different kinds of screening tests depending on the type of the cancer. Health worker should advice on what test an individual can take based on many factors such as sex, age, family history of cancer and the need of the individual.
- Screening for involves use of simple tests across a healthy population in order to identify individuals who have disease, but do not yet have symptoms.
- Examples of screening (check-up) tests include breast cancer screening using mammography and cervical cancer screening using Visual methods like visual inspection with acetic acid), cytology screening methods like Pap smears.
- Screening tests can help find cancer at an early stage, before symptoms appear. When abnormal tissue or cancer is found early, it may be easier to treat or cure. By the time symptoms appear, the cancer may have grown and spread. This can make the cancer harder to treat or cure.
- It is important to remember that when your doctor suggests a screening test, it does not always mean he or she thinks you have cancer. Screening tests are done when you have no cancer symptoms.
- Screening is not undertaken to diagnose a disease, but to identify individuals with increased probability of having either the disease itself or a precursor of the disease. Not all diseases are appropriate for a screening programme.
- The following are the most important criteria to determine whether a disease is appropriate for a screening programme:
  - ✓ The disease must have serious consequences.
  - ✓ The disease must have a detectable preclinical / asymptomatic stage.
  - ✓ Treatment of the preclinical stage must favourably influence the long-term course and prognosis of the disease being screened for.
  - ✓ Treatment must be available and accessible for those who have a positive screening test.

The natural history, screening tests and treatment options for cervical and breast cancer meet these criteria while Prostate cancer meets some of the above criteria, therefore, the commonest types of

cancer are Cervical, Breast and Prostate cancer and at times colo-rectal cancer.

- ✓ Screening program is therefore, recommended to be undertaken only when its effectiveness has been demonstrated, when resources (personnel, equipment, etc.) are sufficient to cover nearly all of the target group, when facilities exist for confirming the disease and for treatment and follow-up of those with abnormal results, and when prevalence of the disease is high enough to justify the effort and costs of screening.

Screening tests include the following categories:

- Physical exam and history: An exam of the body to check general signs of health, including checking for signs of disease, such as lumps or anything else that seems unusual, for example clinical breast exam. A history of the patient's health habits and past illnesses and treatments will also be taken.
- Laboratory tests: Medical procedures that test samples of tissue, blood, urine, or other substances in the body, for example PSA test in Prostate cancer screening.
- Imaging procedures: Procedures that make pictures of areas inside the body, for example breast x-ray (mammography).
- Genetic tests: Tests that look for certain gene mutations (changes) that are linked to some types of cancer.

It is important to note that cancer screening programme also needs to assure there is a functioning referral system so that the individuals found with pre-cancer or suspected cancer will receive appropriate referral and management.

Characteristics of a good screening test

A good screening test should be:

- Accurate: the result of the test is correct
- Reproducible: repeating the same test will give the same result
- Inexpensive: affordable to the health system in terms of both financial and human resources, and to all patients and their families in terms of access to necessary services
- Relatively easy: uncomplicated to perform and to provide follow-up care for women with abnormal results
- Acceptable: well tolerated by both the patient and the provider
- Safe: the test procedure and management of screen-positive subjects have no or minimal adverse effects
- Available: accessible to the entire target population.

Ethical considerations in cancer screening programmes

Before a screening programme is implemented, the following elements should be considered to ensure an ethical and equitable approach:

- **Pre-cancer screening and treatment**, as well as management of cervical cancer, should be accessible to all women in the target age group, including the poorest, most vulnerable, and hardest to reach.
- Patients and communities should receive **health education** to ensure informed decision-

making on screening and treatment.

- **Patient record systems** and patient care should ensure confidentiality.
- **Providers should be adequately trained** and have clear guidelines on management and follow-up of women with positive screening results.
- **A referral system** should be in place for all health problems discovered during the screening process including: – treatment and palliative services for cervical cancer, and – treatment for other reproductive health disorders.
- **Informed choice:** The patient / client should be given enough information so that she/he can make an informed choice about whether to accept or refuse the test or course of action proposed by providers. This information needs to include the meaning and consequences of a positive test, the availability of treatment, as well as the risks the patient may face should he/she refuse screening and related treatment.
- **Informed consent:** This refers to the explicit verbal or written permission given by a patient to receive a procedure or test, once she (or he) has received sufficient information to make an informed choice.
- **Both informed consent and informed choice** are based on the ethical principles of autonomy and respect for the individual. In some cases, the notion of consent may be a collective decision-making process involving others, such as the spouse/ partner, family head.
- **Accurate information** provided through health education and counselling can ensure that women and their extended families understand the facts about cancer, for example cervical cancer, including who is at risk, how screening can reduce this risk, and any potential harm related to screening or treatment.
- After receiving this information, it is the patient who makes the choice with advice and support from others in her close circle. The health-care provider needs to be conscious of the possibility that the patient may be subject to coercion and should make efforts to assure that the patient's decision is not coerced.

Infection prevention during cancer screening

- ❖ In all clinical activities, very careful attention should be given to infection prevention.
- ❖ Providers should use clean gloves on both hands when performing examinations, taking specimens, and performing procedures such as cryotherapy.
- ❖ For invasive procedures providers should use sterile gloves. It is important to use standard infection prevention and control (IPC) precautions with all patients, regardless of whether they appear sick or well, or whether their HIV or other infection status is known or unknown.
- ❖ In this way, providers protect both their patients and themselves from infection. It is worthwhile to make infection prevention efforts visible to the woman being screened (such as washing hands and changing to fresh gloves), to reduce any anxiety she may have about safety and hygiene.

SECTION FIVE: WHAT ARE SOME OF THE GENERAL SIGNS AND SYMPTOMS OF CANCER?

Generally, the symptoms and signs of cancer appear late when the cancer has already advanced (spread). however, having any of those signs may not mean that you have cancer, many other things cause these signs and symptoms, too. If you have any of these symptoms and they last for a long time or get worse, please see a health worker to find out what's going on. These signs and symptoms include;

Swelling- swelling (lump) in the breast e.g. in breast cancer, on the skin e.g. in Karposi Sarcoma, in the check e.g. in Burkit lymphoma.

Unexplained weight loss- Most people with cancer will lose weight at some point. When you lose weight for no known reason, it's called an unexplained weight loss. This happens most often with cancers of the pancreas, stomach, oesophagus (swallowing tube), or lung.

Fever (High body temperature) - Fever is very common with cancer, but it more often happens after cancer has spread from where it started. Almost all people with cancer will have fever at some time, especially if the cancer or its treatment affects the immune system. (This can make it harder for the body to fight infection.) Less often, fever may be an early sign of cancer, such as blood cancers like leukemia or lymphoma.

Fatigue - Fatigue is extreme tiredness that doesn't get better with rest. It may be an important symptom as cancer grows. But it may happen early in some cancers, like leukemia. Some colon or stomach cancers can cause blood loss that's not obvious. This is another way cancer can cause fatigue.

Pain - Pain may be an early symptom with some cancers like bone cancers or testicular cancer. A headache that does not go away or get better with treatment may be a symptom of a brain tumor. Back pain can be a symptom of cancer of the colon, rectum, prostate, cervix, or ovary. Most often, pain due to cancer means it has already spread (metastasized) from where it started.

Skin changes - Along with skin cancers, some other cancers can cause skin changes that can be seen. These signs and symptoms include:

- Darker looking skin (*hyperpigmentation*)
- Yellowish skin and eyes (*jaundice*)
- Reddened skin (*erythema*)
- Itching (pruritis)

Why are some cancers detected late?

Most cancer patients in Uganda are being diagnosed late when the cancer has spread and therefore such patients have lower chances of survival compared to other patients.

The reasons for delays in cancer diagnosis include:

- Low awareness of cancer signs and symptoms can mean that people don't see the GP as soon as they might which could delay a diagnosis.
- Some people might delay because they are worried about what the health worker might find or they don't want to waste the doctor's time.
- There can be delays from the health workers in referring patients on for further tests or treatment.
- Delays can also occur in getting an appointment at the hospital.

But we can all do our bit to help spot cancer early by being aware of any changes in our bodies and reporting them promptly to the health workers.

SECTION SIX: HOW IS CANCER CONFIRMED?

To confirm the presence of cancer, a doctor must look at a sample of the affected tissue under a microscope, commonly known as a ***biopsy*****. A biopsy** is the surgical removal of a small piece of tissue for *microscopic examination.* Microscopic examination will tell the doctor whether a tumor is actually present and if so, whether it is malignant (cancerous) or benign (non-cancerous).

There are two common ways prostate tissue can be removed for biopsy: ***needle*** biopsy, or ***surgical biopsy***. .

- ***Needle Biopsy:*** The doctor takes a small tissue or fluid sample by inserting a needle into the abnormal (suspicious) area.
- ***Surgical Biopsy:*** There are two types of surgical biopsies.
  - An **excisional biopsy** is performed when the doctor removes the entire tumor, often with some surrounding normal tissue.
  - An **incisional biopsy** is performed when the doctor removes just a portion of the tumor. If cancer is found to be present, the entire tumor may be removed immediately or during another operation.

In summary, the biopsy provides the doctor with the following important information:

- Whether or not the tumor is benign (non-cancerous) or malignant (cancer).
- The "type" of the cancer
- The "aggressiveness" or behavior of the tumor

What are the different stages of cancer?

Cancers that have begun to spread are classified according to the manner and extent of spread, usually the following stages are used:

Stage 0 Carcinoma in situ. Early cancer that is present only in the layer of cells in which it began.

Stage 1 A cancerous tumor is found to be limited to the organ of origin.

Stage 2 The cancer has spread to the surrounding tissues and possibly to the local lymph nodes.

Stage 3 There is extensive growth of the primary tumor and possible other organ involvement.

Stage 4 The cancer has spread far into the other organs and systems of the body away from the original tumor site.

SECTION SEVEN: HOW IS CANCER TREATED?

Cancer can be treated using one or two or all of the following methods based on the type and stage of the cancer:

Surgery- The most common form of cancer treatment is surgery. This involves removing the cancer tumor and nearby margins and reconstruction of the affected area.

Chemotherapy- Chemotherapy is a cancer treatment method that uses a combination of drugs to either destroy cancer cells or slow down the growth of cancer cells.

Radiation Therapy- Radiation therapy (also called radiotherapy) uses high-energy rays to kill cancer cells. It affects the nearby skin or cells only in the part of the body that is treated with the radiation.

Hormone Therapy- If the cancer cells have hormone receptors, you may be prescribed hormone therapy drugs, such as blockers or inhibitors. Both types of drugs help to destroy cancer cells by cutting off their supply of hormones.

Targeted Therapy-Targeted therapy uses drugs that block the growth of cancer cells in specific ways, often reducing side effects.

Nutrition and Physical Activity- It's important for you to take very good care of yourself before, during, and after cancer treatment.

Follow-Up Care-You'll need regular check-ups after cancer treatment. This helps ensure that any changes in your health are noted and treated if needed.

SECTION EIGHT: COMMON CANCER MYTHS AND MISCONCEPTIONS

There are myths and misconceptions that may that may lead to unnecessary cost and may hinder right prevention measures and good treatment outcomes. The common cancer myths and misconceptions are explained below.

Is cancer a death sentence?

NO!- It is important to know that a good number of cancers cases can be treated and cure when

detected earlybased on data from large numbers of survivors. However, other factors, including whether the cancer is slow or fast growing, how much the cancer has spread in the body, whether effective treatments are available, the person's overall health, and more.

Will eating sugar make my cancer worse?

No. Although research has shown that cancer cells consume more sugar (glucose) than normal cells, no studies have shown that eating sugar will make your cancer worse or that, if you stop eating sugar, your cancer will shrink or disappear. However, a high-sugar diet may contribute to excess weight gain, and obesity is associated with an increased risk of developing several types of cancer.

Do artificial sweeteners and sweets cause cancer?

No. Researchers have conducted studies on the safety of the artificial sweeteners (sugar substitutes) and found no evidence that they cause cancer in humans.

Is cancer contagious?

NO. Cancer is not a contagious disease that easily spreads from person to person. The only situation in which cancer can spread from one person to another is in the case of organ or tissue transplantation. In some people, cancers may be caused by certain viruses (some types of human papillomavirus, or HPV, for example) and bacteria (such as *Helicobacter pylori*). While a virus or bacterium can spread from person to person, the cancers they sometimes cause cannot spread from person to person

Does my attitude—positive or negative—determine my risk of, or likely recovery from, cancer?

To date, there is no convincing scientific evidence that links a person's "attitude" to his or her risk of developing or dying from cancer. If you have cancer, it's normal to feel sad, angry, or discouraged sometimes and positive or upbeat at other times. People with a positive attitude may be more likely to maintain social connections and stay active, and physical activity and emotional support may help you cope with your cancer.

Can cancer surgery or a tumor biopsy cause cancer to spread in the body?

The chance that surgery will cause cancer to spread to other parts of the body is extremely low. Following standard procedures, surgeons use special methods and take many steps to prevent cancer cells from spreading during biopsies or surgery to remove tumors. For example, if they must remove tissue from more than one area of the body, they use different surgical tools for each area.

Will cancer get worse if exposed to air?

No. Exposure to air will not make tumors grow faster or cause cancer to spread to other parts of the body.

Do cell phones cause cancer?

No, not according to the best studies completed so far. Cancer is caused by genetic mutations, and cell phones emit a type of low-frequency energy that does not damage genes.

Do electricity power lines and telephone mast cause cancer?

No, not according to the best studies completed so far. Power lines emit both electric and magnetic energy. The electric energy emitted by power lines is easily shielded or weakened by walls and other objects. The magnetic energy emitted by power lines is a low-frequency form of radiation that does not damage genes.

Do alternative or complementary medicines and herbs cure cancer?

No. Although some studies suggest that alternative or complementary therapies, including some herbs, may help patients cope with the side effects of cancer treatment, no herbal products have been shown to be effective for treating cancer. In fact, some herbal products may be harmful when taken during chemotherapy or radiation therapy because they may interfere with how these treatments work. Cancer patients should talk with their doctor about any complementary and alternative medicine products—including vitamins and herbal supplements—they may be using.

If someone in my family has cancer, am I likely to get cancer, too?

Not necessarily. Cancer is caused by harmful changes (mutations) in genes. Only about 5 to 10 percent of cancers are caused by harmful mutations that are inherited from a person's parents. In families with an inherited cancer-causing mutation, multiple family members will often develop the same type of cancer. These cancers are called "familial" or "hereditary" cancers.

The remaining 90 to 95 percent of cancers are caused by mutations that happen during a person's lifetime as a natural result of aging and exposure to environmental factors, such as tobacco smoke and radiation. These cancers are called "non-hereditary" or "spontaneous" cancers.

If no one in my family has had cancer, does that mean I'm risk-free?

No. Based on the most recent data, about 40 percent of men and women will be diagnosed with cancer at some point during their lives. Most cancers are caused by genetic changes that occur throughout a person's lifetime as a natural result of aging and exposure to environmental factors, such as tobacco smoke and radiation. Other factors, such as what kind of food you eat, how much you eat, and whether you exercise, may also influence your risk of developing cancer.

Do antiperspirants or deodorants cause breast cancer?

No. The best studies so far have found no evidence linking the chemicals typically found in antiperspirants and deodorants with changes in breast tissue.

Does hair dye use increase the risk of cancer?

There is no convincing scientific evidence that personal hair dye use increases the risk of cancer. Some studies suggest, however, that hairdressers and barbers who are regularly exposed to large quantities of hair dye and other chemical products may have an increased risk of bladder cancer.

Does bleaching cause cancer?

Yes, there are some chemicals found in bleaching agents with a known risk to cancers examples include hydroquinone, mercury etc.

Part Three: Cervical Cancer Information, Education and Communication Guide for Health Workers

SECTION ONE: BACKGROUND INFORMATION OF CERVICAL?

What is Cancer?

Cancer is uncontrolled or abnormal growth of cells in the body that spread or capable of spreading to other parts of the body and interfere with normal body functions.

What is Cervical Cancer?

- Cervical cancer is a type of cancer that begins on the mouth of the womb (cervix). Cells on the cervix begin to grow slowly and abnormally over several years. These early (pre-cancerous) changes can disappear on their own without causing problems. But in some women, they grow into cancer if they are not identified and treated early.
- Cancer of the cervix is one of the cancers that develop from reproductive system, other examples of Reproductive tract cancers affecting Women & Men include:

  Cancer of the Cervix (Mouth of the womb)

  Cancer of the Uterus (The womb)

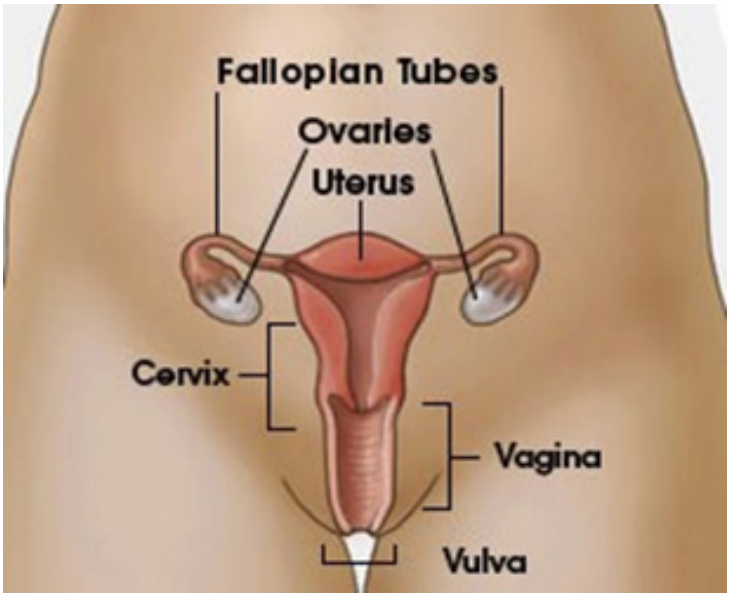
  Cancer of the Ovary (where woman's eggs/ova come from)

  Cancer of the Breast

  Cancer of the Penis

  Cancer of the Prostate

ANATOMY OF FEMALE GENITAL TRACT



Source: *UCI - Fred Hutchinson Cancer Research Center*

What causes Cervical Cancer?

Cancer of the cervix is caused by infection with a virus known as Human Papilloma virus (HPV). Most of the time, in the majority of women, HPV infection disappears without treatment. However, in some women, HPV stays in the cells for years and causes changes in these cells which may

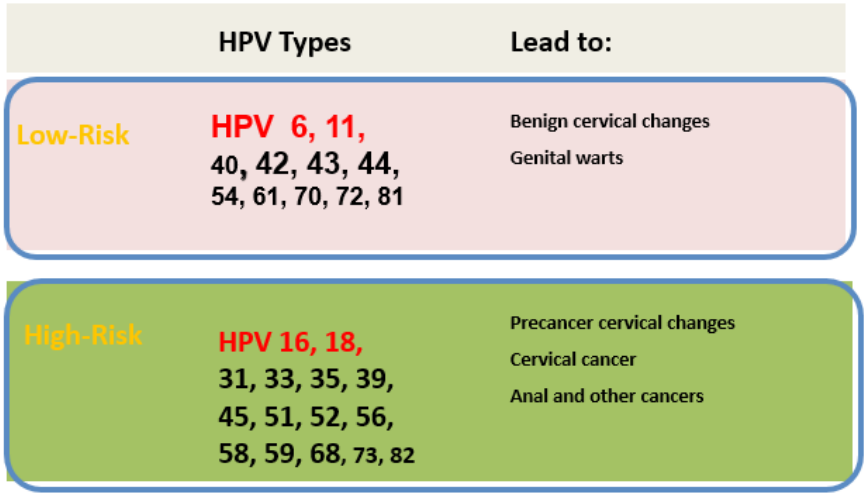
eventually become cancer.

HPV is a viral, sexually transmitted infection that very often occurs in young men and women, who may not be aware of it.

HPV is responsible for 99.7% of cervical cancer and Infects 75 - 80% of sexually active adults at some point, however, it can be cleared by the body's immune system most of the time and is preventable.

Common HPV Types and their effects

Over 100 types of HPV are currently known, most are not associated with cervical cancer or genital warts. The High risk types (16, 18) are associated with cancer and the low risk types (6, 11) are associated with genital warts as indicated below, however, all types can cause abnormal screening test like Pap smear tests.



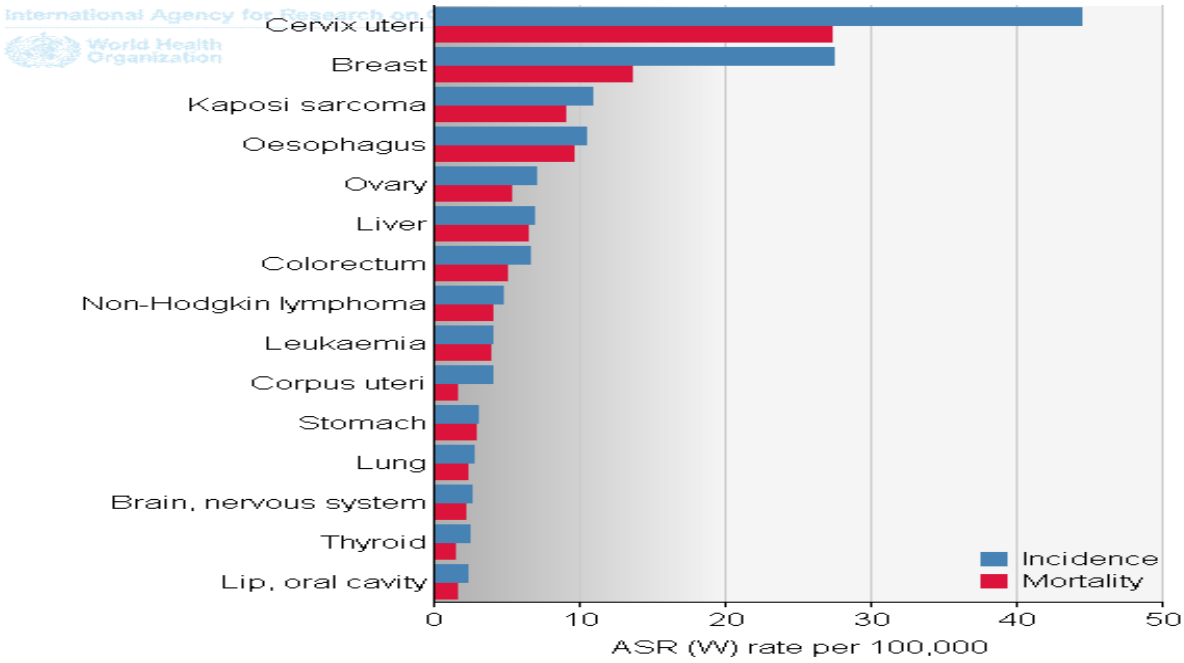
Source: *Cox. Baillière's Clin Obstet Gynaecol. 1995;9:1. & Munoz et al. N Engl J Med. 2003;348:518. as cited by UCI - Fred Hutchinson Cancer Research Center*

The risk factors for cervical cancer

- Early onset of sexual activity- this increases risk of HPV infection
- Multiple and/or high risk sexual partner – this leads to increased risk of HPV infection
- High parity- leads to increased risk of HPV infection.
- Suppressed immune system such as in person living with HIV. This is through two mechanisms; HIV's Immune suppression mechanism that diminish the body's innate tumor Surveillance ability and the HIV viral interaction with HPV oncoviruses, thus creating an environment that enhances tumor growth.
- Tobacco use - a known cancer causing product
- Low socio-economic status – this can lead to unsafe or high risk sexual practices for survival and therefore, increasing the risk of HPV infection.

What is the Burden of Cervical cancer in Uganda?

Cervical cancer is the leading cause of cancer deaths in women in Uganda. Research has shown that 48/100,000 women in Uganda have cervical cancer. This is among the highest prevalence rates in the world. Majority of women (over 80%) are diagnosed with cervical cancer at a late stage when no cure can be achieved. However, there are many more women who die of it but are not documented.



What are the symptoms and signs of cervical cancer?

a. Symptoms of Cervical cancer

Usually there are no symptoms during pre-cancer stage and early cancer. This is why it is so important to check (screen) for signs of pre-cancer.

The following are some of the commonest symptoms of cervical cancer:

Bleeding	• During or after contact/ sexual intercourse • During menopause • Between menstrual periods
Discharge	• Unpleasant odor • Change in color • Increasing discharge
Pain	• Back • Lower abdomen • During sexual intercourse

b. Signs of Cervical cancer

- Area that bleeds easily to the touch
- Fungating /exophytic cervical mass
- Necrosis
- Atypical vascularity
- Ulceration

- Color change (yellow, tan)
- Abnormal bimanual exam
- Enlarged, hard cervix
- Fixed cervix

A woman with any of these symptoms and signs, need to get an examination by a skilled health worker because the earlier cancer or pre-cancer are found, the better the chance of a cure.

How long does it take for an infection with HPV to develop into Cancer?

When a female gets infected with HPV during adolescence or after, HPV starts inducing changes in the cells on the mouth of the womb. If the virus persists, it causes pre-cancerous changes that may later develop into cancer. The estimated time for this process varies but ranges from 10 - 20 years. This is why cervical cancer can be prevented because it gives us a chance to check women (screen) for pre-cancer and provide treatment. It is also the reason why we recommend checking women between 25 and 60 years as they are most at risk of developing cancer. Screening can detect pre-cancer and most abnormal changes found on the cervix are treatable and curable.

Understanding the Natural History of Cervical Cancer

It is helpful for health care providers to be well educated about cervical cancer—with a good understanding of how cancer develops and how it attacks the body.

Before cervical cancer occurs, an area on the cervix will have been abnormal for 10 to 15 or 20 years. This abnormal area that precedes the development of cervical cancer is referred to as a precursor of cervical cancer or a precancerous lesion or pre-cancer. Pathologists refer to a precancerous lesion as cervical intraepithelial neoplasia (CIN) and grade it as mild, moderate, or sever (CIN 1, 2, or 3).

