UNIT 3 NON-COMMUNICABLE DISEASES-2

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3.0 INTRODUCTION
The three commonly occurring cancers in India are those of the breast, cervix and oral cavity. Each of these cancers is amendable to early detection and treatment thus reducing the cancer morbidity and mortality.

3.1 OBJECTIVES
After completing this unit, you should be able to:
• enumerate common cancers in India;
• explain cause, diagnostic test of common cancers;
• identify signs and symptoms for cancers; and
• describe preventive measure and management of cancer.

3.2 CERVICAL CANCER
Cervical cancer occurs when abnormal cells develop and spread in the cervix which is the lower part of the uterus. It is the abnormal growth of cells that have the potential to invade or spread to other parts of the body. In the early stages typically there are no symptoms are seen. In the later stages the symptoms may include abnormal vaginal bleeding, pelvic pain and pain during sexual intercourse.

Human papillomavirus (HPV) infection is found to be involved in the development of more than 90% of cases but it may not be the case always. Other contributory risk factors include smoking, a weak immune system, and having many sexual partners, but these are less important.
Cervical cancer usually develops from precancerous changes over 10 to 20 years. About 90% of cervical cancer cases are squamous cell carcinomas, 10% are adenocarcinoma, and a small number are other types. Diagnosis is typically by cervical screening followed by a biopsy and then followed by imaging which determines the cancer has spread or not.

In India, cervical cancer is a common form of cancer in women. In 2012, cervical cancer is about 8% of the total cases and total deaths from cancer. India accounting to nearly 1/3rd of the global cervical cancer deaths.

### 3.2.1 Signs and Symptoms

The early stages of cervical cancer are usually free of symptoms. Vaginal bleeding, contact bleeding (one most common form being bleeding after sexual intercourse), or in some cases a vaginal mass may indicate the presence of malignancy. The moderate pain during sexual intercourse and vaginal discharge are also the symptoms of cervical cancer.

Symptoms of advanced cervical cancer may include:

- loss of appetite
- weight loss
- fatigue
- pelvic pain
- back pain
- leg pain
- swollen legs
- heavy vaginal bleeding
- bone fractures,
- leakage of urine or feces from the vagina.
- bleeding after douching or after a pelvic exam

### 3.2.2 Cause and Diagnosis

**Causes**

- Human papilloma virus
- Smoking
- Use of Oral contraceptives
- Multiple pregnancies

**Diagnosis**

- Visual inspection by acetic acid
- Biopsy
- Precancerous lesions

### 3.2.3 Stages of Cervical Cancer

Cervical cancer is staged by the International Federation of Gynaecology and Obstetrics (FIGO) staging system based on clinical examination than surgical findings (Fig. 3.1) shows stage 1A, stage 1B, stage 2A, stage 2B, stage 3B, stage 4A and stage 4B.
• Stage 1A cervical cancer- The cancer is limited to the area of cervix

• Stage 1B cervical cancer- In 1B1- The size is less than or equal to 4 cm and in 1B2 the size is larger than the 4 cm.

• Stage 2A cervical cancer- the