Screening tests such as the Pap smear and visual inspection with acetic acid (VIA) were designed for detection of CIN, since it is easily treated with an outpatient procedure. This is why much importance is placed on having screening done after the age of 25 years in Uganda or 30 in other countries but before the age of 40 to 50 years. Before age 30, many cases of CIN will regress to normal but after age 30, CIN is more likely to progress. If CIN is present, it can be eliminated by treatment such as cryotherapy and the woman's risk of developing cervical cancer is greatly reduced.

Without treatment, a woman with CIN will develop cancer in the abnormal area, invading the rest of the cervix and the adjacent tissues. The cancer grows slowly in the area of the cervix, vagina, and uterus at first, but then it spreads to the pelvic soft tissues and bones. A woman may have cervical cancer for years before she develops severe pelvic and low back pain and severe vaginal discharge. Death may occur due to blockage of the ureters (renal failure) or severe vaginal bleeding (anemia).

World Health Organization (WHO) Comprehensive Cervical Cancer Prevention and Control interventions

Primary prevention

- ✓ Health education to reduce high -risk sexual behavior to limit HPV transmission/acquisition
- ✓ Delay age of first sexual intercourse
- ✓ Limit number of partners, change in sexual behavior
- ✓ Condom use
- ✓ HPV vaccination targeting girls aged 9-13 years

Early detection (secondary prevention)

- ✓ **Screening:** Identify and treat precancerous lesions before they progress to cervical cancer
- ✓ **Early diagnosis:** Identify and treat early cancer while the chance of cure is still good (reduces cervical cancer mortality)

Tertiary prevention

- ✓ Treatment of invasive cancer
- ✓ Palliative care

SECTION TWO: CERVICAL CANCER SCREENING

- ❖ Early detection of cervical cancer, by screening women in the target age group of 25 years and above followed by treatment of detected precancerous lesions can prevent the majority of cervical cancers.
- ❖ Screening is a public health intervention provided to an asymptomatic target population.
- ❖ Screening is not undertaken to diagnose a disease, but to identify individuals with increased probability of having either the disease itself or a precursor of the disease.
- ❖ Not all diseases are appropriate for a screening programme. The following are the most important criteria to determine whether a disease is appropriate for a screening programme:
  - ➢ The disease must have serious consequences.
  - ➢ The disease must have a detectable preclinical / asymptomatic stage.
  - ➢ Treatment of the preclinical stage must favourably influence the long-term course and prognosis of the disease being screened for.
  - ➢ Treatment must be available and accessible for those who have a positive screening test.
- ❖ The natural history, screening tests and treatment options for cervical cancer meet these criteria.
- ❖ Decisions about the target age group and frequency of screening are usually made at the national level on the basis of the local proportion of women with pre-cancer or cancer out of all women of the same age, the number of new cervical cancer cases recorded in the last two or three years, and the availability of resources and infrastructure, as well as other factors, such as HIV prevalence.

Characteristics of a good screening test

A good screening test should be:

- ✓ Accurate: the result of the test is correct
- ✓ Reproducible: repeating the same test will give the same result
- ✓ Inexpensive: affordable to the health system in terms of both financial and human resources, and to all patients and their families in terms of access to necessary services
- ✓ Relatively easy: uncomplicated to perform and to provide follow-up care for women with abnormal results
- ✓ Acceptable: well tolerated by both the patient and the provider
- ✓ Safe: the test procedure and management of screen-positive subjects have no or minimal adverse effects
- ✓ Available: accessible to the entire target population.

Cervical cancer screening age and frequency

- The age and frequency of screening are based on current evidence and on the natural history of HPV and cervical pre-cancer.
- High-risk HPV infections are very common in young women, but most of these infections are transient: they are eliminated spontaneously by the woman's body. Only a small percentage of all HPV infections that persist for many years may lead to invasive cancer.
- Cervical cancer usually develops slowly, taking 10–20 years from early pre-cancer to invasive cancer, so cervical cancer is rare before the age of 30.
- Screening younger women will detect many lesions that will never develop into cancer, which will lead to considerable overtreatment, and is thus not cost-effective.

Cervical cancer screening age & frequency for women living without HIV

- WHO recommends that Cervical cancer screening should not start before 30 years of age.
- Screening women between the ages of 30 and 49 years reduces deaths from cervical cancer, therefore, Cervical cancer screening is recommended for every woman in this target age group, but this may be extended to younger ages if there is evidence of a high risk for CIN2+. This is why in Uganda it is recommended to a woman to start screening from the age of 25 years.
- Among women who test negative with visual inspection with acetic acid (VIA) or cytology, the interval for re-screening should be three to five years (currently after every three years in Uganda). Among women who test negative with HPV testing, re-screening should be done after a minimum interval of five years.
- After a subsequent screening with negative test results, and also for older women, the screening interval can be longer than five years.
- Women who have been treated for cervical pre-cancer should receive post-treatment follow-up after 12 months.

Cervical cancer screening age & frequency for women living with HIV

- Screening for cervical pre-cancer and cancer should be done in women and girls who have initiated sexual activity as soon as the woman or girl has tested positive for HIV, regardless of age.
- Women living with HIV whose screening results are negative (i.e. no evidence of precancer is found) should be rescreened within three years, currently in Uganda, it is advised to screen after every one year.
- Women living with HIV who have been treated for cervical pre-cancer should receive post-treatment follow-up after 12 months.
- Women living with HIV have a higher risk of having persistent HPV infections, and a higher risk of developing pre-cancer.
- In addition, women living with HIV are more likely to develop cervical cancer earlier and to die from it sooner. Because they develop pre-cancer at a younger age and the time for pre-cancer to progress to cancer can be shorter, women living with HIV are advised to follow a different screening schedule from those not living with HIV.
- HIV screening is not mandatory for cervical cancer screening. However, in an area with high endemic HIV infection, women should be screened for HIV so that they know their status and, if positive, they should be counselled on the meaning of the test result and provided with appropriate treatment and follow-up care.

Screening methods for cervical pre-cancer

World Health Organization (WHO) recommends the following methods for cervical pre-cancer screening:

- VIA / VILI - Visualization with acetic acid or visual inspection with acetic acid (VIA) or Lugol's iodine (VILI)
- Cytology (pap smear)
- HPV testing

Visual screening methods

- Visual inspection with acetic acid (VIA) is a method for detecting early cell changes that are visible when using a speculum to inspect the cervix with the naked eye after applying dilute (3–5%) acetic acid to it.
- It requires training and supervision of primary care providers, as well as ongoing quality control and quality assurance.

Who should be tested using VIA method?

- VIA is appropriate to use in women whose squamocolumnar junction (SCJ) is visible, typically in those younger than 50.
- This is because the SCJ gradually recedes into the endocervical canal when menopause occurs, making it possible to miss lesions when relying on visual inspection.

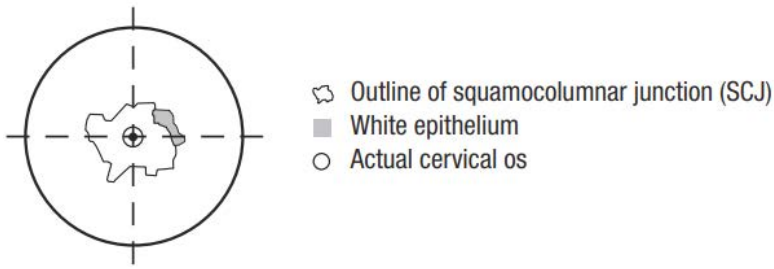
Overview of the procedure of VIA method

- VIA requires use of a speculum and light source, and a trained health-care provider.

- The health care provider performs a speculum examination, identifying the SCJ and carefully inspecting the cervix for visual signs suspicious for cancer or pre-cancer.
- A 3–5% acetic acid solution is liberally applied to the cervix with a large cotton swab. After removing the cotton swab, the provider waits for at least one minute, during which time any areas that became faintly white simply due to inflammation or physiological cell changes (metaplasia) will recede.
- Acetowhite changes on the cervix that do not recede after one minute are more likely to be associated with cervical pre-cancer or cancer.
- If these changes are seen in the transformation zone and have well-defined borders, they are considered a positive. If no persistent acetowhite changes are noted, a negative result is reported.

Source: *Reproductive Health Division, Ministry of Health-Uganda*

VIA results recorded on labelled drawing- source WHO



Source: *WHO, 2014 Comprehensive cervical cancer control: a guide to essential practice – 2nd ed*

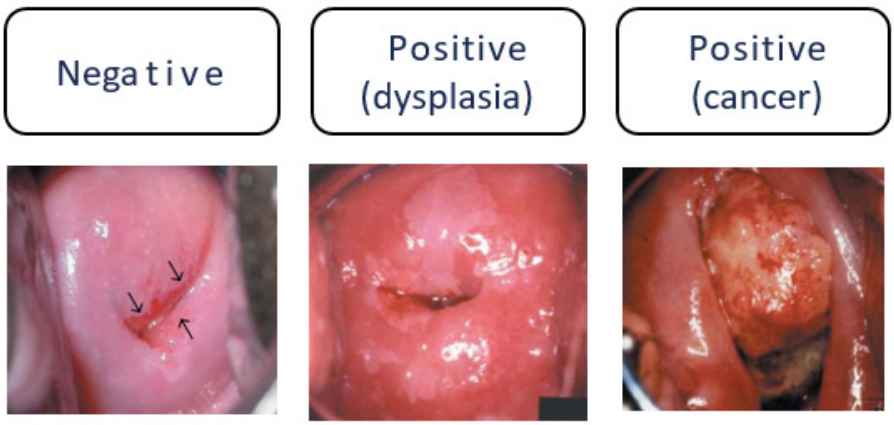
Strengths and limitations of VIA

- VIA testing can detect both early changes and those representing more advanced precancer.
- The immediate result allows the patient to be offered treatment at the same visit (i.e. the single visit approach). Alternatively, if the patient prefers not to do it immediately or if treatment is not available, then treatment can be done at a subsequent visit soon after.
- A diagnostic step, such as a colposcopy and/or biopsy, is usually not performed at this time (at the same screening facility), but if the cervix shows any unusual signs or the provider suspects cancer, the patient can be referred for further diagnosis.
- VIA is quite inexpensive, utilizes locally sourced supplies (vinegar and cotton), and does not rely on laboratory services. It can be performed by trained providers, with adequate visual

acuity, at any level of the health system. Training can be accomplished in a few days using a competency-based approach.

- VIA is a subjective test and therefore depends on the skills and experience of the provider executing the test. Skills must be used regularly, and refresher courses are recommended.
- Due to the subjective nature of the test, quality control and quality assurance for VIA is particularly important. This can be achieved through supervision and routine monitoring.

Illustration of possible VIA result



Source: *UCI - Fred Hutchinson Cancer Research Center*

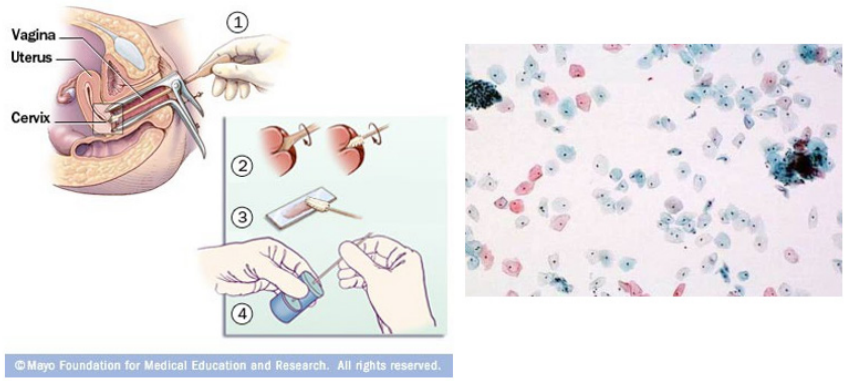
Papanicolaou ("Pap") smear test or cytology

- Cytology-based screening involves taking a sample of cells from the entire transformation zone.
- The cells are either fixed on a slide at the facility (Pap smear) or placed in a transport medium (liquid-based cytology) and then sent to the laboratory where expert cytotechnologists examine the cells under a microscope.
- If abnormal cells are seen on microscopic examination, the extent of their abnormality is classified using the Bethesda System.

Overview of Pap smear procedure

- ❖ Collection of a cytology sample requires a speculum and adequate lighting to visualize the entire surface of the cervix.
- ❖ The provider takes specimens from the face of the cervix and the endocervix using a spatula or brush and transfers the specimen to a slide (Pap smear) or a preservative solution (LBC).
- ❖ The sample must be appropriately labelled and transported to the laboratory, where skilled personnel are needed to process and interpret it.

Cells from the cervix are “smeared” onto a slide



Source: *Mayo Foundation for Medical Education and Research as cited by UCI - Fred Hutchinson Cancer Research Center*

Molecular screening method: HPV DNA test

- Molecular HPV testing methods are based on the detection of DNA from high-risk HPV types in vaginal and/or cervical samples.
- Testing women younger than 30 years old for these viruses is not advised because many young women are infected with them, but most HPV infections will be spontaneously eliminated from their bodies before they reach the age of 30. However, as a woman ages, if high-risk HPV is detected, it is more likely that her HPV infection is persistent.
- Since persistent HPV infection is the cause of nearly all cases of cervical cancer, a positive test result in a woman over the age of 30 indicates that she may have an existing lesion or may be at risk for future pre-cancer and cancer.

Overview of HPV DNA test procedure

- HPV testing does not necessarily require a pelvic examination or visualization of the cervix. A health-care provider can collect a sample of cells by inserting a small brush or other appropriate device into the vagina, and then placing it in a small container with an appropriate preservative solution.
- It may also be collected at the time of a speculum examination.
- The sample can also be self-collected by the woman; she can be given the brush and the special container and instructed how to use them.
- Currently expensive and long turnaround time, however, rapid testing and point of care technologies e.g. careHPV is in development process.

Source: *UCI - Fred Hutchinson Cancer Research Center*

Comparison of cervical pre-cancer screening methods

Method	Procedure	Strengths	Limitations
Molecular screening method: HPV DNA test	The sample is taken by the provider or by the woman herself, stored in a container with appropriate preservative solution and sent to the laboratory (or processed immediately on-site if a new test is used).	• Collection of the specimen is simple, allowing the possibility of self-collected specimens. • The assay result is a definite end-point. • If the new test with on-site processing and rapid results is used, a positive result can be followed by an offer of immediate treatment (i.e. single-visit approach).	• It requires proprietary supplies and equipment, which may not be easily accessible. • The unit cost is often high. • Storage of materials needed for tests can be problematic. • In general, the laboratory and specimen transport requirements are complex. • Using an HPV test that is currently available, the result will not be immediately available, requiring the patient to make multiple visits and increasing the risk of loss-to-follow-up.
Visual screening method: Visual inspection with acetic acid (VIA)	A trained provider examines the cervix at least 1 minute after applying 3–5% acetic acid, to visualize cell changes on the cervix.	• This method is relatively simple and inexpensive. • The results are available immediately. • VIA can be performed by a wide range of personnel after brief training. • Infrastructure requirements are minimal. • A positive result can be followed by an offer of immediate treatment (i.e. single-visit approach).	• After training, VIA providers need initial supervision and continuing education (refresher retraining) and quality control and quality assurance. • The end point is subjective; there is high variability in the accuracy of results between providers. • VIA is not appropriate for many postmenopausal women.

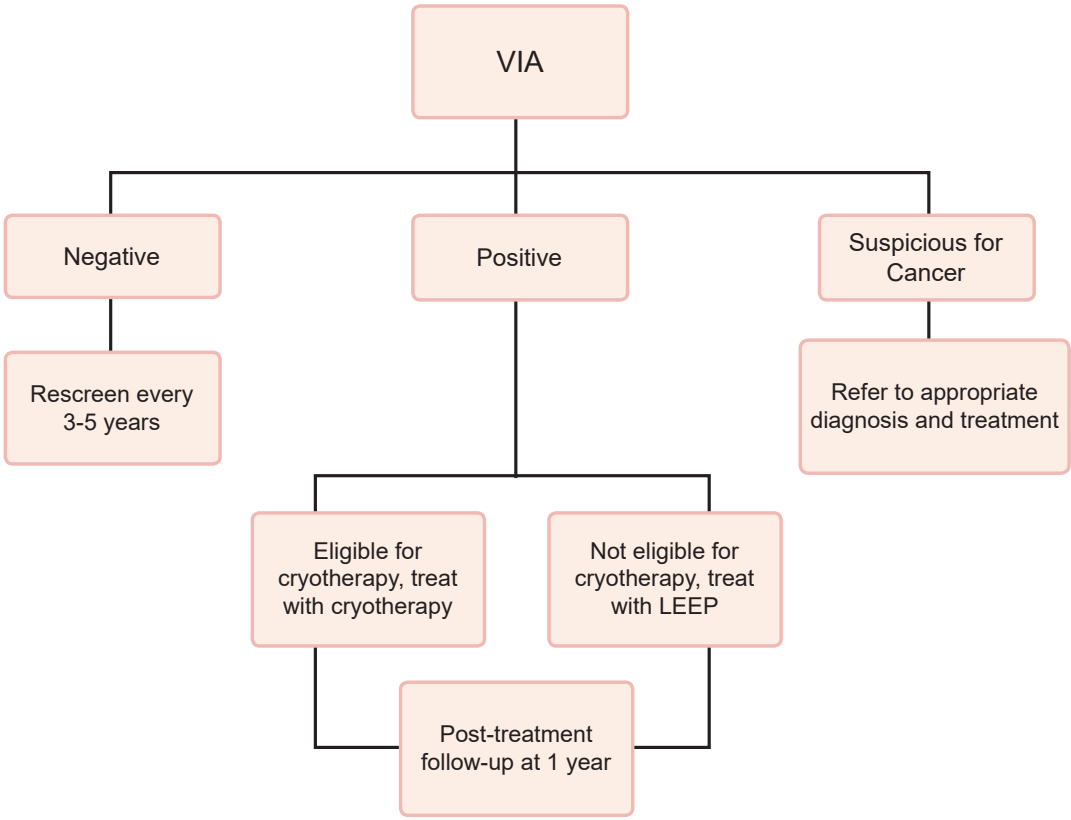
Cytologybased screening method: **c. Conventional cytology (Pap smear)**	A sample of cervical cells is taken by the provider using a spatula and/or small brush, fixed onto slides and examined by a trained cytotechnician in a laboratory	• This method has proven effectiveness to decrease cervical cancer in the context of a well-functioning system. • It is widely accepted in high-resource countries. • Training and mechanisms for quality control and quality assurance are well established.	• The method is difficult to introduce and maintain. • Systems are needed to ensure timely return and communication of test results and follow-up care for screen-positive women. • Transportation is required for specimens to the laboratory and for results back to the clinic. • Cytology programmes require clinical and laboratory quality control and quality assurance. • Interpretation is subjective. • Results are not immediately available, so multiple visits are required, increasing the risk of loss to follow-up.
d. Liquidbased cytology (LBC)	A sample of cervical cells is taken by the provider with a spatula and/or small brush, immersed in a preservative solution and sent to a laboratory for processing and review by a trained cytotechnician.	• Once cytotechnicians are proficient, LBC samples take less time to review. • Samples can also be used for molecular testing (such as for HPV DNA). • Training and mechanisms for quality control and quality assurance are well established.	• Supplies and laboratory facilities for LBC are more expensive than for conventional cytology. • Other limitations are the same as for conventional cytology

Screen-and-treat approach

- ❖ Adding a diagnostic step after screening, before treatment of pre-cancer, can result in high loss to follow-up because additional patient visits are required as well as a longer time interval between screening and treatment.
- ❖ To reduce such loss to follow-up, the screen-and-treat approach has been developed and this strategy is increasingly being adopted worldwide.

- The screen-and-treat approach utilizes a screening test that gives either immediate or rapid results that can be followed closely by treatment of those women who screen positive for pre-cancer.
- Ideally, the treatment can occur on the same day and at the same location (i.e. the single visit approach). If this is not possible or the patient declines, then treatment can be offered shortly after screening at an arranged time and location easily accessible to the patient.
- The screen-and-treat approach eliminates the extra visits and time required for the diagnostic step.
- A limitation to the screen-and-treat approach is that the lack of a diagnostic step can result in false-positive results and overtreatment. However, concerns about overtreatment must be weighed against the low morbidity associated with treatment using cryotherapy and the overall benefit of ensuring higher rates of treatment.
- Another concern about the screen-and-treat approach is that when cryotherapy is done immediately after positive VIA or HPV results, no tissue sample would be available if needed for histological examination at a later time.
- To try to reduce overtreatment while still retaining the benefits of the screen-and-treat approach, another strategy is to follow an initial positive screening test with a second test, and then only treat the patient if both tests are positive.

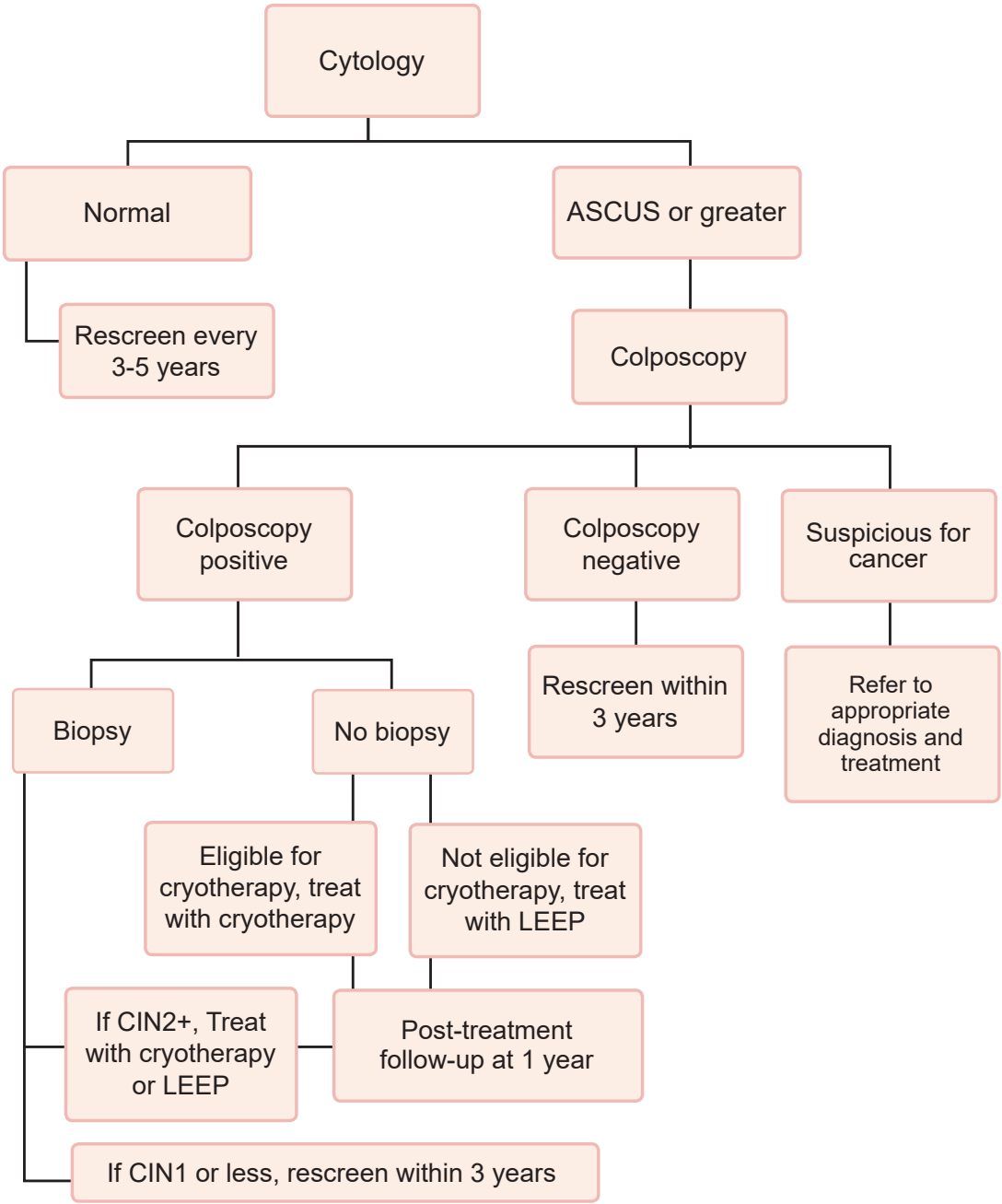
Flowcharts for screen-and-treat strategies (negative or unknown HIV status): Screen with VIA and treat with cryotherapy, or LEEP when not eligible for cryotherapy



Source: *WHO; 2013.WHO Guidelines for screening and treatment of precancerous lesions for cervical cancer prevention*

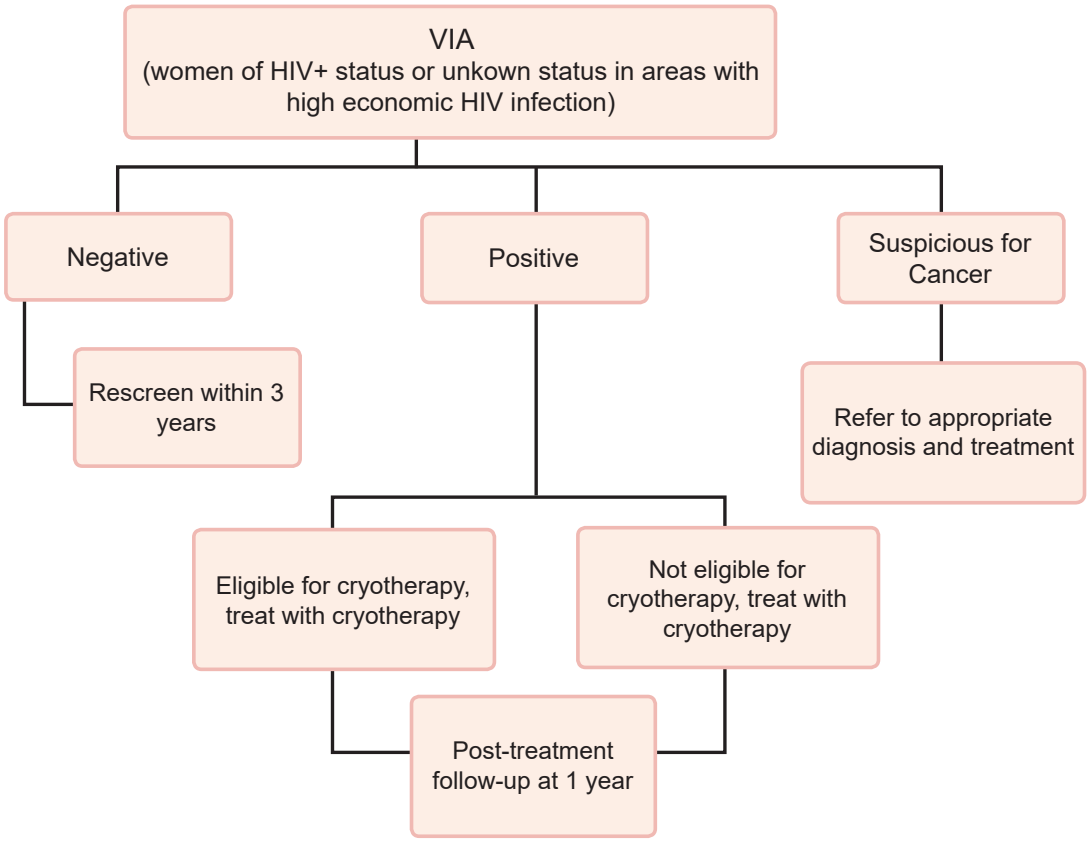
Currently in Uganda persons living without HIV are advised to screen for pre-cancer after every 3 years, following negative screening test.

Flowcharts for screen-and-treat strategies (negative or unknown HIV status) using cytology method



Source: *WHO; 2013.WHO Guidelines for screening and treatment of precancerous lesions for cervical cancer prevention*

Flowcharts for screen-and-treat strategies (HIV-positive status or unknown HIV status in areas with high endemic HIV infection)



Source: *WHO; 2013.WHO Guidelines for screening and treatment of precancerous lesions for cervical cancer prevention*

Currently in Uganda persons living with HIV are advised to screen for pre-cancer after every 1 year, following negative screening test.

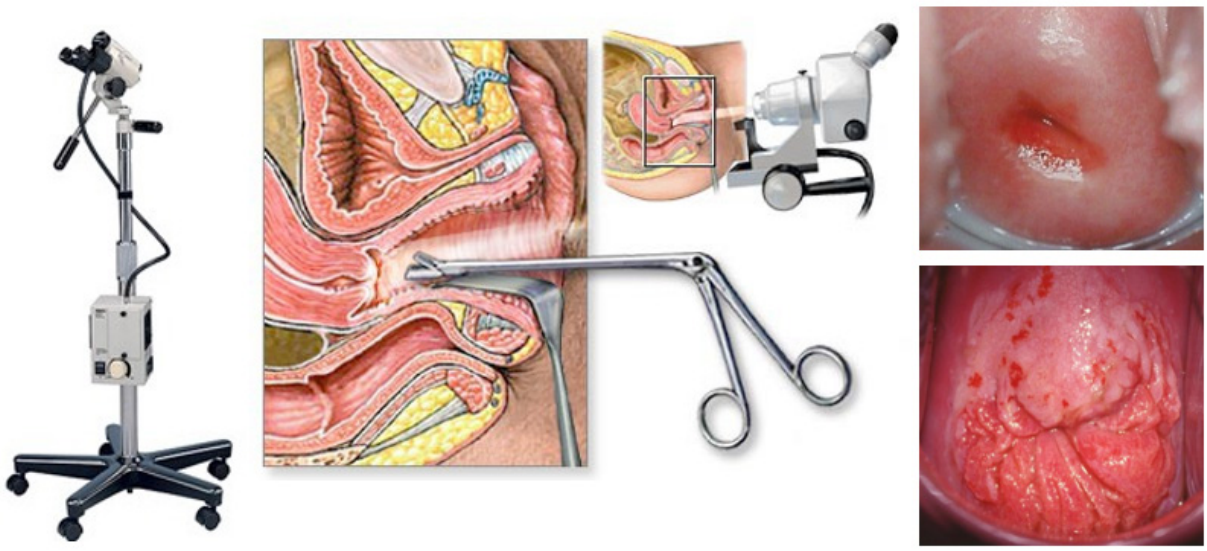
SECTION THREE: DIAGNOSTIC TESTS FOR DETECTION OF CERVICAL PRE-CANCER AND CERVICAL CANCER

How is cervical cancer confirmed?

A diagnostic or confirmatory test is a medical test performed to aid in the diagnosis or detection of a disease. Because not all women with positive results on cervical screening tests actually have pre-cancer, a subsequent diagnostic test is sometimes used for definitive diagnosis or confirmation of pre-cancer or cancer.

Colposcopy and cervical biopsy

- Colposcopy, biopsy and endocervical curettage (ECC) are the most commonly used diagnostic tests for cervical pre-cancer. They require a high level of resources and training.
- If a colposcope, biopsy forceps and an endocervical curette are available, these procedures may be provided at the primary care level by physicians and midlevel providers who have had competency-based training and appropriate supportive supervision. More often, they are performed as outpatient procedures at the secondary care level (district and regional referral hospital).
- Colposcopy is the examination of the cervix, vagina and vulva with an instrument that provides strong light and magnifies a field, allowing specific patterns in the epithelial (surface) layer and surrounding blood vessels to be examined.
- This can be done with a colposcope, an expensive, specialized piece of equipment or using specially designed video or digital cameras. Typically, colposcopy is used on patients with positive screening results, to verify the presence, extent and type of pre-cancer or cancer, to guide biopsies of any areas that appear abnormal, and to help determine whether cryotherapy or LEEP is the most appropriate treatment.



Source: *WHO, 2014 Comprehensive cervical cancer control: a guide to essential practice – 2nd ed*

Biopsy

- Biopsy is the removal of small samples of abnormal tissue for microscopic examination to achieve a diagnosis. Biopsies can be taken from areas of the cervix that are VIA-positive or from areas that appear suspicious for cancer.
- If a lesion or abnormal structure of the cervix is not visible to the naked eye, colposcopy can assist in pinpointing the site or sites where one or more biopsies should be taken.
- Typically, a biopsy is taken from each abnormal area, although random biopsies may be useful under certain circumstances.
- Biopsy is used to determine the degree of abnormality of the cell changes at the cervix and to rule out cancer.
- After examination, the result is classified as normal, as cervical intraepithelial neoplasia (CIN), or as invasive carcinoma.
- The precancerous lesions are classified as low-grade (CIN1) or high-grade (CIN2 and CIN3, collectively referred to as CIN2+) pre-cancer.
- The classification is based on the thickness of the abnormal epithelium: the deeper the abnormal cells reach from the basement membrane toward the upper layer of cells, the higher the degree of CIN.
- The degree of abnormality informs recommendations for treatment: highgrade lesions (CIN2+) are moderate or severe pre-cancer and are treated, whereas CIN1 is a mild abnormality that typically represents an infection with a low-risk HPV type rather than a true precursor to cervical cancer, and so CIN1 is not usually treated.
- If invasive cancer is found on biopsy, the patient should be referred for treatment.

Endocervical curettage

- Endocervical curettage (ECC) is a procedure in which some surface cells are gently scraped from the endocervical canal with a special thin instrument or spatula, and the tissue is placed in a container with a fixative solution and sent to a laboratory for examination.
- ECC is used in the following circumstances:

  i. rare cases when the screening test suggests there may be a pre-cancer or cancer that is not visible with colposcopy, leading the provider to suspect that the lesion is hidden inside the cervical canal;

  ii. if the squamocolumnar junction cannot be fully visualized in the face of an already suspected lesion;

  iii. if the Pap smear revealed a glandular lesion, which usually arises from the columnar epithelium inside the canal; and

  iv. if screening and/ or colposcopy were not adequate because the transformation zone was not seen in its entirety and cancer is suspected.

The endocervical cytobrush specimen may be used as an equivalent approach instead of ECC.

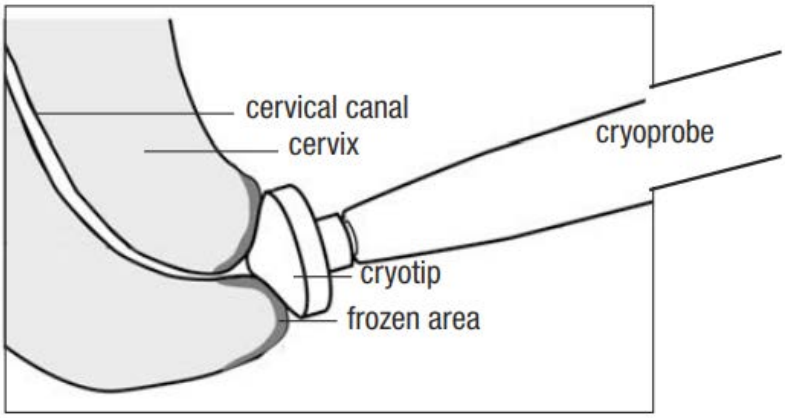
SECTION FOUR: TREATMENT OPTIONS FOR CERVICAL PRE-CANCER

- Women with pre-cancer must receive effective treatment, which can usually be provided by trained health care provider at health centres, in contrast to treatment for suspected or confirmed invasive cancer, which requires specialist medical providers at higher-level facilities (hospitals).
- In the context of a screen-and-treat approach, treatment follows a positive pre-cancer screening test without diagnostic confirmation.
- Treatment aims to destroy or remove areas of the cervix identified as pre-cancer.
- Treatment methods may be ablative (destroying abnormal tissues by burning or freezing) or excisional (surgically removing abnormal tissues).
- Unless there are other compelling reasons to remove the uterus, hysterectomy should not be performed for precancer.
- The choice of treatment will depend on:
  i. the benefits and harms of each method
  ii. the location, extent and severity of the lesion
  iii. the cost and resources required to provide treatment
  iv. the training and experience of the provider.
- Regardless of the treatment method recommended by the provider, the woman needs information about the procedure so that she can make an informed choice.
- Consent from the patient is needed prior to the procedure, but it can be given verbally.
- If cancer is suspected: If a patient has a cervical abnormality that looks suspicious for cancer, the patient should NOT be treated with cryotherapy, LEEP or CKC. The appropriate next step for her is a cervical biopsy to confirm or rule out a diagnosis of cancer.
- If the provider has the appropriate training and equipment, he or she can perform the biopsy. If not, the provider should refer the patient for prompt further evaluation.

Option 1: Cryotherapy

- ❖ Cryotherapy eliminates precancerous areas on the cervix by freezing (an ablative method).
- ❖ It involves applying a highly cooled metal disc (cryoprobe) to the cervix and freezing the abnormal areas (along with normal areas) covered by it.
- ❖ The supercooling of the cryoprobe is accomplished using a tank with compressed carbon dioxide (CO2) or nitrous oxide (N2 O) gas.
- ❖ Cryotherapy can be performed at all levels of the health system, by health-care providers (doctors, nurses and midwives) who are skilled in pelvic examination and trained in cryotherapy. It takes about 15 minutes and is generally well tolerated and associated with only mild discomfort.
- ❖ It can, therefore, be performed without anaesthesia.
- ❖ Following cryotherapy, the frozen area regenerates to normal epithelium.

Position of cryoprobe on the cervix and ice forming



Source: *WHO, 2014 Comprehensive cervical cancer control: a guide to essential practice – 2nd ed*

Eligibility criteria cryotherapy:

- Screen-positive women (such as with VIA screening) or women with histologically confirmed CIN2+ are eligible for cryotherapy if the entire lesion and squamocolumnar junction are visible, and the lesion does not cover more than three quarters of the ectocervix.
- The patient is not eligible for cryotherapy if the lesion extends beyond the cryoprobe being used, or into the endocervical canal or if the lesion is suspicious for invasive cancer.

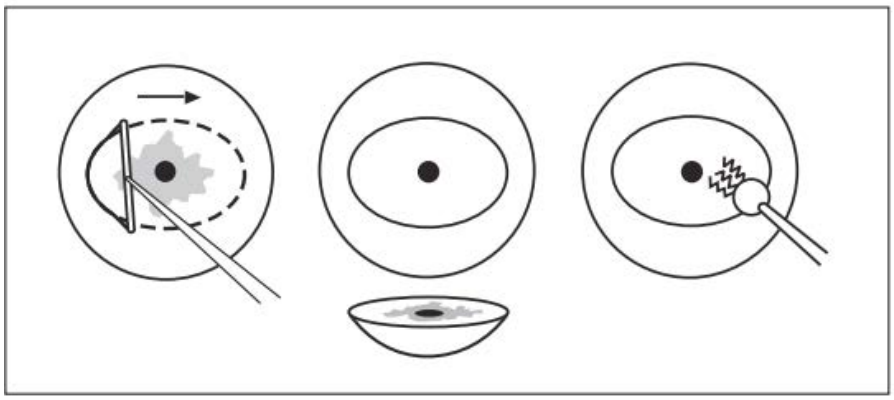
Post procedure cryotherapy:

- It takes a month for the cervical tissue to regenerate.
- The patient should be advised that during this time she may have a profuse, watery discharge and she should avoid sexual intercourse until all discharge stops, or use a condom if intercourse cannot be avoided.

Option 2: Loop electrosurgical excision procedure

- LEEP is the removal of abnormal areas from the cervix using a loop made of thin wire powered by an electrosurgical unit. The loop tool cuts and coagulates at the same time, and this is followed by use of a ball electrode to complete the coagulation.
- LEEP aims to remove the lesion and the entire transformation zone.
- The tissue removed can be sent for examination to the histopathology laboratory, allowing the extent of the lesion to be assessed.
- Thus, LEEP serves a double purpose: it removes the lesion (thus treating the pre-cancer) and it also produces a specimen for pathological examination.
- The procedure can be performed under local anaesthesia in hospital with gynecologist(s) on an outpatient basis and usually takes less than 30 minutes. However, following LEEP, a patient should stay at the outpatient facility for a few hours to assure bleeding does not occur.

LEEP of an ectocervical lesion with one pass: excision of the lesion with wire electrode and coagulation with ball electrode



Source: *WHO, 2014 Comprehensive cervical cancer control: a guide to essential practice – 2nd ed*

Eligibility criteria:

Screen-positive women (such as with VIA screening), or women with histologically confirmed CIN2+ are eligible for LEEP if the lesion is not suspicious for invasive cancer.

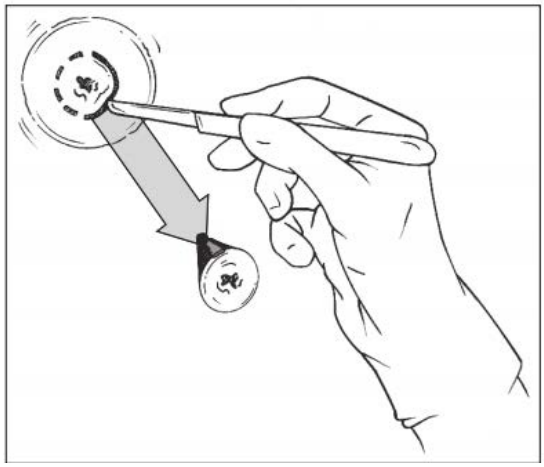
Post LEEP procedure:

- The patient should be advised to expect mild cramping for a few days and some vaginal discharge for up to one month.
- Initially, this can be bloody discharge for 7–10 days, and then it can transition to yellowish discharge.
- It takes one month for the tissue to regenerate, and during this time the patient should avoid sexual intercourse or use a condom if intercourse cannot be avoided.

Option 3: Cold knife conization (CKC)

- CKC is the removal of a cone-shaped area from the cervix, including portions of the outer (ectocervix) and inner cervix (endocervix).
- The amount of tissue removed will depend on the size of the lesion and the likelihood of finding invasive cancer.
- The tissue removed is sent to the pathology laboratory for histopathological diagnosis and to ensure that the abnormal tissue has been completely removed.
- A CKC is usually done in a hospital, with the necessary infrastructure, equipment, supplies and trained providers.
- It should be performed only by health-care providers with surgical skill – such as gynaecologists or surgeons trained to perform the procedure – and competence in recognizing and managing complications, such as bleeding.
- The procedure takes less than one hour and is performed under general or regional (spinal or epidural) anaesthesia.
- The patient may be discharged from hospital the same or the next day.

Removal of a cone-shaped area of the cervix



Source: *WHO, 2014 Comprehensive cervical cancer control: a guide to essential practice – 2nd ed*

Eligibility criteria:

- CKC should be reserved for cases that cannot be resolved with cryotherapy or LEEP.
- It should be considered in the presence of glandular pre-cancer or microinvasive cancer lesions of the cervix.

Post CKC procedure:

- Following CKC, patients may have mild cramping for a few days and a bloody vaginal discharge, transitioning into a yellow discharge for 7–14 days.
- It takes 4–6 weeks for the cervix to heal (depending on the extent of the procedure) and during this time the patient should avoid sexual intercourse or use a condom if intercourse cannot be avoided.

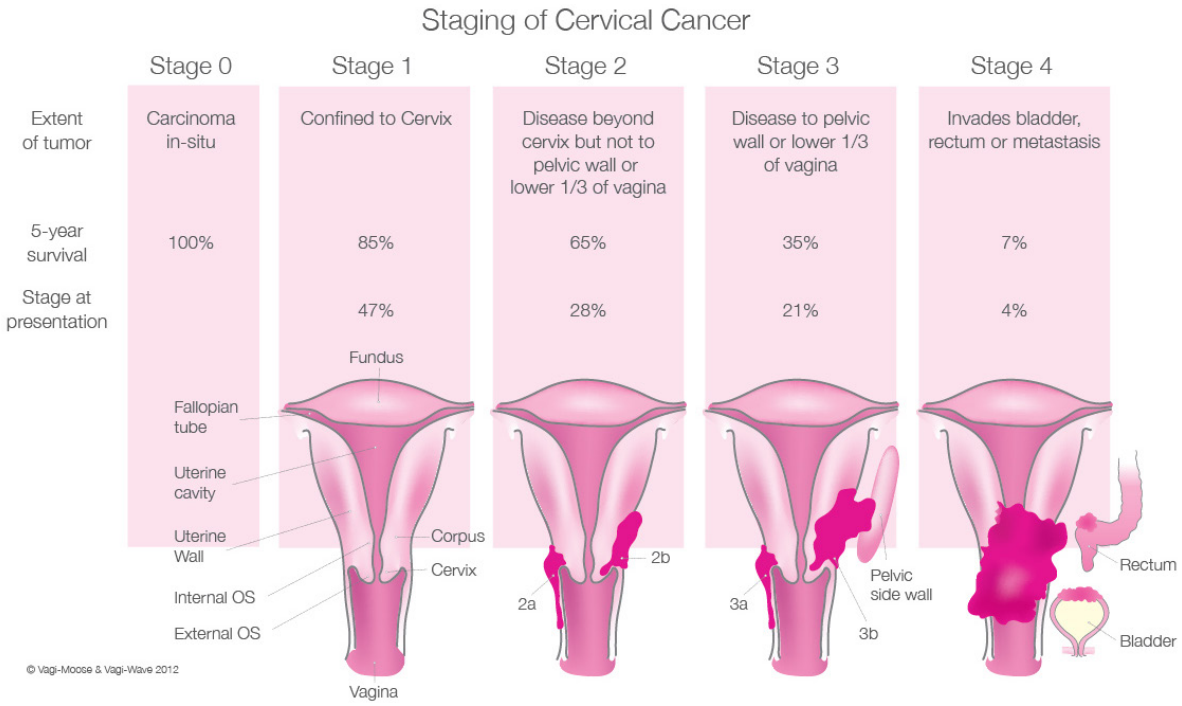
Stages of cervical cancer

The advancing spread of cancer within the body is described by stages, numbered from I to IV or 1 – 4 following pathology report and other tests for assessing metastasis (distant spread). Stages I & II are described as early stages while III & IV are late stages and decisions on whether curative or palliative therapy should be given are based on the stage of the cancer.

It is important for the health workers to understand where and how the cancer may be affecting a woman's body so that the therapy is appropriate and the patient's needs are anticipated.

Cervical cancer spreads by direct extension to vagina, uterus, parametrium, pelvic sidewall, bladder and rectum.

The figure below illustrates stages 1-4 of Cervical cancer



Source: *https:www.vagi-wave.co.uk/how-it-helps/cervical-cancer*

SECTION FIVE: CERVICAL CANCER TREATMENT

- Treatment of cervical cancer depends on the stage
- One, or combination of the following types of treatment options are used in the treatment of cervical cancer.

i. Surgery

- Cold knife cone biopsy
- Hysterectomy

ii. Radiation

- External beam
- Brachytherapy

iii. Chemotherapy

- By use of chemotherapy alone
- Chemo-radiation - By use of chemotherapy with radiation

Women with early stages of cervical cancer—cancer that has not spread beyond the cervix or adjacent vagina— may be treated by total abdominal hysterectomy (removal of the uterus) with or without removal of pelvic lymph nodes and radiotherapy if these treatments are available and affordable.

Similarly, those with cancer confined within the pelvis may be treated with radiotherapy and chemotherapy if these are affordable and available.

For many women with cervical cancer, the disease is so advanced by the time it is detected, and as such it cannot be cured. In these cases, providing palliative care to relieve the symptoms often is the best thing that can be done to help the woman and her family.

Follow up care

It is important to have regular follow-up exams after cancer treatment to ensure that any changes are noticed early.

Changes in the treated areas or in the other parts of the body should be reported to the doctor right away.

Tell your doctor about other physical problems like loss of appetite, weight loss, blurred vision, dizziness, headaches, shortness of breath, digestive problems that don’t go away.

SECTION SIX: DELIVERING KEY CERVICAL CANCER MESSAGES TO TARGET AUDIENCE

Step 1. Remind client of good health practices.

- Protect her health by getting regular check-ups and participating in a cervical cancer prevention program.
- Tell the client(s) to be proud for taking steps to protect their health.
- Ask the client(s) what they know about cervical cancer.
- Find out what beliefs or fears they might hold about cervical cancer.

Step 2. Deliver key messages on Cervical Cancer

- Cancer of the mouth of the womb is a disease that kills many women in Uganda.
- Explain that cancer begins on the outside of the cervix (mouth of the womb) and spreads slowly.
- Women are usually above 25 years when this starts to happen.
- Women do not feel anything when it starts - no pain, no bleeding, no vaginal discharge.
- When it spreads very deep into the womb or when bleeding or pain starts, it is usually very difficult to treat.

Step 3. Explain that the good news is that Cervical Cancer can be prevented!

- A simple test is carried out at health facilities within Uganda. This test can 'determine if you have a sign of pre-cancer. One of the commonest test used is called visual inspection with acetic acid (VIA)
- When the mouth of the womb starts to change, it has not become cancer yet
- No one can tell by the way a woman looks whether the mouth of the womb is healthy or not until she is examined.
- We can treat pre-cancer by removing the bad part (like the skin of the fruit) that is not healthy and stop the unhealthy part from spreading and growing into cancer.
- Once the unhealthy part (pre-cancer) is removed, the woman's womb is healthy again. She can do all the things that she has always done.
- Remember, some women have this problem. But, they cannot know until they get a check-up.

Step 4. Explain what happens at the health facility.

- At the health facility, health workers will conduct an exam called the visual inspection in the acetic acid (VIA) or Pap smear. They will take a look at the mouth of the woman's womb to see if it has started to change.
- If there is a change on the woman's cervix, she will be referred for treatment.
- At the treatment clinic, a trained health worker can take care of the problem.
- Even if a woman is screened and no problems were found, she needs to return, in three years' time to make sure no new changes have happened.

— Persons living with HIV need to return once in every year.

Step 5: Remind the women why going for cervical screening at the health facility is important.

It is healthy and very important for women between 25 - 60 years to get a check-up every three years to prevent cervical cancer.

— You can prevent it by getting a check-up and treatment if needed

— You do not have to be sick to get a check-up.

— The test is quick. It is safe. It works. It is generally not painful.

— The test is very simple and quick to do, and it is free of charge in health. units but may have a small cost in private units.

Step 6: Test for understanding

— Review information if the client(s) looks worried or puzzled about anything.

— Ask client questions to determine if she understood what you have said to her.

— If client answers incorrectly, review the information again.

— Repeat Steps I-through 4, if needed.

Step 7: Invite or refer the clients for check-up

Make a formal invitation to all eligible women (ages 25-60 years) wishing to participate in the screening. Give directions to the nearest health centre or hospital where cervical cancer screening services are provided. If there are husbands, ask them to accompany or send their spouses for screening. Thank the audience.

Delivering Key Messages to Men

Step 1: Repeat key messages for women, and background information on cervical cancer

Step 2: Basic Information for Men

In addition to the background information, inform the men about the following:

— HPV infection can easily be passed between people who have sexual contact. It causes no symptoms.

— HPV can also threaten men's health, if it persists, by causing cancer of the penis.

— HPV can live on genital skin, so it is not sexual penetration alone that can transmit HPV.

— Using condoms may not offer complete protection but it reduces number of infections and thus has a role in prevention of cervical cancer.

— Men have a key role to play in prevention of cervical cancer in women by

- Reducing the number of their sexual partners.
- Using condoms if they have more than one relationship (sexual partner).
- Using condoms to prevent S.T.Is including HIV/AIDS.
- Encouraging their partners to be screened if they are over 25 years.

- Avoiding unwanted pregnancies and pregnancy at a very young age.

Step 3. Make the following additional points:

- Remind male partners/spouses on the importance of having a healthy family.
- It is especially important for the mother to be healthy because she takes care of the rest of the family and often the farming/ agricultural works or business.
- He can do his part to prevent cervical cancer in his own family.
- If a husband really loves his wife, he will support her going for the screening test.
- His support for his family's health is part of being a responsible husband and good father.
- Remind the man that a cervical cancer prevention program is taking place at a nearby health facility (name facility).
- The test generally will not hurt. It is safe and it works.
- It is quick and simple to do.
- The health care providers are very respectful and will treat his wife well.
- After the test, the woman can do all the things that she has always done.
- The test does not in any way negatively affect the health of the woman.

And finally,

- Remind the male partner/spouse to do his part. He can support his spouse to get screened in a number of ways such as:
- He should encourage his wife to get screened.
- The test is free of charge in most public health units but may have a minimal cost in private hospital or private services section of public health facilities but the male spouse can help with transport costs, granting permission for her to go for screening.
- He can offer to tend the garden and domestic chores while she goes for screening.
- He can even accompany his spouse to the health facility so that he can obtain more information about the test with a health provider.
- He should cooperate and abstain from sexual intercourse following some tests and treatment.
- He should reduce the work burden when his wife has undergone treatment to allow her rest and recover.
- If his wife has advanced disease, he should provide maximum comfort.
- He can reduce cancer deaths in the community by advocating for women's health programs.

Delivering Key Messages at Public Events

In a public event communicate key messages especially the following:

- Cancer of the cervix is a serious problem among women in Uganda and kills many women.
- It can easily be prevented with a simple check-up and treatment if needed. This test and treatment can stop cervical cancer in Uganda.
- This test is now available at several health facilities throughout Uganda (list the nearest health facilities in the district or the region where screening is available).
- All women between the age of 25 and 60 years even if they feel healthy, should get this special check up every three years, but persons living with HIV should test after every one year.
- Women in this age group are the most likely to benefit because if they have health problem with the cervix (mouth of the womb), it can be seen and easily treated.
- A woman does not have to be sick to get a check-up for cervical cancer.
- The test is quick, safe, works well and is generally not painful.
- The test is very simple and quick to do and is generally free of charge to the woman in most facilities except in private wing of public health facilities and private hospital where very little money may be charged.

Here is where you can go for further information:

- Health Centres III & IV in your area.
- District and Regional Referral Hospitals.
- Other registered Hospitals (NGO/Private)
- Your DDH's office.
- The Ministry of Health.

Remember to encourage all women between 25 - 60 years in your community or workplace to go for screening.

Delivering Key Messages on Cervical Cancer Prevention to Women at the Health Facility

Start Session with Background Information on Cervical Cancer and Basic Information for men.

Step 1: Remind client of good health practices.

- Protect her health by getting regular check-ups and participating in a cervical cancer prevention program.
- Tell the client to be proud for taking steps to protect her health.

Step 2: Explain key points about cervical cancer and its consequences.

- Cancer of the mouth of the womb is a disease that kills many women in Uganda.
- Pre-cancer starts on the mouth of the womb and spreads slowly if not treated
- Women do not feel anything when it starts - no pain, no bleeding, no discharge.
- When it spreads very deep into the womb or when bleeding or pain starts, it is very difficult to treat.

Step 3: Explain that cervical cancer can be prevented.

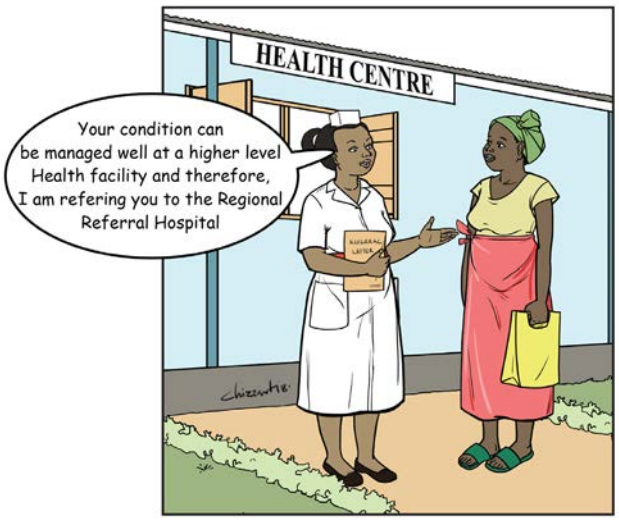
- When the mouth of the womb starts to change, it has not become cancer yet.
- We can remove the part that is not healthy by a treatment method called cryotherapy (like removing the bruised skin of the fruit).
- Removing the bad part will stop it from spreading and growing into cancer.
- Once the unhealthy part is removed, the woman's womb is healthy again.

Step 4: Tell clients why cervical screening at the health facility is important

- All women between the ages of 25 and 60 should get a screening check-up at the health facility every three years - even if they feel healthy.
- No one can tell from the way a woman looks whether the mouth of the womb is healthy or not.

The only way to know is if she is examined.

- Like maize, you must remove the husk/coverings to see if there are any bad kernels or seeds or maize cob. We really don't know if a maize cob is unhealthy until we peel away the outside. The only way to know is by checking. This is why it is important that women are checked.
- At the health facility, health workers will conduct a cervical exam. They will take a look at the mouth of the womb to see if it has started to change.
- The women who have this problem cannot know until a health worker has had a look at it.
- If there is a change on the woman's cervix, the health provider will refer her to the District or regional or national referral Hospital. At the Hospital, a trained health provider or doctor can take care of the problem.
- Tell the client that if she is referred to the Hospital, it is very important that she goes to get the problem taken care of.
- All women aged 25 - 60 years should return for check-ups every three years. Even if a woman is screened and no problems were found, she needs to return in three years just to make sure



Step 5: Test for understanding

- Review information and check for understanding.
- Ask client(s) to repeat what she/they heard.
- Ask the women questions to determine if they understood what you have said to them.
- Correct any misinformation.

Step 6: Discuss client's right to decide for herself.

- Before the exam is conducted, remind client(s) that the health provider should ask permission to carry out the exam. Tell her/them that this is called "Informed Consent."
- Remind clients that it is their right to decide to be screened or receive treatment. Even in the exam room, she can still change her mind and come back another time.
- Remind client that if at any time during the exam there is something she does not understand; she should talk to the health provider.

Step 8: Individual Counseling and Consent.

- The client or clients who accept screening should proceed to the individual counseling session & screening **(Use Flip Chart for Counseling and Consent)**

Delivering Key Messages to Community Leaders and Policy makers about Cervical Cancer prevention

STEP 1: GETTING STARTED

- Introduce yourself appropriately to the audience
- Give an outline of the objectives of your session (For example; to raise awareness about cervical cancer, its problems/complications and policy Implications).

— Introduce the cervical cancer screening program.

STEP 2: DELIVER (BASIC FACTS) ON CERVICAL CANCER.

- Cervical Cancer affects many women worldwide with over 528,000 new cases diagnosed annually. Over 80% of these are in developing countries of which Uganda is one.
- It is estimated that over 1 million women worldwide have cervical cancer. Majority of these have not been diagnosed or they have no access to treatment that could cure or prolong life.
- Cervical cancer is the leading cause of cancer deaths in women in Uganda. Research has shown that in 2012, 48/100,000 women in Uganda had cervical cancer, representing more than 4,000 women with cervical cancer. This is among the highest prevalence rates in the world. Majority of women (over 80%) are diagnosed with cervical cancer at a late stage when no cure can be achieved. However, there are many more women who die of it but are not documented.
- Experience in the developed world shows that well planned, organized screening program achieve high coverage and significantly reduce new cases of cervical cancer and the associated mortality.
- Most new infections of HPV resolve spontaneously but if they persist, they can lead to pre cancer. If pre-cancer is left un treated it can lead to cancer. This usually takes 10-20 years the cancer to develop into cancer. This means that with effective screening programmes majority of the Cervical Cancer cases can be prevented by early detection and treatment precancerous lesions.
- The most affected women are women over 25 years with majority of deaths occurring between 40-60years.

— If untreated invasive cervical cancer is fatal, causes enormous pain and suffering and has significant adverse effects on families and communities.

STEP 3: BARRIERS TO CONTROL OF CERVICAL CANCER

- Where cervical cancer screening programmes have failed the following are the reasons:

Political Barriers:

- Lack of enabling national policies & evidence based management guidelines.
- Lack of prioritization of women's sexual & reproductive health and
- Failure to allocate resources to Cervical Cancer control.

Community & Individual Barriers:

- Lack of awareness that Cervical Cancer is a major health problem among the population, health care providers, leaders & policy makers.
- Poor attitudes, misconceptions & beliefs that cancer is untreatable and failure to openly discuss

issues & diseases of the genital tract presents major barriers to cervical cancer control.

- Poorly organized health systems, lack of appropriate equipment & trained providers limits access to prevention activities, screening, diagnosis treatment, follow up and palliative car

STEP 4: HOW CAN LEADERS & POLICY MAKERS HELP REDUCE NEW CERVICAL CANCER CASES & DEATHS?

- Facilitating & supporting formulation of enabling policies and evidence based management guidelines.
- Supporting the allocation of adequate resources to implement the policy on Cervical Cancer screening & treatment.
- Advocating for prioritization of cancer prevention and early detection on the National and local district agenda.
- Mobilizing resources for Cervical Cancer prevention & treatment.
- Advocating for & mobilizing Men and Eligible women to utilize screening services.
- Supporting the efforts to motivate & remunerate health providers in their work.
- Participating in supervision & monitoring of the implementation of health programmes.
- Fostering and building of multidisciplinary teams for the prevention of Cervical Cancer.

Step 5: Take Home Message

1. Cervical Cancer is preventable, unlike many other cancers. The slow progression of cervical pre-cancer to cancer provides a window of opportunity of up to l0years to detect & treat precancerous lesions and prevent their progression to cancer.
2. Cervical cancer screening and treatment are justified on the basis of the general principles of public health screening.
3. Regardless of the screening test used, the focus should maximize coverage and link screening to treatment and palliative care services. This depends on available resources.
4. Treatment with Cryotherapy can be performed by doctors, nurses, & midwives at all levels of health care with comparable safety and acceptability.
5. Policy makers must get committed to invest in and devote the necessary resources and t1eicated staff to program planning, implementation & monitoring.
6. Policy phase should be participatory and involve key stakeholders, clearly basing policy decisions on needs and health priorities of Uganda.

Delivering Key Messages to Adolescents in Schools & Out of Schools on Cervical Cancer Prevention

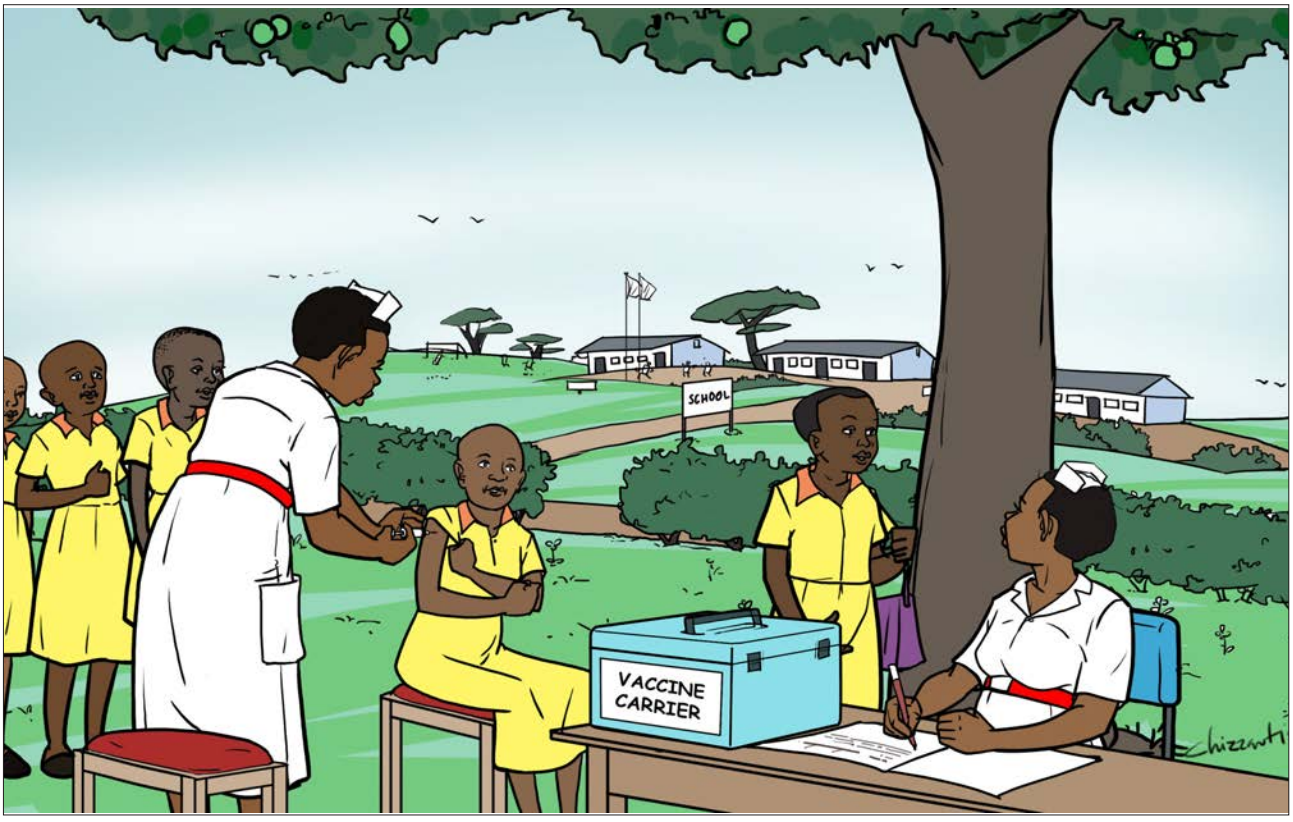
GETTING STARTED

- Identify a suitable place to talk
- Introduce yourself appropriately
- Introduce the Cervical Cancer prevention program

Step 1: DELIVERING KEY MESSAGES

- Cervical Cancer kills many women worldwide
- Cervical Cancer is the abnormal uncontrolled growth of cells on the Cervix.
- It is caused by Human Papilloma Virus (HPV), a sexually transmitted virus.
- Many people get the virus while still young and they don't get symptoms.
- Although Condoms do not completely prevent transmission, they reduce the number of infections and therefore Cervical Cancer.
- Young people who engage in early sexual intercourse and deliver at a young age are most at risk.
- It takes several years for a persistent HPV infection to cause precancerous changes in the cervix. It also takes up to 10 years and more for pre-cancer to develop into cancer.
- This provides a great opportunity to screen all females 25years and above for pre-cancer and provide them curatives treatment.
- Avoiding early sexual intercourse is one of the most important ways to prevent cervical cancer.
- Since the HPV can live on the genital skin and condoms are not 100% effective in preventing transmission, abstinence during adolescence is the best prevention strategy.
- Boys should know that persistent HPV infection in them can lead to cancer of the penis.
- For young people who are not yet sexually active the HPV vaccine that has been developed prevent cervical cancer.
- The HPV vaccine is available in public health facilities countrywide for girls 9-13 years of age or girls in primary four class.

Role of community health workers in HPV Vaccination



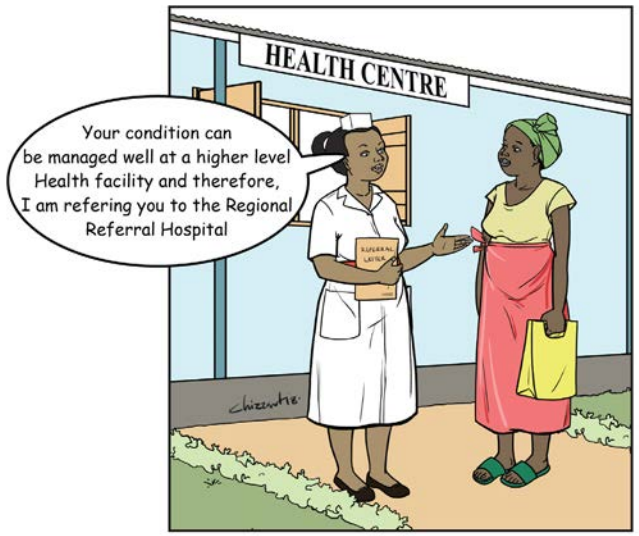
Community health workers (CHWs) are in constant contact and communication with families in their communities and they are the bridge between the community and the facility-based health-care providers. In an HPV vaccination programme, their role may include:

- Raising awareness about cancer risk factors and the availability of the HPV vaccine and its importance for preventing cervical cancer, targeting the community at large, local health and community managers, local authorities, religious leaders and civil society representatives;
- Educating girls and their parents and other community members about the benefits of the HPV vaccine and other available cervical cancer prevention strategies;
- Countering misinformation and rumours that undermine acceptance of vaccination, by providing accurate information;
- Reminding girls and their families to get the subsequent dose(s) needed for full protection
- Working with health facility staff to vaccinate girls, either in the community, at schools or other selected venues, and/or documenting vaccination-related activities; and
- Assisting in the delivery of additional interventions that improve the health of the community

Making a Follow-Up call and visit following Cryotherapy Treatment

If the client has been:

To the Hospital and was treated with cryotherapy **less than one month** ago, **Do this:**



- Determine if client is having problems with the take-home instructions.
- Ask if she is experiencing any problems such as fever or pain in the womb or lower back. Ask if she has bleeding more than normal monthly bleeding. If yes, refer her immediately to the health facility. Remind her to take her client card with her.
- Remind client not to insert anything into the vagina (herbs, tampons, a penis). She needs to give her body time to heal.
- Remind client to use a condom if she must have sexual relations
- Tell client it takes about four weeks (one month) her body to heal.

If the client has been:

To the District or Regional Referral Hospital and was treated with cryotherapy more than one month, do the following:

- Remind client to go to the District or Regional Referral Hospital for review.
- Tell her she will be counseled and also receive a vaginal exam to see how she is healing. Remind her to prepare for the vaginal exam.
- Remind her to go for a one-year clinical exam when time comes.
- Check if she has scheduled dates for these visits.

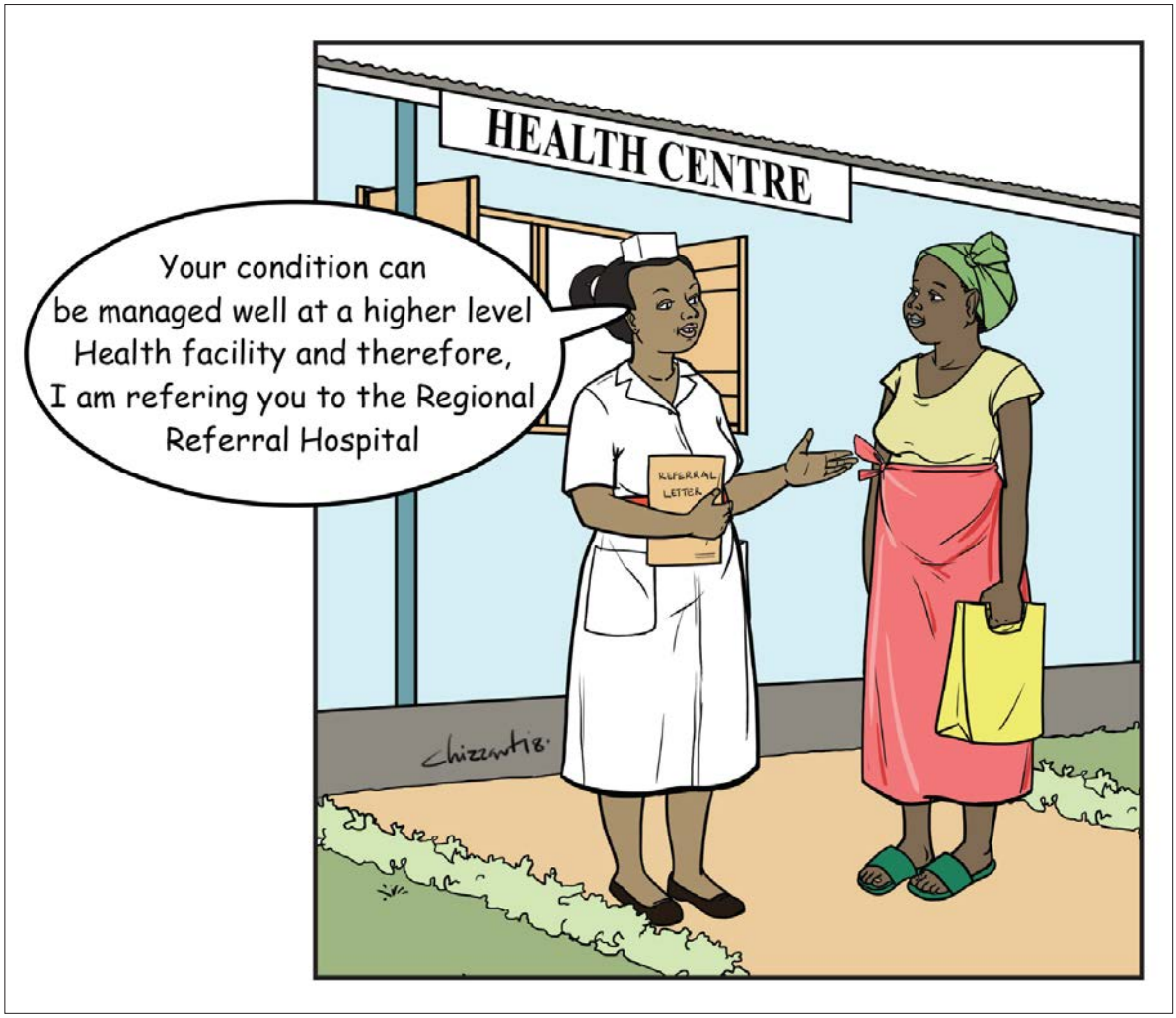
If the client has been:

Referred to a Regional or National Referral Hospital,

Do the following:

- Tell client that she has a problem that needs to be treated. This can only be done at the Hospital she was referred to.
- Remind her that she needs to go as soon as possible. Otherwise, she may get very ill and possibly get unpleasant complications
- After third follow up visit and she still hasn't gone, refer client to your supervisor.
- Follow-up visits should be conducted at monthly intervals.

Talking to Women who need further Care beyond the District Hospital



Who needs further care?	What you can do for this woman:
Women who have been treated for cervical cancer. These are women who have received treatment for cervical cancer at the Regional Referral Hospital, or they have gone to Mulago Hospital, or Uganda Cancer Institute in Kampala for further tests and treatment. The types of treatment they may have received are Wertheim's hysterectomy, LEEP, or curative radiotherapy. **They do not need palliative care visits.**	— Remind the client that she should now have peace of mind. The surgery or treatment most likely managed the problem. — Examine the client card for any follow-up visits. — Remind the client to return for her scheduled follow-up visits. The visit is to make sure everything is OK. — Refer client to the health facility if she or her family has questions about her health after surgery.
Women who need supportive (palliative) care. These are women whose cancer cannot be cured. These women will need end- of-life support.	— Remind client that if she had a surgery (hysterectomy) as part of her cancer treatment, the uterus has been removed, and with it, the cancer. This means that the client will be unable to have pregnancy. — Provide emotional support. Encourage client and her family to seek palliative care. — Be truthful about her condition and why palliative care is important. — Talk about the client's condition in a positive manner. — Explain that a health provider gives palliative care instructions. She will counsel them on what to expect and how to manage the illness at home. — Encourage client and her family to seek out a clergy member or religious group for spiritual support. — If you can do these things, she is more likely to die with dignity and respect. — Link the client to HOSPICE AFRICA or any other palliative care organization in your area.

SECTION SEVEN: COMMONLY ASKED QUESTIONS AND RESPONSES ABOUT CERVICAL CANCER PREVENTION SERVICES

A. Questions for the Health Centre Screening Visit

Q 1. Why aren't all women recommended for cervical screening?

A. There are several reasons for this.

- Women between the ages of 25 - 60 years are most likely to develop problems on their cervix. These can be seen and are treatable. Women in their teens and 20s are less likely to get pre-cancerous lesions on their cervix. If they do get them, they usually go away without treatment. This is not so with women who are older.
- In places where health services are limited, it is important to devote services to women above 25 years. This is why it is important that women are screened at that age - before the cancer advances.
- Any woman above 25 years should be screened every three years. If this is not possible, - at least once every five years.

Q 2. What exactly does the screening Test do?

A. The screening test identifies pre-cancerous changes on the woman's cervix. The health worker applies medicine on the cervix and looks for a change in color. (A bad spot will turn "white" when the medicine is put on it.) If a woman has a white spot on her cervix, she will be referred for further exam/evaluation and/or treatment.

Q 3. My husband is a polygamist. Can my co-wife get cervical cancer from me?

A. That's a good question. What you and your co-wife should know is that any woman who has had sexual relations in her life should get screened at least once in her lifetime, ideally when she is her 30s, to make sure she stays healthy.

Q 4. Will this exam hurt?

A. No. The exam may be a little uncomfortable, but it will not be painful.

Q 5. Are the instruments clean?

A. Yes. They have been sterilized (cleaned) so that there is no danger of infection and most of the instruments are used once and dispose of.

B. Questions for the District Hospital Visit

Q 7. If the health worker finds that I have a problem with the cervix, what will happen?

A. The health workers will confirm this test and they will remove or destroy the abnormal changes with treatment or refer you if the level of the health centre cannot handle the your problem. Treatment involves freezing the spot on the mouth of the womb. This makes the cervix healthy again. If the health worker thinks you should have the treatment, he or she will explain the process to you.

Q 8. Will treatment affect my daily life?

A. If you are treated for a problem on the cervix, there are certain things you can do to make sure that your cervix heals properly. The health provider will explain more about this to you.

Q 9. How much will the exams cost?

A. There is no charge for this service in public health facility, except minimal charge may apply in private services section or in private hospital.

Q 10. What if I can't afford to go to the Hospital?

A. If it is difficult for you to go to the health centre, you can discuss this with your husband, comunity health workers or a local leader. They can help you find solutions to these problems.

Q 11. How do I get to the Hospital? Where is it?

A. (Answer appropriately)

Q 12. How long will my appointment at the Hospital take?

A. The exam takes about 15 minutes. We don't know how long you may have to wait because there may be many women ahead of you or if you do need treatment, your visit may be longer. It is important to travel early to the Hospital on the appointment date.

Q 13. What if my husband won't support my going to the Hospital? What can I do?

A. Explain why the visit is so important to protect your health. If he still does not want you to go, request a community health worker to talk to your husband. If he still doesn't want you to go, ask him to come with you to the health centre. A nurse or doctor can explain everything to him.

REFERENCES AND WHERE YOU CAN FIND MORE INFORMATION

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Part Four: Breast Cancer Information, Education and Communication Guide for Health Workers

SECTION ONE: WHAT IS BREAST CANCER?

Breast cancer is an uncontrolled growth of breast cells.

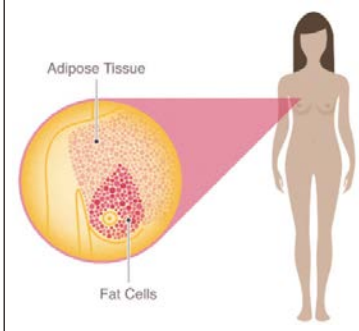
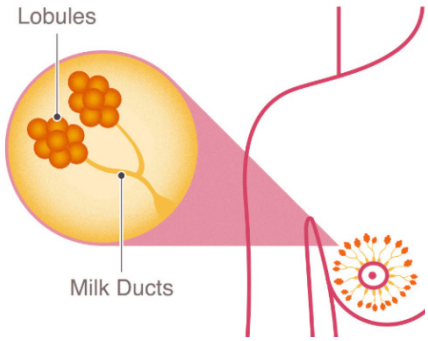
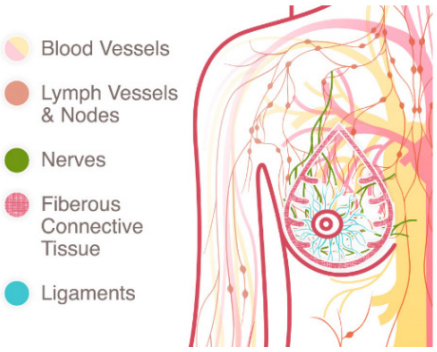
Understanding the breast: Adipose tissue, Lobes, Lobules, Milk Ducts and the lymph system

The female breast is mostly made up of a collection of fat cells called **adipose tissue** (**Figure 1**). This tissue extends from the collarbone down to the underarm and across to the middle of the ribcage. A healthy female breast is made up of 12–20 sections called lobes (**Figure 2**). Each of these lobes is made up of many smaller **lobules,** the gland that produces milk in nursing women. Both the lobes and lobules are connected by **milk ducts,** which act as stems or tubes to carry the milk to the nipple. These breast structures are generally where the cancer begins to form.

Within the adipose tissue is a network of ligaments, fibrous connective tissue, nerves, lymph vessels, lymph nodes, and blood vessels.

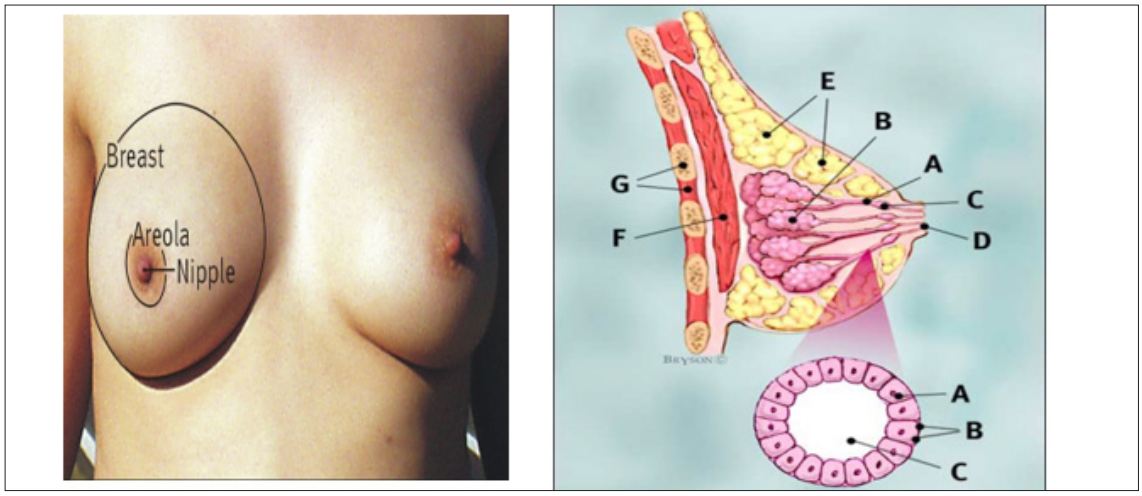
The lymph system, which is part of the immune system, is a network of lymph vessels and lymph nodes running throughout the entire body (**Figure 3**). Similar to how the blood circulatory system distributes elements throughout the body, the lymph system transports disease-fighting cells and fluids. Clusters of bean-shaped lymph nodes are fixed in areas throughout the lymph system and act as filters by carrying abnormal cells away from healthy tissue.

The type of breast cancer is generally determined by the origin of the growth of cancer cells, which is almost always in the lobes, lobules, or ducts. When cancer is found in the nearby lymph nodes, it helps doctors identify just how far the cancer has spread. If the nearest nodes contain cancer, additional nodes are usually examined for the presence or absence of cancer cells to understand how far the disease has progressed.

Figure 1: Adipose tissue	*Figure 2: Lobes, Lobules, Milk Ducts*	*Figure 3: The lymphatic system*
		

Source: *http://www.nationalbreastcancer.org/breast-anatomy*

Normal breast structure

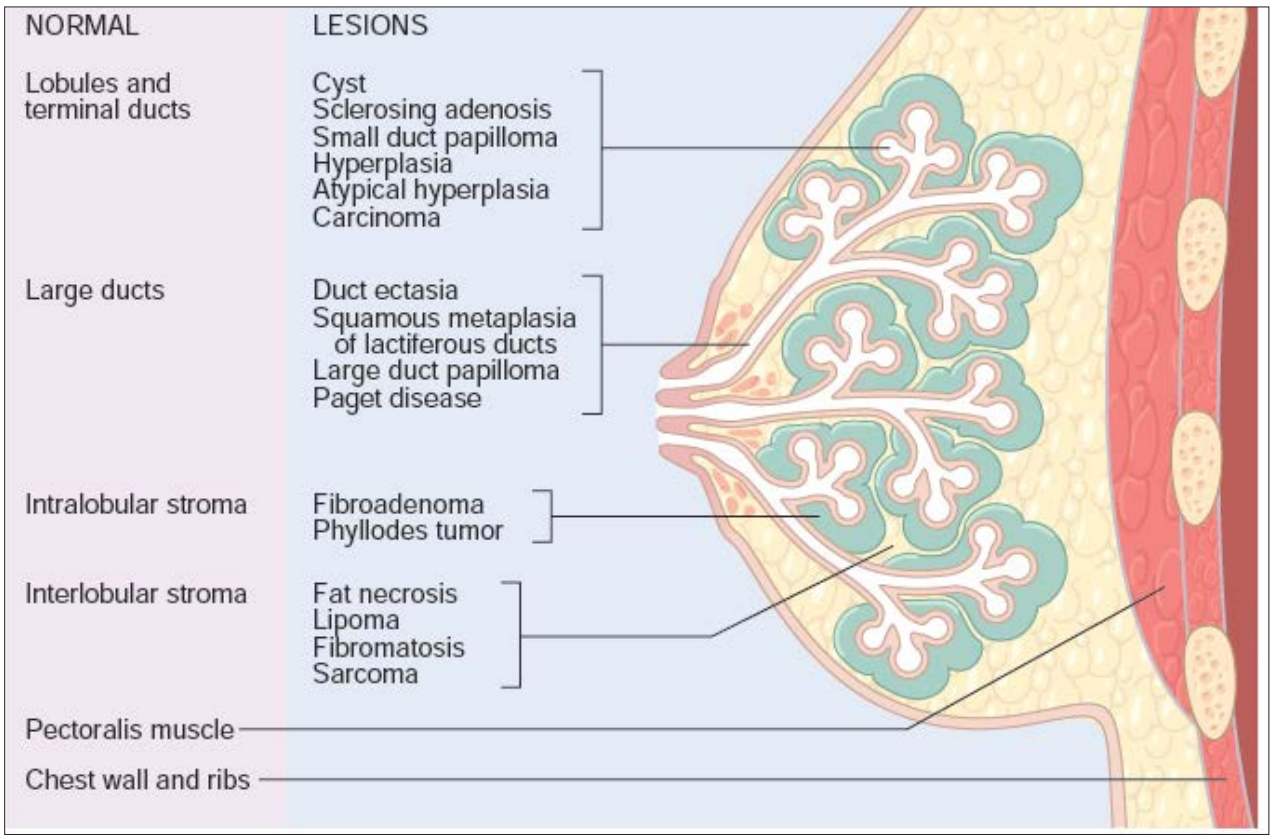


Source: *www.aboutcancer.com/breast_ca_org_anatomy.jpg*

A) Ducts **B)** Lobules **C)** Lumen (Dilated section of duct to hold milk) **D)** Nipple
E) Fat **F)** Pectoralis major muscle **G)** Chest wall/rib cage

COMMON SITES OF BREAST CANCER

Breast cancer usually develops in ducts, milk lobules, lumen of the milk ducts and nipples



Source: *http://medicinembbs.blogspot.ug/2010/12/breast-anatomy.html*

Breast Cancer burden

According to the World Health Organization (WHO), breast cancer is the most common cancer among women worldwide, claiming the lives of hundreds of thousands of women each year and affecting countries at all levels of modernization.

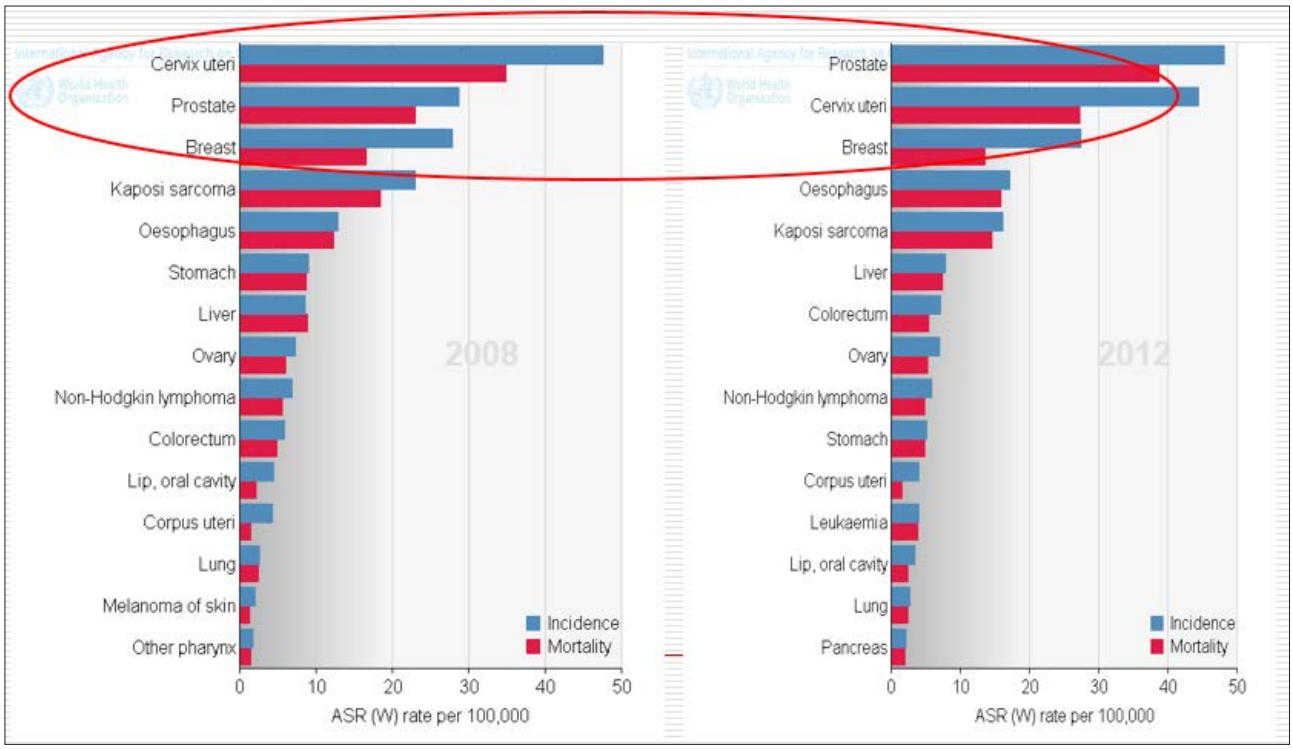
Breast cancer is the second leading cause of cancer death among women in Uganda, after cancer of the cervix, however, the annual rate of increase in the incidence of breast cancer is 3.7 %, more than that of cancer of the cervix (1.8%).

- In 2012, according to age- standardized data from WHO Globocan report, there was 28/ 100,000 new cases of breast cancer and 14/100,000 deaths from breast cancer
- All people, whether male or female, are born with some breast cells and tissue that have the possibility to develop into cancer. However, breast cancer in men is rare,

Although breast cancer in men is rare, an estimated 1 in every 100 people diagnosed with breast cancer is a man world-wide.

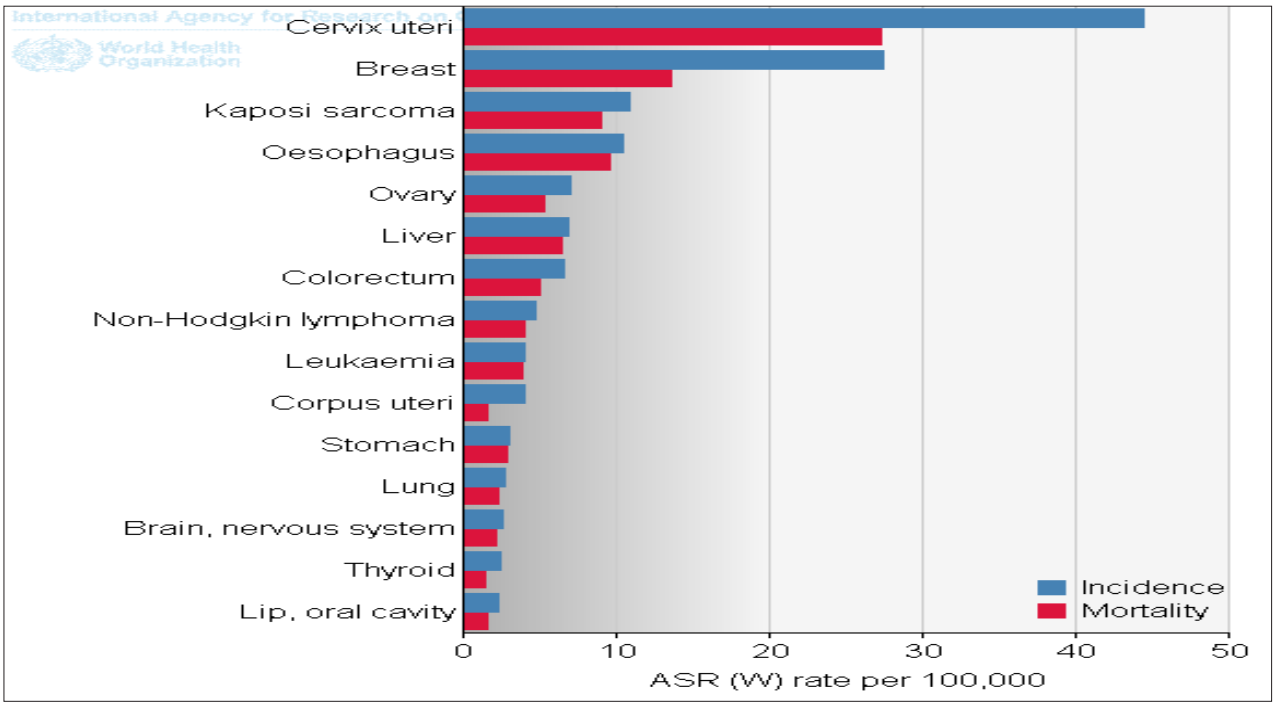
The relative burden of the top Cancers in Uganda

According to WHO Globocan report of 2008 and 2012 respectively (www.globocan.iarc.fr)), the estimated new cases of cancer (incidence) & death (mortality) in both men and women were as indicated in the **Figure** below. The top three cancers were Prostate, Cervical and Breast cancer.



Top cancers among women in Uganda

According to WHO report of 2012, Cancer of the cervix and breast are the leading cause of cancer death among women in Uganda (see **Figure** below)



SECTION TWO: WHAT ARE THE RISK FACTORS FOR BREAST CANCER?

When a person is told that she or he has breast cancer, it's natural to wonder what may have caused the disease. But no one knows the exact causes of breast cancer. Doctors may not know exactly why one person develops breast cancer and another person doesn't, and most women who have breast cancer will never be able to pinpoint an exact cause. What we do know is that breast cancer is always caused by damage to a cell's DNA.

Known breast cancer risk factors

Women with certain risk factors are more likely than others to develop breast cancer. A risk factor is something that may increase the possibility of developing a disease. Some risk factors (such as drinking alcohol) can be avoided. But most risk factors (such as having a family history of breast cancer) can't be avoided. Having a risk factor does not mean that a person will develop breast cancer. Many women who have risk factors may never develop breast cancer.

The risk factors for breast cancer can be i.e. genetic or environmental or lifestyle factors, or in most cases, a combination of the genetic and environment or lifestyles. But most patients will never know exactly what caused their cancer. However, there are certain established risk factors that are associated with breast cancer.

Risk factors that cannot be changed: Genetic Factors

- **Sex:** Breast cancer occurs nearly 100 times more often in women than in men.
- **Age:** Two out of three women with invasive cancer are diagnosed after age 55.
- **Family History and Genetic Factors:** If your mother, sister, father or child has been diagnosed with breast or ovarian cancer, you have a higher risk of being diagnosed with breast cancer in the future. Your risk increases if your relative was diagnosed before the age of 50.
- **Personal Health History:** If you have been diagnosed with breast cancer in one breast, you have an increased risk of being diagnosed with breast cancer in the other breast in the future. Also, your risk increases if abnormal breast cells have been detected before.
- **Menstrual and Reproductive History:** Early menstruation (before age 12), late menopause (after 55), having your first child at an older age, or never having given birth can also increase your risk for breast cancer.
- **Certain Genetic Changes:** Mutations in certain genes, such as BRCA1 and BRCA2, can increase your risk for breast cancer. Individuals with these gene mutations can pass the gene mutation onto their children.
- **Dense Breast Tissue:** Having dense breast tissue can increase your risk for breast cancer and make lumps harder to detect.

Avoidable risk factors: Environmental and Lifestyle risk factors

1. **Lack of adequate physical Activity:** A sedentary lifestyle with little physical activity can increase your risk for breast cancer, therefore, have regular physical activity like brisk walking, running or gardening for at least 30 minutes per day for at least 5 days a week.

How might physical activity be linked to reduced risks of cancer?

Exercise has a number of biological effects on the body, including:

- Lowering the levels of hormones, such as insulin and estrogen, and of certain growth factors that have been associated with cancer development and progression.
- Helping to prevent obesity and decreasing the harmful effects of obesity, particularly the development of insulin resistance (failure of the body's cells to respond to insulin)
- Reducing inflammation
- Improving immune system function
- Altering the metabolism of bile acids, resulting in decreased exposure of the gastrointestinal tract to these suspected carcinogens
- Reducing the amount of time it takes for food to travel through the digestive system, which decreases gastrointestinal tract exposure to possible carcinogens.

How much physical activity is recommended for general health benefits?

The Uganda physical activity guideline (PAG) is being developed, however, the WHO physical activity guideline recommends for adults aged 18–64, for substantial health benefits, need to engage in at least 150 minutes (2 hours and 30 minutes) of moderate-intensity aerobic physical activity, 75 minutes (1 hour and 15 minutes) of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity, every week. Aerobic physical activity should be performed in episodes of at least 10 minutes, preferably spread throughout the week.

For children and adolescents, the guidelines recommend at least 60 minutes (1 hour) of physical activity daily. Most of the 60 or more minutes a day should be either moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week. As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week and bone-strengthening physical activity on at least 3 days of the week.

Is physical activity beneficial for cancer survivors?

Physical activity is beneficial in cancer survivorship especially, in controlling weight gain, improving quality of life, limiting cancer recurrence or progression and improving prognosis (likelihood of survival).

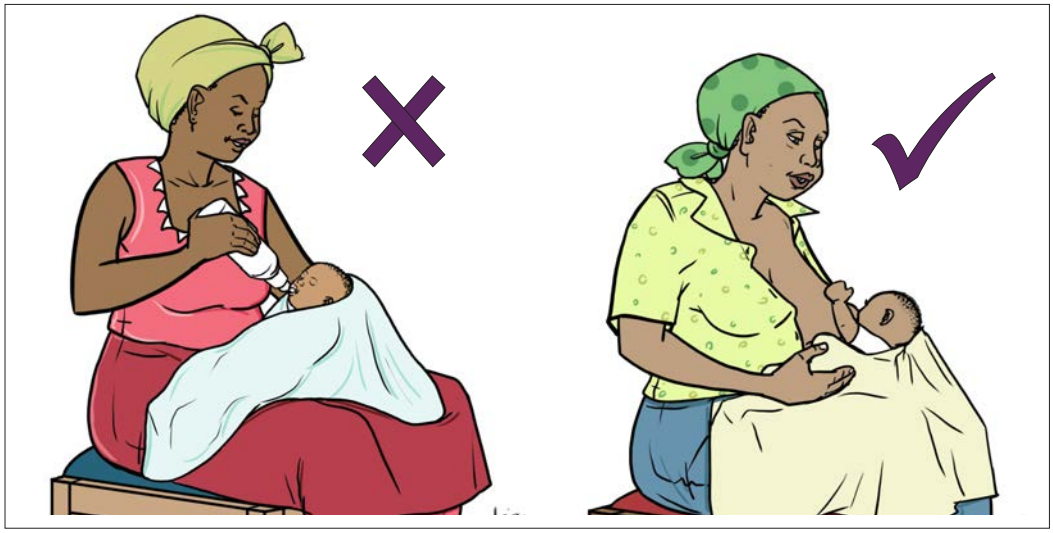
2. **Unhealthy Diet:** Not eating the right amount, variety and quality of food increases breast cancer risk. A diet high in saturated fat like red meat (beef, pork, goat's meat, etc.) and lacking fruits and vegetables can increase your risk for breast cancer. Therefore, eat a variety and right amount of quality and safe food.

3. **Being Overweight and or Obese:** Being overweight or obese can increase your risk for breast cancer. Your risk is greater if you have already gone through menopause, therefore, maintain healthy weight. It is therefore, advisable for every person to determine their weight status by use of body mass index (BMI). Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in metres (kg/m2). For example,

an adult who weighs 70kg and whose height is 1.75m will have a BMI of 22.9 That is, BMI = 70 kg /(1.75 m2) = 70 /3.06 = 22.9

BMI	CLASSIFICATION
<16.00	Severe thinness
16.00 - 16.99	Moderate thinness
17.00 - 18.49	Mild thinness
<18.50	Underweight
18.50 - 24.99	Normal
25.00 - 29.99	Over weight
≥30.00	Obese
30.00 - 34.99	Obese class I
35.00 - 39.99	Obese class II
≥40.00	Obese class III

4. **A late first pregnancy & not breastfeeding:** Women who have a late first pregnancy (after the age of 35) are more likely to develop breast cancer. Women who do not breast feed their children also increase their possibility of developing breast cancer.



5. **Drinking Alcohol:** Frequent consumption of alcohol can increase your risk for breast cancer. The more alcohol you consume, the greater the risk. Therefore, do not drink alcohol or avoid excess amount of alcohol. Alcohol is produced by the fermentation of sugar and starch in the presence of yeast. The main types of alcoholic drinks and their alcohol content are as follows:
   - Beers and hard ciders: 3-7 percent alcohol
   - Wines, including sake: 9-15 percent alcohol
   - Wines fortified with liquors, such as port: 16-20 percent alcohol
   - Liquor, or distilled spirits, such as, enguli, gin, rum, vodka, and whiskey, which are produced by distilling the alcohol from fermented grains, fruits, or vegetables: usually 35-40 percent alcohol (70-80 proof), but can be higher. Other locally produced alcohol have unknown amount of alcohol concentration.

The more alcohol a person drinks—particularly the more alcohol a person drinks regularly over time—the higher his or her risk of developing an alcohol-associated cancer.

How does alcohol increase the risk of cancer?

There are many ways that alcohol may increase the risk of developing cancer, these include:

- Breaking down ethanol in alcoholic drinks to acetaldehyde, which is a toxic chemical and a probable human carcinogen; acetaldehyde can damage both DNA(the genetic material that makes up genes) and proteins.
- Generating chemically reactive molecules that contain oxygen, which can damage DNA, proteins, and lipids (fats) through a process called oxidation
- Impairing the body's ability to break down and absorb a variety of nutrients that may be associated with cancer risk, including vitamin A; nutrients in the vitamin B complex, such as folate; vitamin C; vitamin D; vitamin E; and carotenoids
- Increasing blood levels of estrogen, a sex hormone linked to the risk of breast cancer

Alcoholic beverages may also contain a variety of carcinogenic contaminants that are introduced during fermentation and production, such as nitrosamines, asbestos fibers, phenols, and hydrocarbons.

So what amount of alcohol a person can drink safely?

The amount of alcohol a person can drink safely depends on the types of alcohol, health status and sex of the person, for example, the American National institute of health (NIH) recommends that a man should not drink more than two drinks (serving size) per day and women not more than one drink per day- this is only if you are not pregnant, lactating, have alcohol dependencies, diseases

or are taking medications. One drink contains 14 grams of alcohol, meaning one 12 oz of beer (5% alcohol), one 5 oz of glass of wine (12%), and one 1.5 oz of hard liquor (40%) – each of these is one drink/ one serving.

6. **Tobacco use-** Tobacco use is a leading cause of many types of cancer. People who use tobacco products or who are regularly around environmental tobacco smoke (also called second-hand smoke) have an increased risk of cancer because tobacco products and secondhand smoke have many chemicals that damage the DNA.

   There is no safe level of tobacco use. People who use any type of tobacco product are strongly urged to quit.

   People who quit smoking, regardless of their age, have substantial gains in life expectancy compared with those who continue to smoke. Also, quitting smoking at the time of a cancer diagnosis reduces the risk of death. Tobacco smoke contains many chemicals that are harmful to both smokers and nonsmokers. Breathing even a little tobacco smoke can be harmful.

   It is estimated that of the more than 7,000 chemicals in tobacco smoke, at least 250 are known to be harmful, including hydrogen cyanide, carbon monoxide, and ammonia. Among the 250 known harmful chemicals in tobacco smoke, at least 69 can cause cancer.

7. **Radiation to the Chest:** Having radiation therapy to the chest before the age of 30 can increase your risk for breast cancer.
8. **Combined Hormone Replacement Therapy (HRT):** Taking combined hormone replacement therapy, as prescribed for menopause, can increase your risk for breast cancer and increases the risk that the cancer will be detected at a more advanced stage.

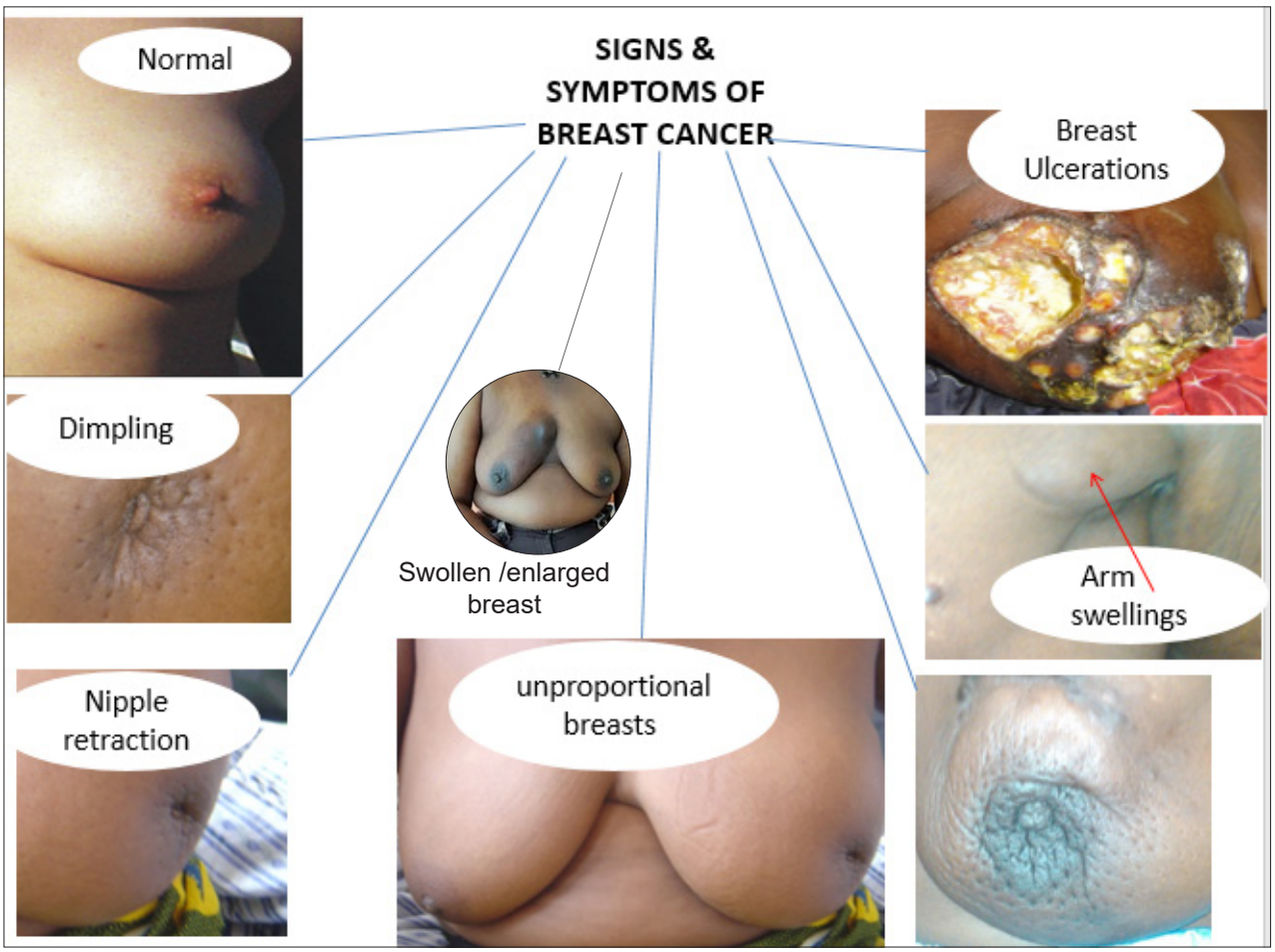
SECTION THREE: SYMPTOMS AND SIGNS OF BREAST CANCER

Many breast cancer symptoms are invisible and not noticeable without a professional screening, but some symptoms can be caught early just by being proactive about your breast health. Most people who have breast cancer symptoms and signs will initially notice only one or two, and the presence of these symptoms and signs do not automatically mean that you have breast cancer.

The common signs of breast cancer are summarized below:

- A hard lump developing in the breast or armpit – typically painless and occurring on one side only.
- A change in the size or shape of the breast, including indentation, 'growing' (particularly prominent) veins or skin erosion.
- Changes in the skin such as hardening, dimpling, scaly, bumps, redness/heat or an orange peel like appearance.
- Changes in the nipple such as retraction (nipple that is turned slightly inward or sunken), the secretion of unusual discharge or a rash around the nipple area.

Varying presentations illustrating breast cancer signs and symptoms



Source: *UCI - Fred Hutchinson Cancer Research Center*

SECTION FOUR: EARLY DETECTION OF BREAST CANCER

You can take some important steps to help detect it earlier. *Early Detection* measures can increase your possibility of finding breast cancer before it spreads.

Methods of Breast cancer screening (check-up)

1. By Self: through monthly self Breast examinations (BSE)
2. By Health worker(Nurses, Midwives, doctors). This is called Clinical breast Exam(CBE) recommended to be done after every one year (annually).
3. Through imaging using ultra sound machines, breast X-rays (mammography), CT scans and MRIs.
4. Surgery: Breast lump removal and histology done for suspected masses.

1. Breast Self-Exam (BSE)

By performing monthly breast self-exams, you will be able to more easily identify any changes in your breast. Be sure to talk to your health worker if you notice anything unusual changes in your breast.

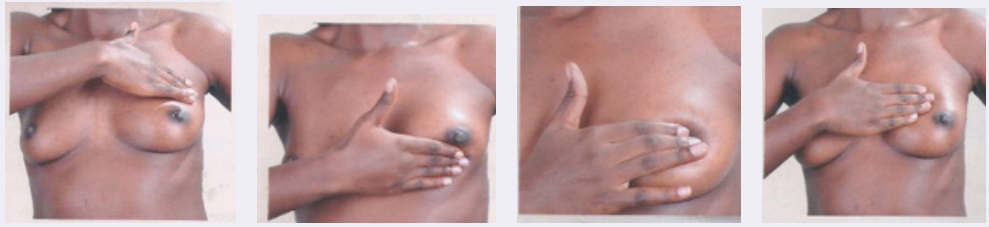
How to do a Breast Self-Exam (BSE)

A breast self-examination (BSE) is a technique which allows an individual to examine his/her breast tissue for any physical or visual changes in a private place like bedroom or bath room with adequate light. It is often used as an early detection method for breast cancer. Both men and women should perform a BSE at least once each month beginning at age of 18 years.

Breast Self-Exam Tips

1. Do your BSE at least 7 days after the end of your monthly period.
2. If you are pregnant, no longer have periods or your period is irregular, choose a specific day each month.
3. If you find a lump or notice other unusual changes, don't panic. About 80% of lumps found are not cancerous. See your doctor promptly for further evaluation.

How to do a Breast Self-Exam (BSE)

STEPS & DESCRIPTION	
STEP 1: 	Stand in front of a mirror and look closely at your breasts in the mirror with your shoulder straight and your arms on your hips. Check for changes in the following: • **Shape:** Compare one to the other. One breast may normally be larger than the other, but sudden changes in size should not occur. • **Skin:** Check for rash, redness, and puckering, dimpling, or orange-peel-textured appearance. • **Nipples:** Check for any physical changes such as a sunken nipple, scaliness, redness, itching, swelling, or discharge. • **Vein patterns:** Look for a noticeable increase in size or number of veins compared to the other breast.
STEP 2:	Raise your arms and look for the same changes
STEP 3:	While you are at the mirror, look for any signs of fluids (watery, blood or yellowish fluid) coming out of the nipple or both nipples.
STEP 4:	Lie down and examine your breast using flat pads of your three middle fingers—not the tips—move the pads of your fingers in little circles so that you can feel all levels of your breast tissue . Use your right hand to examine your left breast after which you use your left hand to exam your right breast. 
Step5:	Finally feel your breast while you are standing or sitting. Cover your entire breast using the same hand movement described in step 4 above.

Source: *The cancer awareness magazine, UCI (2011)*

2. Clinical Breast Exam

- This is an exam done by your healthcare provider to check the entire breast, underarm, and collarbone area for any lumps or abnormalities. It is worth noting that some women have breast tissue that appears to be full of tiny fibrous bumps or ridges throughout the breast tissue that are not cancer.

Clinical Breast exams are an important part of early detection. Although most lumps are discovered through breast self-exams, an experienced health worker may help you better than when you check your breast yourself.

It is recommended to have Clinical Breast exams once a year.

When your health worker detects abnormal changes in the breast, he / she will recommend additional test or refer the patient to higher level hospital to do additional check-up.

The difference between a breast self-exam and a Clinical breast exam is that clinical breast exam is

performed by a healthcare worker who is trained to recognize many different types of abnormalities and warning signs. This is a yearly check-up exam, whereas your breast self-exam is something every woman should do once a month at home.

3. Mammogram

- A mammogram is an x-ray that is used to examine the breast tissue for any suspicious areas. Mammography is recommended for women 40 years and older.
- The breast is exposed to a small dose of ionizing radiation that produces an image of the breast tissue.
- Mammograms can often show a breast lump before it can be felt. They also can show tiny clusters of calcium called microcalcifications. Lumps or specks can be caused by cancer, fatty cells, or other conditions like cysts. Further tests are needed to find out if abnormal cells are present.
- **It is recommended for all** women 40 years and older to have mammograms every 1 or 2 years. Women who are younger than 40 and have risk factors for breast cancer should ask their healthcare professional whether mammograms are advisable and how often to have them.

What happens If my mammogram results are abnormal and how is breast cancer confirmed?

If the mammogram shows an abnormal area of the breast, your doctor will order additional tests offering clearer, more detailed images of that area.

Although lumps are usually non-cancerous, the only way to be certain is to perform additional tests, such as an ultrasound or MRI. If further tests show that the mass is solid, your radiologist may recommend a biopsy, a procedure in which cells are removed from a suspicious area to check for the presence of cancer.

Breast biopsy

Cells or tissue from a suspicious mass are removed and examined under a microscope to check for cancer cells. There are several types of biopsies, namely:

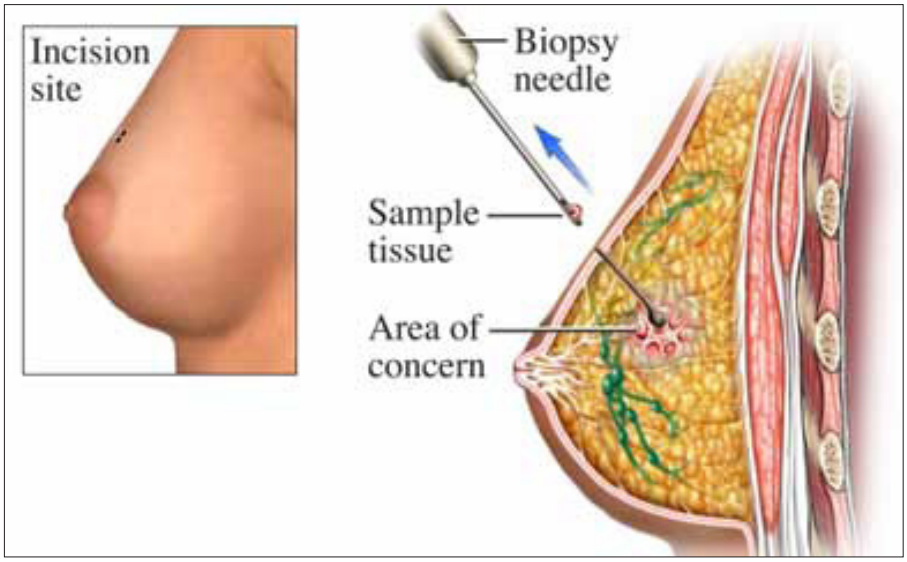
Fine needle aspiration (FNA): This is a non-surgical procedure in which a small needle is used to remove a sample of cells from the breast lump or swelling for examination under a microscope

Core biopsy: This is similar to FNA except that a relatively larger needle is used to remove a sample of cells from the breast lump or swelling for examination under a microscope

Ultrasound –guided core biopsy: This is similar to core biopsy, except ultrasound is used to guide the needle for correct placement.

Stereotactic biopsy: This is where the radiologist makes a small incision in the breast skin and a biopsy needle is placed in to the breast tissue with aid of computerized pictures to guide the exact needle placement.

The figure below shows how breast biopsy is done



Source: *http://thenurseszone.com/nursing-responsibilities-during-breast-biopsy/*

Staging of breast cancer

In simple terms the stage of a cancer describes the size of the tumour and determines whether it has spread and how far it has spread. The stage is important because it helps cancer specialists to decide on the best treatment option.

Stage Classification

Stage I: The tumour is no larger than two centimeters, and has not spread to the lymph nodes

Stage II: The tumour is around five centimeters in size and may have spread to the lymph nodes under the arm

Stage III: The tumour(s) may have spread to lymph nodes, be clumped together or sticking to other structures. The tumour(s) may have also spread to surrounding breast tissue

Stage IV: Tumour(s) that have spread to other organs in the body e.g. lungs, liver or bone. This is sometimes referred to as 'invasive cancer.

These stages are further grouped into three main stages of breast cancer:

Early stage, which refers to cancer that is confined to the fatty tissue of the breast.

Locally advanced, which has spread to underlying tissue of the chest wall.

Advanced or metastatic, where the tumour has spread to other parts of the body. Approximately one third of breast cancer cases are diagnosed after the cancer has spread beyond the primary tumour site (metastasised).

Types of breast cancer

The type of breast cancer is important in determining the most effective treatment approach. The most common way to classify breast cancer is according to the status of three specific cell surface receptors. These are the oestrogen receptor (ER), progesterone receptor (PR) and the Human Epidermal Growth Factor Receptor (HER)2/ neu receptor.

Hormone Receptor-Positive breast cancer: The most common type of breast cancer is known as **Hormone Receptor-Positive breast cancer**; accounting for around 75% of all breast cancers. This type of cancer grows in response to hormones oestrogen and progesterone, and as such it is more likely to respond to therapies that aim to inhibit the growth effects of hormones.

HER2-positive breast: Another sub-type of hormone dependent breast cancer is classified as the **'HER2-positive breast cancer'** which is typified by cells that make too much of a protein known as HER2/neu. It represents 20–30% of Hormone Receptor Positive breast cancers. Tumours that do not overexpress HER2/neu are described as HER2-negative.

Triple negative breast cancer (TNBC): **Triple negative breast cancer** is a rarer form of breast cancer which is a sub-type of HER2-negative disease. TNBC refers to tumour cells which lack oestrogen and progesterone receptors, and do not overexpress the HER2 protein. This cancer type accounts for around 15% of all breast cancers, and is usually more aggressive and difficult to treat as it does not tend to respond to standard therapies. Due to the aggressive nature of this disease it is important to treat patients early; however, with few effective treatments available there is a high unmet medical treatment need for this type of breast cancer.

SECTION FIVE: TREATMENT OF BREAST CANCER

Breast cancer treatment options vary depending on the stage of the cancer – its size, position, whether it has spread to other parts of the body and the physical health of the patient. Current treatments for breast cancer include surgery, radiotherapy, chemotherapy, hormonal and targeted therapies. These therapies may be used alone or in combination depending on the stage of the disease.

Surgery

This is the main treatment option for patients whose breast cancer has not spread to other parts of the body and is also an option for more advanced stages of the disease. The types of breast cancer surgery differ in the amount of tissue that is removed with the tumour; this depends on the tumour's characteristics, whether it has spread, and the patient's personal feelings.

Some of the most common types of surgery include:

a. **Breast conservation surgery -** which involves the removal of the cancerous area, the surrounding tissue and in some cases the lymph node, with aim of maintaining a normal breast appearance after surgery. There are two types of breast conservation surgery:
   - ◊ **Lumpectomy -** This is the removal of the cancerous area and small surrounding area of normal tissue.
   - ◊ '**Partial Mastectomy'** or 'Quadrantectomy'; this is where a larger portion of tissue is removed (compared with Lumpectomy). Some lymph nodes under the arm may be removed.

b. **Total Mastectomy**. This surgery involves the removal of the entire breast, without the removal of lymph nodes. This can be performed in an attempt to prevent further cancer.

NB: Surgery can also be followed or preceded by radiotherapy and/or chemotherapy, either sequentially or in combination.

Post-surgery care

The breast cancer patient is advised to:

Keep the wound clean,

- Eat a well-balanced diet- right amount, right variety and good quality food (hygienic, not adulterated)
- Exercise regularly but not vigorously,
- Seek advice on how to obtain artificial breast (breast prosthesis),
- Speak to your doctor if you wish to undergo breast reconstruction.

Radiotherapy

During radiation treatment, a radiation machine is used to send high energy rays, usually x-rays and similar rays to destroy cancer cells that might have remained in the affected area after surgery. Therapy with radiation is often used in addition to surgery and chemotherapy to reduce the chances of the cancer recurring. It can be given after surgery (known as adjuvant treatment) or in conjunction with chemotherapy prior to surgery (neoadjuvant therapy) to shrink the tumour. Radiotherapy can also be used without surgery in patients with advanced metastatic breast cancer to help alleviate symptoms.

Cancer patients usually receive radiation treatment five days a week for six weeks. The radiation process is painless and last only a few minutes.

Usually a patient goes through mapping procedure to identify the treatment area before receiving the radiation dose.

Chemotherapy

Chemotherapy is the use of anti-cancer drugs that travel through the blood stream to kill cancer cells anywhere in the body. It is usually delivered through intravenous (IV) injections, sometimes combined with pills. Chemotherapy may be given prior to surgery (neo-adjuvant) with the aim of reducing tumour size and the need for extensive surgery, or after surgery (adjuvant) to reduce the chances of the cancer coming back.

When the cancer has spread to other parts of the body (metastatic), chemotherapy may be used to reduce symptoms, improve quality of life and extend survival. Chemotherapy drugs can be given intravenously (directly into the blood), or orally in a tablet. Chemotherapy is typically associated with adverse side effects such as fatigue, nausea and diarrhea; this is because of its toxic in which even some normal cells are attacked.

Hormonal therapy

Medicines that block or inhibit the actions of the hormones oestrogen and progesterone are often used in the treatment of patients with Hormone Receptor-Positive breast cancer.

Targeted therapy

Targeted therapies (also called biological therapies) are a relatively new approach to cancer treatment and target specific biological processes that are often essential to tumour growth. Targeted therapies precisely target cancer-specific processes, making them effective and less toxic to non-cancerous, healthy cells.

Several types of targeted therapy exist for the treatment of advanced breast cancer. These are either given just after chemotherapy as maintenance or in conjunction with other therapies e.g. chemotherapies or hormonal therapies at various stages of advanced disease in accordance with their approved label.

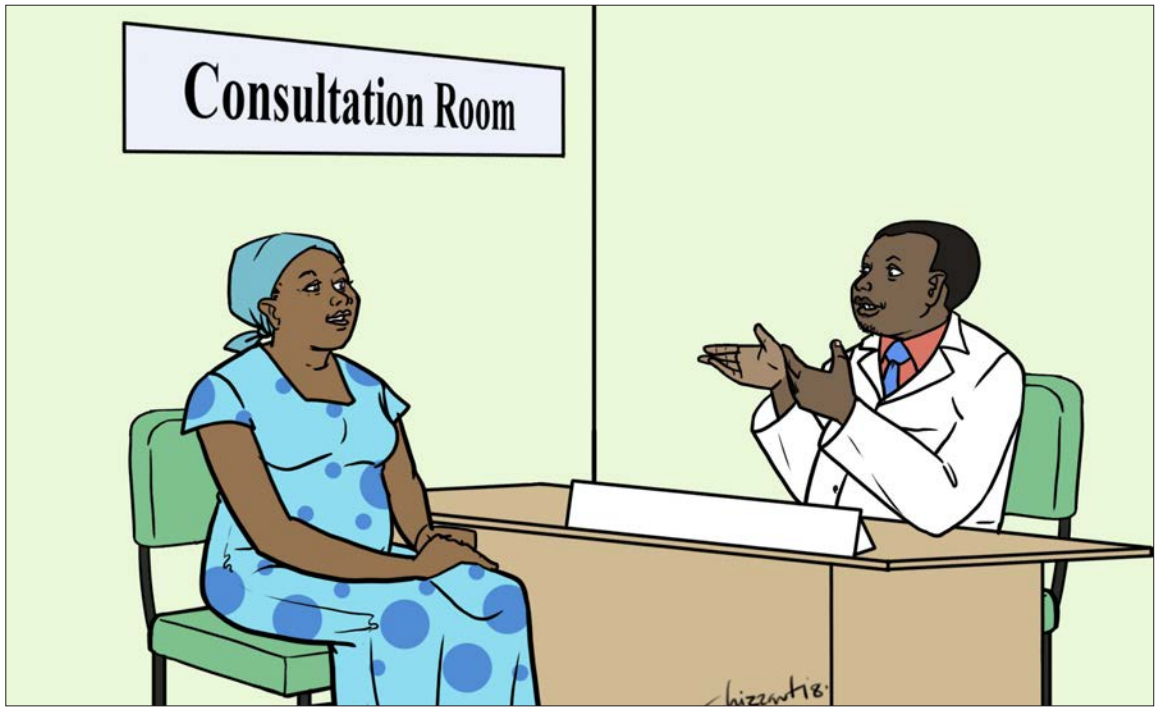
Follow up care

It is important to have regular follow-up exams after breast cancer treatment to ensure that any changes are noticed early.

Examination of the breasts, chest, neck and underarm areas are usually included in the follow–up exams. Periodic mammograms may be recommended by the doctor.

Changes in the treated breast or in the other breast should be reported to the doctor right away.

Tell your doctor about other physical problems like loss of appetite, weight loss, blurred vision, dizziness, headaches, shortness of breath, digestive problems that don’t go away.



Common myths about breast cancer

These do not cause Breast cancer:

- Breast cancer is not contagious; you can't contract cancer from a person who has the disease.
- Breast cancer is not caused by wearing bras, as myths often suggest
- Breast cancer is not caused by implants, as myths often suggest
- Breast cancer is not caused by deodorants and antiperspirants, as myths often suggest
- Breast cancer is not caused by microwaves, or cell phones, as myths often suggest

References

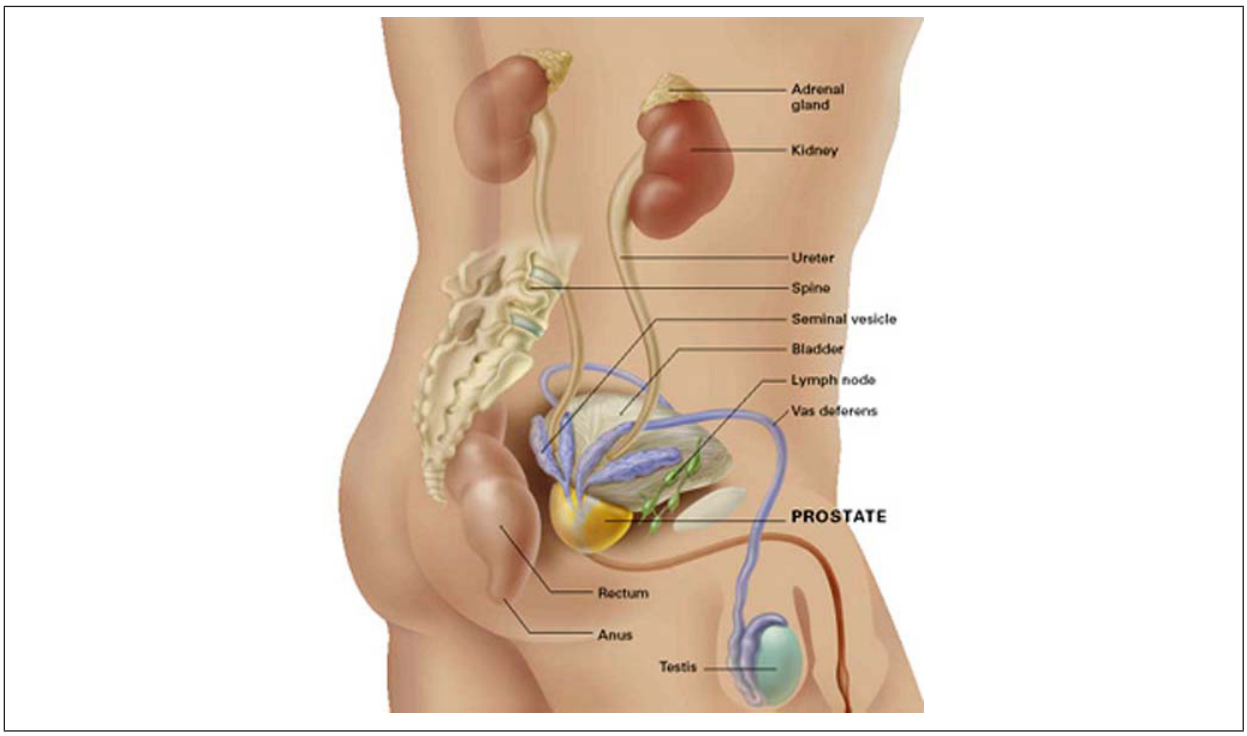
1. National Cancer Institute: https://www.cancer.gov/publications/patient-education/wyntk-breast-cancer
2. National Cancer Institute. 2013. SEER stat fact sheets: Breast.
3. American Cancer Society: https://www.cancer.org/cancer/breast-cancer/about/what-is-breast-cancer.html

Part Five: Prostate Cancer Information, Education and Communication Guide for Health Workers

SECTION ONE: WHAT IS THE PROSTATE GLAND?

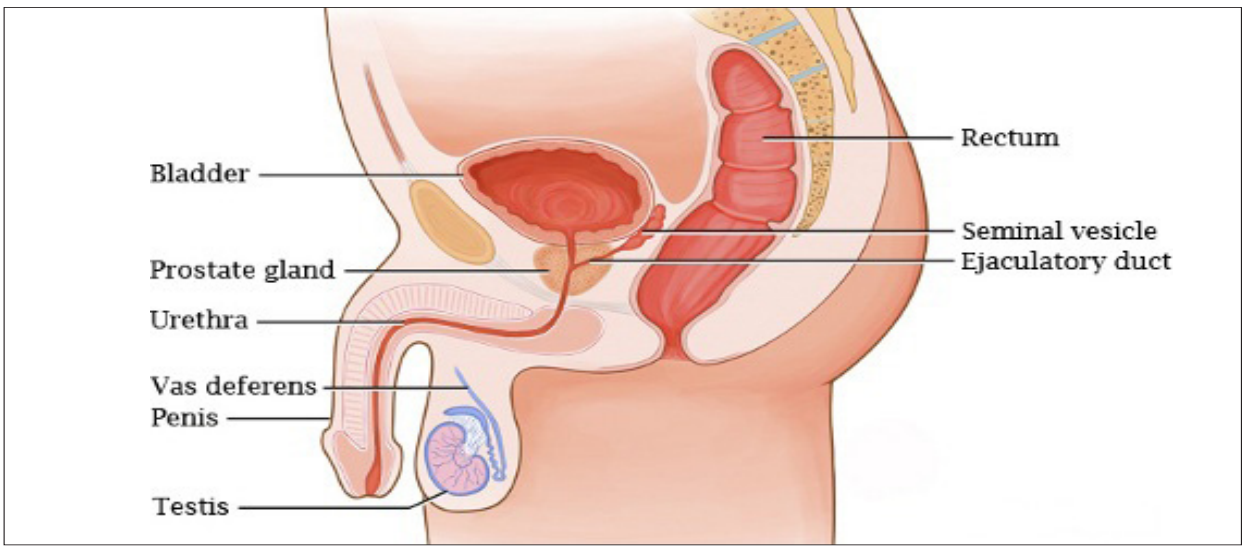
The prostate is a gland found only in men, it sits just below the urinary bladder in front of the rectum. It surrounds the urethra (the tube that carries urine and semen through the penis and out of the body). Cells of the prostate make fluid contained in the seminal fluid which nourishes sperm. The normal size of the Prostate in an adult is same as a walnut. However, at birth, the prostate is about the size of a pea. Prostate experiences two growth spurts at puberty and around the age of 50 years.

The Anatomy of Male Genitourinary System showing the Prostate gland



Source: *http://www.prostatecentre.com/patient-information/prostate*

The cross-section of Male Genitourinary System showing Prostate gland



SECTION TWO: WHAT ARE THE COMMON HEALTH PROBLEMS THAT AFFECT THE PROSTATE GLAND?

The three most common prostate problems are:

i. Inflammation of the prostate (prostatitis),

ii. Enlarged prostate (benign prostatic hyperplasia - BPH) or benign prostatic enlargement (BPE)

iii. Prostate cancer

It is important to note that one prostate problem or change does not necessarily lead to another. For example, having prostatitis or an enlarged prostate does not increase your risk of prostate cancer. It is also possible for you to have more than one condition at the same time. Prostatitis and BPH are not cancer.

Prostatitis

Prostatitis is an inflammation of the prostate gland that may result from a bacterial infection. It affects at least half of all men at some time during their lives. Having this condition does not increase your risk of any other prostate disease.

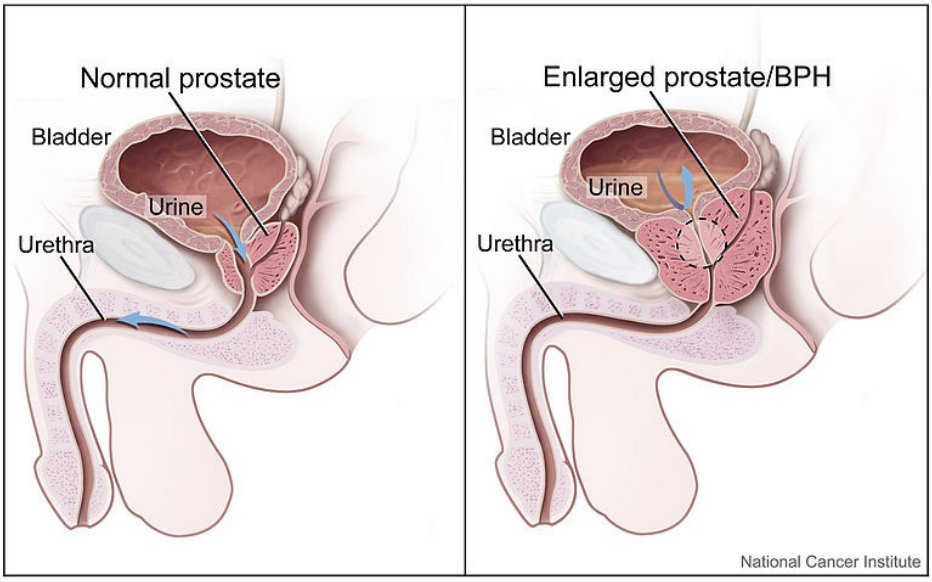
Symptoms of prostatitis include; difficulty in passing urine, burning or stinging feeling (dysuria) or pain when passing urine, Strong, frequent urge to pass urine, even when there is only a small amount of urine (urgency), chills and high fever, low back pain or body aches, pain in the belly, groin, or behind the scrotum, rectal pressure or pain, urethral discharge with bowel movements, genital and rectal throbbing, sexual problems and loss of sex drive and painful ejaculation.

Patients with Acute bacterial prostatitis and Chronic bacterial prostatitis can be treated with antibiotics. While the other chronic prostatitis or chronic pelvic pain syndrome can be treated with anti-inflammatory medications and other pain control treatments.

Enlarged Prostate (BPH or BPE)

Benign means "not cancer," and hyperplasia means abnormal cell growth. BPH is not linked to cancer and does not increase the risk of getting prostate cancer, yet the symptoms for BPH and prostate cancer can be similar.

The diagrams below show urine flow in a normal prostate gland (left) and enlarged prostate gland (right). In diagram on the left, urine flows freely while on the right, urine flow is affected because the enlarged prostate is pressing on the bladder and urethra. This can lead to the following symptoms.



Source: *http://www.prostatecentre.com/patient-information/prostate*

Symptoms of BPH include; trouble starting a urine stream or making more than a dribble, passing urine often, especially at night, feeling that the bladder has not fully emptied, a strong or sudden urge to pass urine, a weak or slow urine stream, stopping and starting again several times while passing urine, pushing or straining to begin passing urine.

At its worst, BPH can lead to: a weak bladder, backflow of urine causing bladder or kidney infections, complete blockage in the flow of urine and kidney failure.

Some men with BPH eventually find their symptoms to be bothersome enough to need treatment. BPH cannot be cured, but medicines or surgery can often relieve its symptoms. Talk with your doctor about the best choice for you. Your symptoms may change over time, so be sure to tell your doctor about any new changes.

What is Prostate Cancer?

Prostate cancer is a type of cancer that starts from the prostate gland as a result of some prostate cells that have become cancer cells. About 85% of Prostate cancer tends to grow or progress slowly compared to most other cancers. Cell changes may begin 10, 20, or even 30 years before the persons develops symptoms of the cancer. By the time a person suffering from prostate cancer develops symptoms, the cancer may already be advanced.

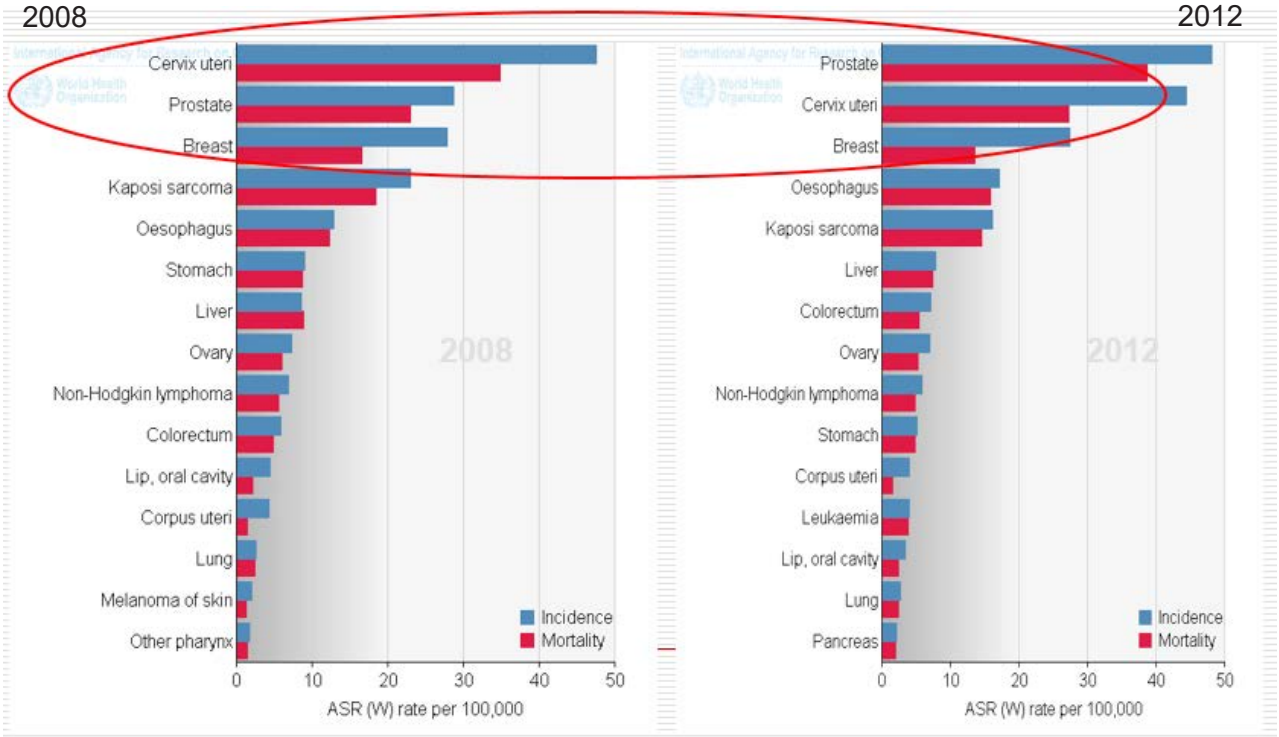
SECTION THREE: HOW COMMON IS PROSTATE CANCER?

It is the second commonest cancer in men in the whole world. The number of men who suffer from prostate cancer is increasing worldwide. (Cuzick et al, 2014, WHO, 2012). In Africa, it is the leading cause of cancer illness and death among men - in 2012, 23 men out of every 100,000 men had Prostate cancer and 17 out of every 100,000 men died of Prostate cancer. In the Sub-Saharan Africa, in the same year 28 men out of every 100,000 men suffered from prostate cancer and 21 men out of every 100,000 men died of prostate cancer.

Prostate cancer is the commonest cancer in men in Uganda. In 2012, 48 men out of every 100,000 men in Uganda suffered from prostate cancer and 39 men out of every 100,000 men who suffered from prostate cancer died of from it according to WHO report (Globocan, 2012), which is one of the highest rates observed in Africa (Wabinga et al, 2013, Parkin et al, 2012).

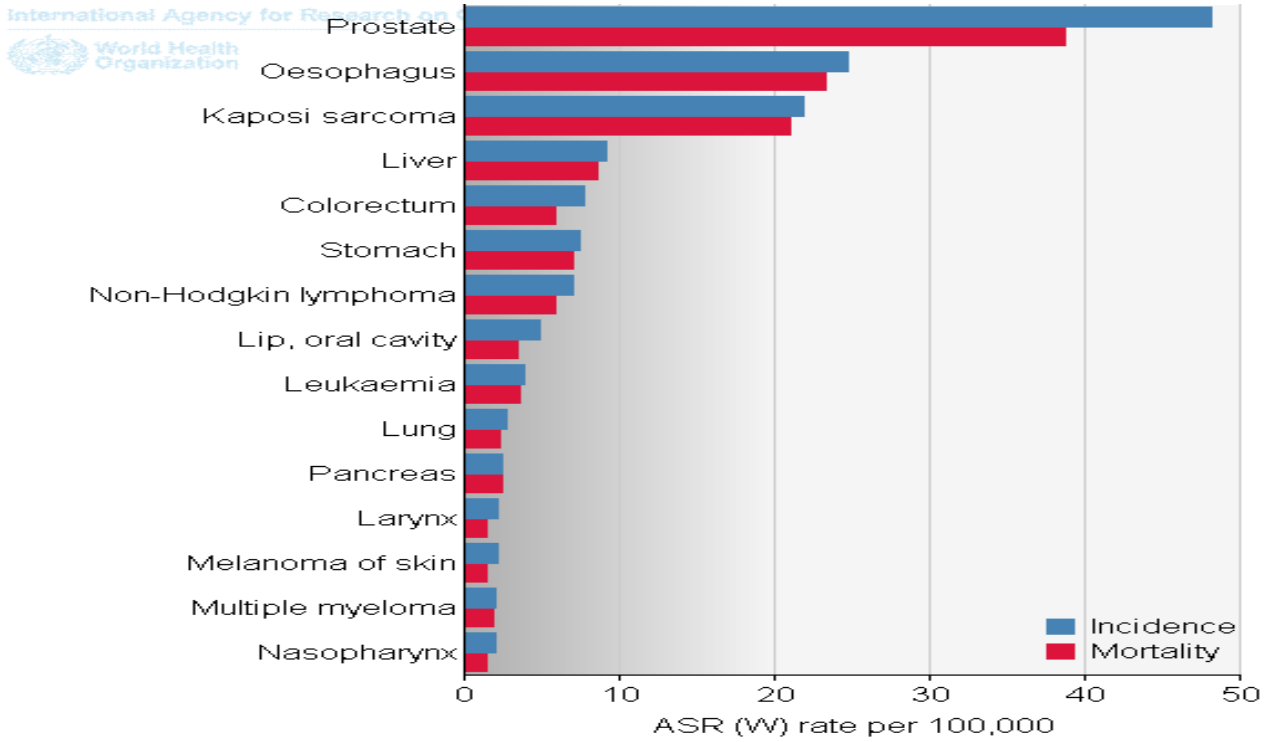
The relative burden of top three types of cancer in Uganda

The top Cancers in Uganda according to WHO Globocan report of 2008 and 2012 respectively(www.globocan.iarc.fr)), the estimated new cases of cancer (incidence) & death (mortality) in both men and women were as indicated in figure below. The top three types of cancer when data for both men and women are compared were Prostate, Cervical and Breast cancer.



Top cancers among men in Uganda

According to WHO report of 2012, Cancer of the Prostate, oesophagus and Kaposi sarcoma are the leading cause of cancer death among men in Uganda (see figure below)



SECTION FOUR: WHAT ARE THE RISK FACTORS FOR PROSTATE CANCER?

The risk factors or conditions that increase the possibility of developing Prostate cancer can be grouped in to either modifiable (can be changed or avoided) or non-modifiable (cannot be changed or practically difficult to change or avoid).

The non-modifiable risk factors of Prostate cancer

1. **AGE-**The risk of prostate cancer increases with age, especially after age of 50. More than 80% of prostate cancers are diagnosed in men who are 65 years or older.

2. **GENETIC CHANGES-** Several inherited gene changes can raise prostate cancer risk, for example; inherited mutations of the Breast cancer genes 1 and 2 (*BRCA1* or *BRCA2* genes) raise the risk of breast and ovarian cancers in some families. Mutations in these genes (especially in *BRCA2*) may also increase prostate cancer risk in some men. Men with Lynch syndrome (also known as *hereditary non-polyposis colorectal cancer*, or HNPCC), a condition caused by inherited gene changes, have an increased risk for a number of cancers, including prostate cancer. Other inherited gene changes can also raise a man's risk of prostate cancer.

3. **FAMILY HISTORY-** Some cases of Prostate cancer seems to run in some families, which suggests that in some cases there may be an inherited or genetic factor or sharing a particular risk factor. Having a father or brother with prostate cancer more than doubles a man's risk of developing prostate cancer. The risk is higher for men who have a brother with the disease than for those who have a father with it while the risk is much higher for men with several affected relatives, particularly if their relatives were young when the cancer was detected.

4. **TESTOSTERONE AND OTHER SEX HORMONES**-Sex hormones, including testosterone, clearly contribute to the growth and progression of prostate cancer, although there is still debate around the importance of circulating levels of specific hormones or genetic markers in these pathways in prostate cancer.

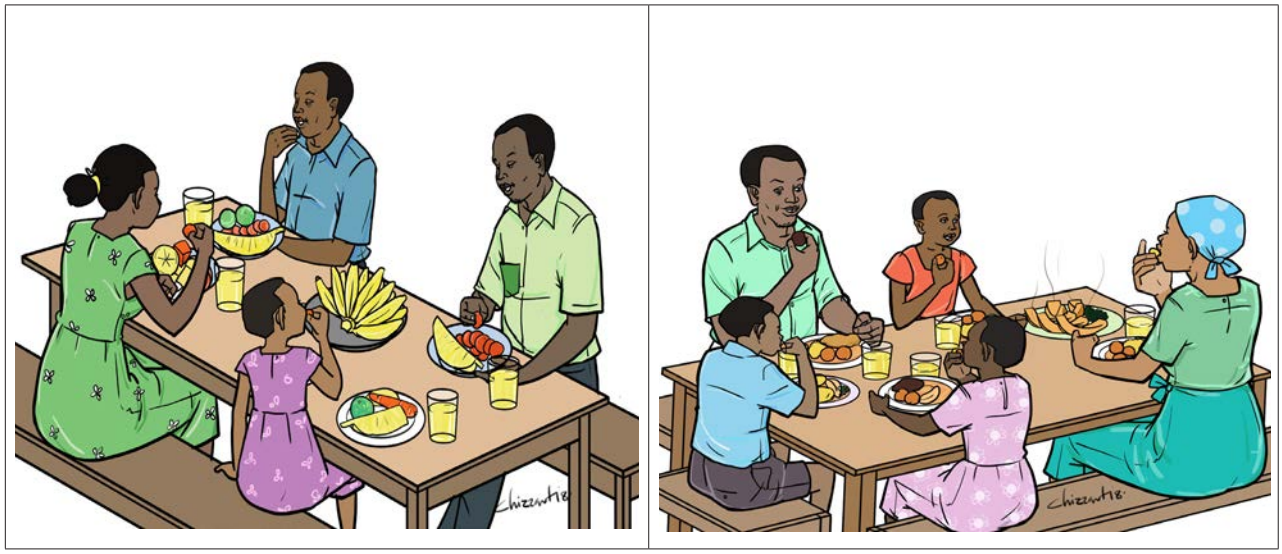
5. **INSULIN & INSULIN-LIKE GROWTH FACTOR**1 (IGF-1) - High levels of circulating insulin in the blood can occur as a result of obesity as well as uncontrolled diabetes. The consequences of hyperinsulinemia include raised triglyceride levels and hypertension. Hyperinsulinemia is linked with Prostate cancer risk and progression. High insulin could potentially contribute to the higher risk of prostate cancer incidence and mortality. Controlling insulin levels is achievable through therapeutic or lifestyle interventions.

The main modifiable prostate cancer risk factors

1. **DIET**

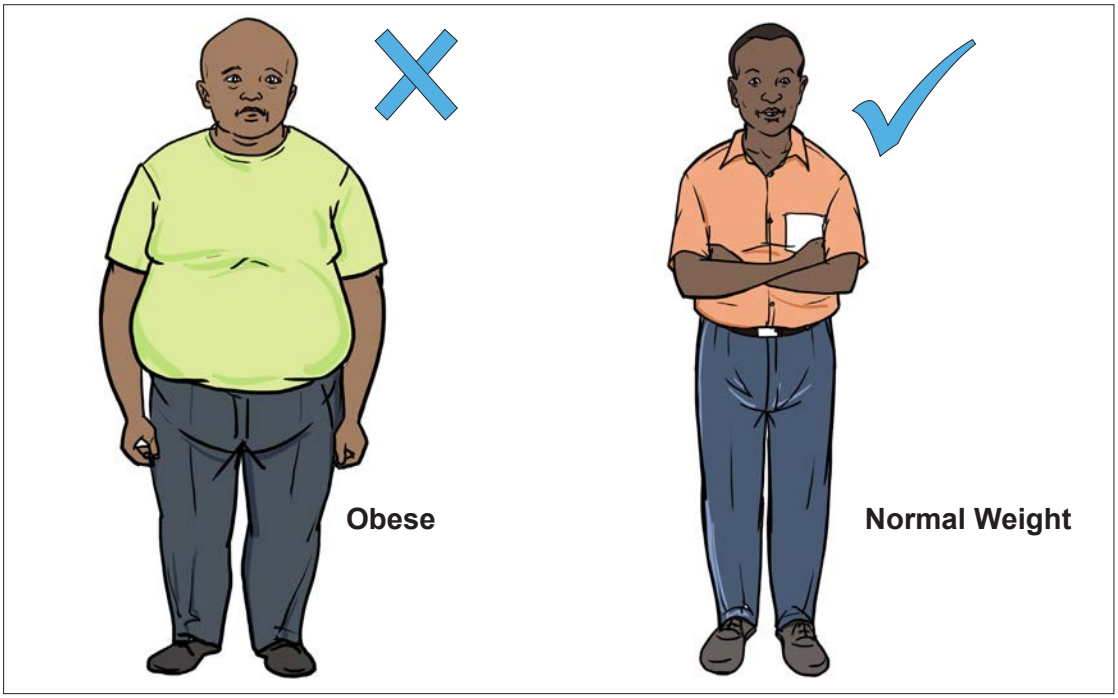
   Men who eat a lot of red meat (beef, goat, pork etc) or high-fat dairy products appear to have a slightly higher chance of getting prostate cancer. This is also true in men who also tend to eat fewer fruits and vegetables. Therefore, it is recommended to eat red meat in moderation and eat more of white meat (fish and poultry) with adequate intake of fruits and vegetables. It also recommended where possible, to avoid high intake of processed, and fried food.

Research in the past few years has shown that diet modification might decrease the chances of developing prostate cancer, reduce the likelihood of having a prostate cancer recurrence, or help slow the progression of Prostate cancer. For example, tomatoes are rich in lycopene, a carotenoid, has antioxidant effects, which may lower prostate cancer risk (Giovannucci et al, 2002).



2. OVERWEIGHT & OBESITY

Men who are obese have a higher risk of getting more aggressive Prostate cancer. The obese men may have a relatively lower PSA levels than non-obese men due to dilution of the PSA in a larger blood volume. Men who are obese are also at greater risk for having more advanced prostate cancer and of dying from prostate cancer.



It is therefore, advisable for every person to determine their weight status by use of body mass index (BMI).

Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by

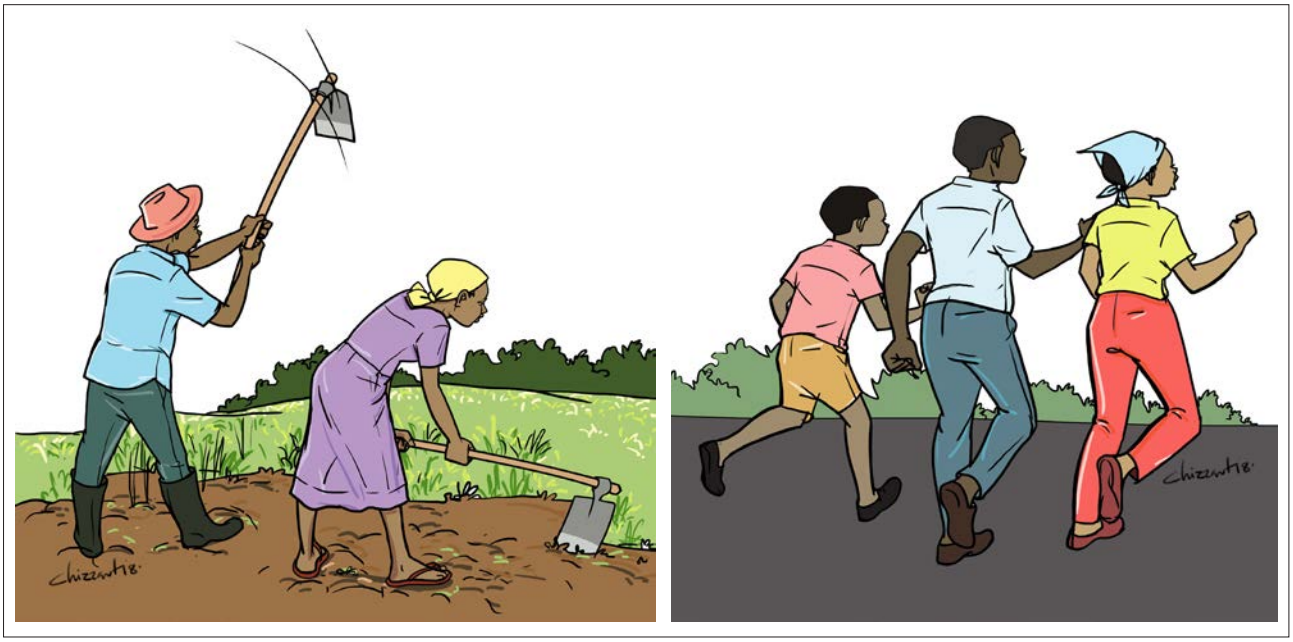
the square of the height in metres (kg/m2). For example, an adult who weighs 70kg and whose height is 1.75m will have a BMI of 22.9

That is, BMI = 70 kg /(1.75 m2) = 70 /3.06 = 22.9

BMI	CLASSIFICATION
<16.00	Severe thinness
16.00 - 16.99	Moderate thinness
17.00 - 18.49	Mild thinness
<18.50	underweight
18.50 - 24.99	Normal
25.00 - 29.99	Over weight
≥30.00	Obese
30.00 - 34.99	Obese class I
35.00 - 39.99	Obese class II
≥40.0	Obese class III

3. PHYSICAL INACTIVITY

Physical activity is any movement that requires more energy than when the body is resting. Physical activity can include working, exercising, performing household chores and leisure-time activities such as walking, tennis, hiking, bicycling, and swimming. Physical activity is essential for people to maintain a balance between the number of calories consumed and the number of calories used. Consistently using fewer calories than are consumed leads to obesity, which is linked to increased risks of cancers.



How might physical activity be linked to reduced risks of cancer?

Exercise has a number of biological effects on the body, including:

Lowering the levels of hormones, such as insulin and estrogen, and of certain growth factors that have been associated with cancer development and progression.

- Helping to prevent obesity and decreasing the harmful effects of obesity, particularly the development of insulin resistance (failure of the body's cells to respond to insulin)
- Reducing inflammation
- Improving immune system function
- Altering the metabolism of bile acids, resulting in decreased exposure of the gastrointestinal tract to these suspected carcinogens
- Reducing the amount of time it takes for food to travel through the digestive system, which decreases gastrointestinal tract exposure to possible carcinogens.

How much physical activity is recommended for general health benefits?

The Uganda physical activity guideline (PAG) is being developed, however, the WHO physical activity guideline recommends for adults aged 18–64, for substantial health benefits, adults need to engage in at least 150 minutes (2 hours and 30 minutes) of moderate-intensity aerobic physical activity, 75 minutes (1 hour and 15 minutes) of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity, every week. Aerobic physical activity should be performed in episodes of at least 10 minutes, preferably spread throughout the week.

For children and adolescents, the guidelines recommend at least 60 minutes (1 hour) of physical activity daily. Most of the 60 or more minutes a day should be either moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week. As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week and bone-strengthening physical activity on at least 3 days of the week.

Is physical activity beneficial for cancer survivors?

Physical activity has beneficial effects for several aspects of cancer survivorship--specifically, weight gain, quality of life, cancer recurrence or progression, and prognosis (likelihood of survival).

4. TOBACCO USE

Tobacco use is a leading cause of many types of cancer. People who use tobacco products or who are regularly around environmental tobacco smoke (also called second-hand smoke) have an increased risk of cancer because tobacco products and secondhand smoke have many chemicals that damage the DNA.

5. EXCESS ALCOHOL CONSUMPTION

Frequent consumption of alcohol can increase your risk for cancer. The more alcohol you consume, the greater the risk. Therefore, do not drink alcohol or avoid excess amount of alcohol intake.

SECTION FIVE: HOW IS PROSTATE CANCER DETECTED EARLY?

The sooner cancer is detected and treated, the better a person's chance for a full recovery. The chances that cancer will be detected early are greatly improved by having regular medical check-ups and being aware of any changes in your body. A doctor can often find early cancer during a physical exam or with routine tests, even if a person has no symptoms.

Checking for cancer in a person who does not have any symptoms of the disease is called *screening.* Some people visit the doctor only when they notice abnormal changes. However, early cancer may not have any symptoms. That is why screening for some cancers can help, particularly as we get older.

Why is it important to screen for prostate cancer?

The purpose of early detection is to discover and stop a cancerous tumor before it grows and spreads (*metastasizes).* For this reason, it is important for individuals to see their doctor on a regular basis for a physical exam. During a routine physical exam, a doctor will look for any unusual changes in the body. In addition, the doctor may recommend a screening test.

Some screening tests are used because they have been shown to be helpful both in finding cancers early and in decreasing the chance of dying from these cancers. The recommendation to have a screening test is based on the individual, the test, and the cancer that the test is intended to detect. For example, the doctor takes into account the person's age, medical history and general health, family history and lifestyle. This information assists the doctor in determining a person's risk for developing cancer.

At what age should a man start screening?

Over time recommendations for routine screening for prostate cancer have varied. Some doctors and cancer organizations have encouraged annual prostate cancer screening for all men over the age of 40; while others have counseled on an individual basis and encouraged men to make their own informed decisions about screening together with their doctors.

Generally, men aged 40 years and above should talk with their health care provider about their prostate cancer risk and the need for screening tests. Men can ask their provider whether to begin screening for prostate cancer (even though he does not have any symptoms), what tests to have, risks and benefits of each test, and how often to have them. The doctor may suggest either of the tests described below. These tests are used to detect prostate abnormalities, but they cannot show whether abnormalities are cancer or another, less serious condition. The doctor will take the results into account in deciding whether to check the patient further for signs of cancer.

The table below shows the recommended age of starting Prostate cancer check-up & types of tests

Guideline	Age to start Prostate cancer screening	Suggested Screening Tests
AUA 2009	40	PSA and DRE
NCCN 2010	40	PSA and DRE
EAU	45	PSA and DRE
ACS 2010	40-50 (depends on risk)	PSA with or without DRE

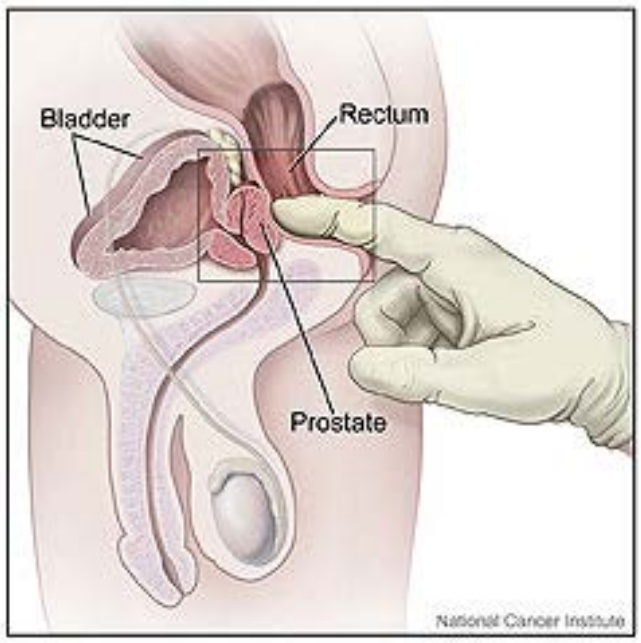
Source: *American Urological Association-* ***AUA****, 2009, National Comprehensive Cancer Network-* ***NCCN****, 2010, European Association of Urology-* ***EAU****, 2009, American Cancer Society-* ***ACS****, 2010*

What are the Prostate Cancer Screening tests?

Symptom assessment- This first step is for your doctor to hear and understand the "story" of your prostate concerns. You'll be asked whether you have symptoms, how long you've had them, and how much they affect your lifestyle. Your personal medical history also includes any risk factors, pain, fever, or trouble passing urine. Then a combination of PSA testing and DRE as a way to get more accurate results can be recommended by your doctor.

Prostate Specific Antigen (PSA) Test- PSA is a protein produced by the prostate gland. The PSA test measures the level of PSA in the blood. Both benign (non-cancerous) prostate conditions and prostate cancer can cause PSA levels to rise in the blood. In prostate cancer, more PSA gets into the blood than is normal. However, a high PSA blood level is not proof of cancer, and many other things can cause this. Confirmatory test must be done to prove that it is cancer.

Digital Rectal Exam (DRE)- DRE is a standard way to check the prostate gland. With a gloved and lubricated finger, your doctor feels the prostate from the rectum to check for the size, texture, firmness, lump and pain caused by touching or pressing the prostate. The test lasts about 10-15 seconds. The DRE allows the doctor to feel only one side of the prostate.



Source: *https://www.forbes.com/sites/stevensalzberg/2013/11/11/great-news-for-guys-no-more-invasive-prostate-exams/#77bee060220c*

What are the symptoms of prostate cancer?

There are many different symptoms known to be associated with certain types of cancers. As cancer grows in the body, it causes changes to take place, producing symptoms. The symptoms produced depend on the size of the cancer, the location, and the surrounding organs or structures. As cancer grows, it produces pressure on nearby organs, blood vessels and nerves.

It is important to understand that a symptom is an indication that something is not right in the body and does NOT always indicate cancer. Certain symptoms may be a sign of infection, benign tumor, or another problem. It is important to see the doctor as soon as possible about any symptom or physical change to determine its cause. One should not wait to feel pain: Early cancer usually does not cause pain.

The commonest symptoms of Prostate cancer include;

- Difficulty in passing urine
- Frequent urge to pass urine especially at night
- Weak or interrupted urine stream
- Pain or burning when passing urine
- Blood in the urine or semen
- Painful ejaculation
- Pain in the back, hips, or pelvis
- Lower back bone pain- Prostate cancer can spread to the lymph nodes of the pelvis or it may spread throughout the body. It tends to spread to the bones, so bone pain, especially in the back, can be a symptom of advanced prostate cancer.

SECTION SIX: HOW IS PROSTATE CANCER CONFIRMED?

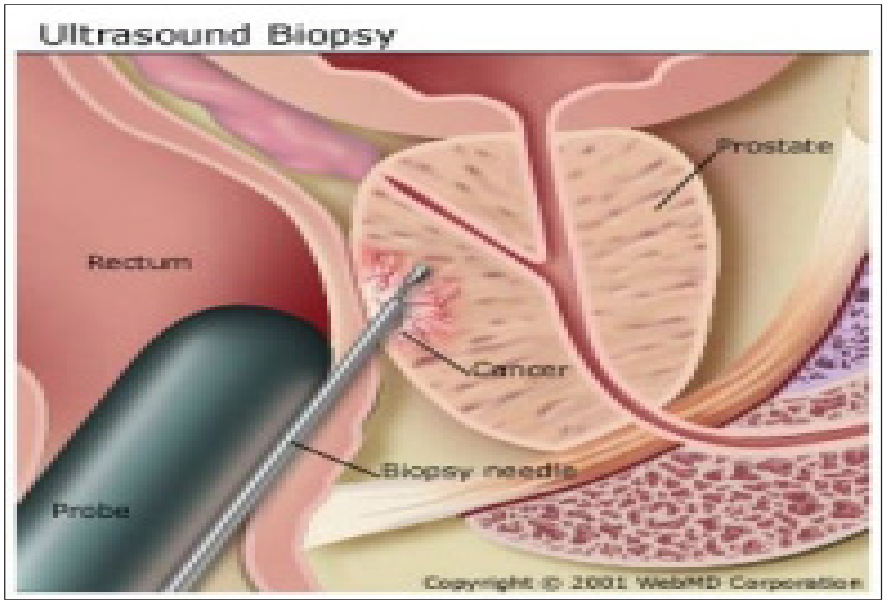
To confirm the presence of cancer, a doctor must look at a sample of the affected tissue under a microscope, commonly known as a ***biopsy*****. A biopsy** is the surgical removal of a small piece of tissue for *microscopic examination.* Microscopic examination will tell the doctor whether a tumor is actually present and if so, whether it is malignant (cancerous) or benign (non-cancerous).

Prostate Biopsy

If your symptoms, PSA & DRE test results suggest prostate cancer, your doctor will refer you for a prostate biopsy. This means, small tissue samples are taken directly from the prostate gland. A positive test result after a biopsy means prostate cancer is present. Treatment options depend on the stage (or extent) of the cancer, PSA level, age, type of the prostate cancer (slow growing or aggressive type) and general health of the patient.

The best way of removing prostate tissue is by **transrectal ultrasound** guided (TRUS) **biopsy.** This is where Doctors take samples of tissue from the prostate to diagnose prostate cancer with use of ultrasound to give visibility of the tumour.
There are two types of surgical biopsies.

- An **excisional biopsy** is performed when the doctor removes the entire tumor, often with some surrounding normal tissue.
- An **incisional biopsy** is performed when the doctor removes just a portion of the tumor. If cancer is found to be present, the entire tumor may be removed immediately or during another operation.



Source: *http://westcoasturology.com/practice-specialties/prostate-biopsy*

The difference between benign and malignant tumors

Benign tumors are not cancer- They do not spread to other parts of the body and are usually not a threat to life. Benign tumors are often removed because their size may cause a problem to nearby organs or for cosmetic reasons.

Malignant tumors are cancer- The cancerous cells in these tumors are abnormal and divide without control or order due to ***oncogenes***. Oncogenes are normal genes that have been changed, or mutated and therefore have affected a cell's ability to control functions such as cell replication and cell death. When the cell cycle (cell division and cell death) proceeds without control, cells can divide without order and accumulate genetic defects that can lead to a cancerous tumor.

Cancer cells can invade and damage nearby tissue and organs by breaking away from a malignant tumor and entering the bloodstream or the ***lymphatic system***. This is how cancer spreads from what is called the original or ***primary site*** to form new tumors in other parts of the body. The process by which cancer spreads from its original or primary site to another part of the body is referred to as ***metastasis***.

When cancer spreads or metastasizes, the new tumor has the same kind of abnormal cells as the primary (original) tumor and is referred to by the same name as the primary tumor**.** For example, if prostate cancer metastasizes (spreads) to the bone, the cancer cells in the bone are prostate cancer cells and therefore it is called metastatic prostate cancer (not cancer of the bone).

Once the doctor has removed the tumor and determined the presence of cancer, he will want to determine the "aggressiveness" of the cancer, or how fast the cancer is growing. To do this, the doctor will look at the tumor under the microscope to determine ***tumor grade***, or how alike or different the cancer cells are from one another.

In summary, the biopsy provides the doctor with the following important information:

- Whether or not the tumor is benign (non-cancerous) or malignant (cancer).
- The "type" of the cancer – in this case Prostate cancer
- The "aggressiveness" or behavior of the tumor (e.g., well differentiated versus poorly differentiated).

Cancers that have begun to spread are classified according to the manner and extent of spread: by direct extension, by involvement of the lymph nodes, and by evidence of distant metastasis or spread. Though each type of cancer has its own progression of disease and the medical community has various methods of staging classification, staging can be generally described as follows:

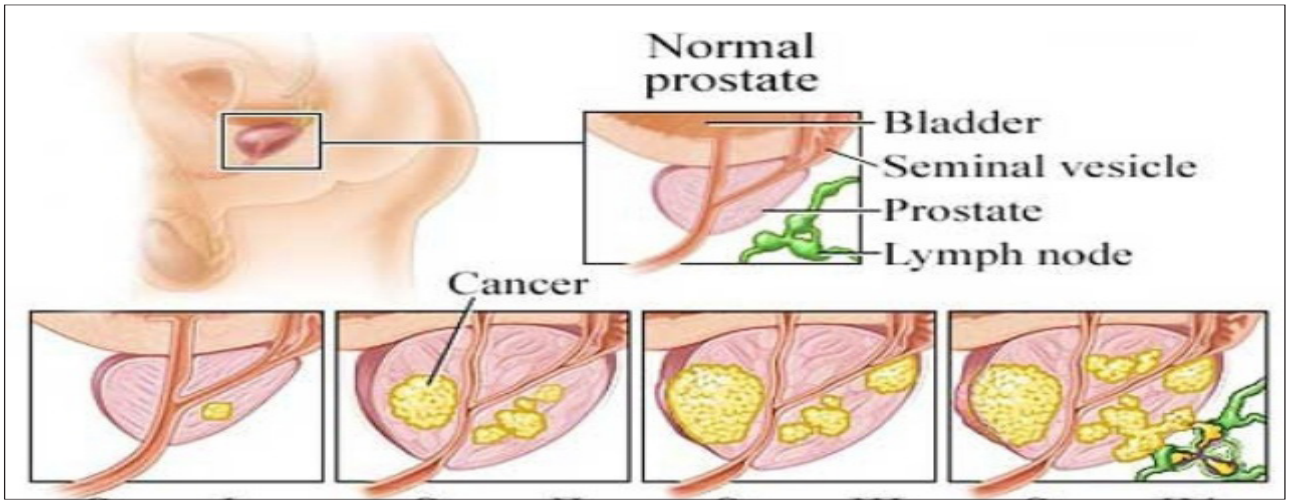
Stage 0 Carcinoma in situ. Early cancer that is present only in the layer of cells in which it began.

Stage 1 A cancerous tumor is found to be limited to the organ of origin.

Stage 2 The cancer has spread to the surrounding tissues and possibly to the local lymph nodes.

Stage 3 There is extensive growth of the primary tumor and possible other organ involvement.

Stage 4 The cancer has spread far into the other organs and systems of the body away from the original tumor site.



Source: *http://westcoasturology.com/practice-specialties/prostate-biopsy*

Note: Each cancer grows differently. The stage of cancer at the time of diagnosis means different things for different cancers. For example, lymph node involvement does not necessarily mean the same thing in every kind of cancer. Thus, the information about the extent of the cancer must be considered in light of the tissue diagnosis obtained from the biopsy.

Staging is performed using a number of methods such as physical exams, imaging procedures such as ultrasound, magnetic resonance imaging (MRI), and computed tomography (CT or CAT scan), x- rays), laboratory tests (e.g. blood tests and even special surgery.

In summary, the staging of cancer is important for three reasons:

1. To determine the extent of the disease;
2. Treatment is determined by the stage of the specific cancer;
3. Staging helps determine the patient's prognosis.

SECTION SEVEN: HOW IS PROSTATE CANCER TREATED?

Treatment for cancer depends on the type of cancer, the size, location and stage of the disease, the person's general health, and other factors. Treatment for cancer can be either local or systemic.

The purpose of cancer treatment varies according to the situation. A particular treatment might be recommended because it offers the best chance of a cure. When cure is not possible, treatment may improve the quality of life by relieving pain, pressure and other symptoms of cancer.

Prostate cancer treatment- Depending on the situation, the treatment options for men with prostate cancer might include, watchful waiting or active surveillance, surgery, radiation therapy, cryotherapy (cryosurgery), hormone therapy, chemotherapy and Bone-directed treatment.

1. **Active surveillance/ watchful wait** - Most men (85%) present with mild form of prostate cancer and therefore, the doctor may advise watchful waiting or active surveillance while 15% of prostate cancer patients present with aggressive form that requires urgent treatment. During watchful wait patient receives regular follow-up to monitor tumor. More information on this can be accessed at: Ballentine Carter, H. (2012) in study titled differentiation of lethal and non lethal prostate cancer: PSA and PSA isoforms and kinetics. *Asian Journal of Andrology, 14(3), 355–360. http://doi.org/10.1038/aja.2011.141*

Why Wait?

- PSA and DRE can detected prostate cancer at a very early stage & the patient present with mild slow growing form of prostate cancer.
- Average doubling time of the prostate tumor is quite slow (2-4 years).
- Immediate treatment may constitute over-treatment and introduce unnecessary urinary and potency risks.
- May be appropriate if the patient is elderly and/or in poor health, and will live out their life spans without the cancer causing problems.

2. ***Surgery-*** Is the removal of the cancerous tumor and possibly the removal of surrounding tissue and lymph nodes near the tumor. Surgery is most effective when the cancer is still confined to its original site and when the tumor can be completely removed.

3. ***Chemotherapy-*** This is the use of drugs to kill cancer cells. Most patients receive chemotherapy by mouth or through a vein. It is a systemic treatment, meaning that the drugs flow through the bloodstream to nearly every part of the body. Chemotherapy primarily works **by attacking cells that divide and grow rapidly, such as cancer cells.** The doctor may use one drug or a combination of drugs.

   Chemotherapy is used most often when there is a possibility that cancer cells may be located somewhere other than the primary tumor. It may be the only kind of treatment a patient needs, or it may be combined with other forms of treatment.

   The side effects of chemotherapy depend mainly on the drugs and the doses the patient receives. As with other types of treatment, side effects vary from person to person. Generally,

anticancer drugs affect cells that divide rapidly. In addition to cancer cells, these include blood cells, which fight infection, help the blood to clot, and carry oxygen to all parts of the body. When blood cells are affected, patients are more likely to get infections, may bruise or bleed easily, and may feel unusually weak and very tired.

Rapidly dividing cells in hair roots and cells that line the digestive tract may also be affected. As a result, side effects may include loss of hair, poor appetite, nausea and vomiting, diarrhea, or mouth and lip sores.

Chemotherapy may also affect cells that line the digestive tract, in which case side effects include poor appetite, nausea and vomiting, diarrhea, or mouth and lip sores. Some chemotherapy drugs also affect fertility.

Although the side effects of chemotherapy can be distressing, most of them are temporary and they can usually be treated or controlled.

4. ***Radiation Therapy (radiotherapy) -*** This is the use of high-energy rays to kill cancer cells or stop them from growing and dividing**.** For some types of cancer and stage of cancer, radiation might be used instead of surgery as the primary treatment. In other cases, radiation might be given after surgery to destroy any cancer cells that remain in the area.

There are two forms of radiation: external and internal. External radiation comes from a machine outside the body. Most people go to a hospital or clinic for treatment 5 days a week for several weeks. With internal radiation, radioactive material is sealed in a container (needles, tubes, seeds, etc.) and placed directly in or near the tumor. **Radiation is a local treatment; it can only affect cancer cells in that area where it is placed or directed.**

The side effects of radiation depend on the amount of radiation given (the dose), the part of the body that is treated, and the individual patient's response**.** For example, radiation to your abdomen can cause nausea, vomiting and diarrhea. A common side effect is extreme tiredness and skin changes in the treated area. Most side effects go away with time.

5. ***Hormone Therapy -*** Hormone therapy is used against certain cancers that depend on *hormones* for their growth. Some types of cancer (such as most prostate and breast cancers) depend upon hormones (natural substances produced in the body) to grow. Prostate cells and prostate cancer cells are dependent upon androgens (male sex hormones) for survival and growth. Removal of androgens kills a majority of prostate cancer cells.

   This treatment may involve using drugs that stop the production of hormones, or that change the way the hormones work in the body. Another type of hormone therapy is to remove organs such as testicles (Orchiectomy) that make the hormones.

Hormone therapy is a systemic treatment; it affects cancer cells throughout the body.

Depending on which hormone is targeted, hormone therapy can cause a variety of side effects. Some of the side effects include weight gain, hot flashes and nausea. Men may experience ***impotence***, loss of sexual desire, and breast growth or tenderness. Patients need to discuss these and other side effects with their doctor.

SECTION EIGHT: WHAT ARE SOME OF THE COMMON MYTHS AND MISCONCEPTIONS ABOUT PROSTATE CANCER?

Common myths and misconceptions about prostate cancer:

“High levels of sexual activity or frequent ejaculation cause prostate cancer”

Answer: This is not true. In fact, some studies show that men who report more frequent ejaculations may have a lower risk of developing prostate cancer

“Prostate enlargement means prostate cancer”

Answer: This is not true. Apart from prostate cancer, there are other conditions that present with symptoms similar to that of prostate cancer.

“A man will develop prostate cancer only if his father had prostate cancer”

Answer: not exactly, but if a man had a father or brother with prostate cancer, his possibility of developing prostate cancer is higher than someone who doesn’t have this history.

“Use of cell phones and putting cell phones in the pocket cause Prostate cancer”

Answer: No, according to the current studies conducted so far. Cancer is caused by genetic mutations, and cell phones emit a type of low-frequency energy that does not damage genes.

“Herbal products can cure Prostate cancer”

Answer: No. Although some studies some herbs, may help patients cope with the side effects of cancer treatment, no herbal products have been shown to be effective for treating cancer. In fact, some herbal products may be harmful when taken during cancer treatment.

SECTION NINE: WHAT ARE THE PUBLIC HEALTH MESSAGES FOR PROSTATE CANCER HEALTH COMMUNICATION?

- First take note of these possible barriers when communicating to men about Prostate cancer. These barriers may include:
  - ☐ Fear of dying
  - ☐ Effect on sexual function
  - ☐ Worries about digital rectal examination
  - ☐ Cultural differences
  - ☐ Literacy skills
  - ☐ Language problems
  - ☐ Keeping health matters private
- Encourage men to speak with their doctors to learn more about:
  - ☐ their personal risks for prostate cancer,
  - ☐ options for screening, and
  - ☐ the pros and cons of prostate cancer detection and treatment.
- Educate men about prostate cancer including:
  - ☐ Risk factors for prostate cancer
  - ☐ Symptoms for prostate cancer
  - ☐ Screening tests
  - ☐ Conditions other than prostate cancer that can elevate the PSA
- Provide men accurate information about prostate cancer screening using publications / information from credible sources (e.g., UCI, ACS, NCI)
- Inform men that the decision to get prostate cancer screening is between them and their doctor
- Encourage men to speak with their doctors to make an informed decision, and to get tested if they decide to.
- Inform men that if **prostate cancer is detected, they should obtain** all the information regarding the disease from their health workers especially on:
  - ☐ The decision about the ***type*** of prostate cancer treatment is between the man and his doctor(s)
  - ☐ Surgery, radiation therapy, and “active surveillance” possibilities.
- Inform men that Active surveillance is where the man has further testing over time before deciding whether more invasive treatment is needed.
- Inform men that:
  - ☐ The main Prostate cancer risk factors are age, family history, race, and possibly diet and exercise
  - ☐ Early detection can find localized cancer, but survival benefits still uncertain
  - ☐ Treatment depends on grade, extent and location of disease
  - ☐ Surgery and radiation are equivalent therapeutic tools for localized prostate cancer
  - ☐ Hormonal therapy is effective for metastatic prostate cancer

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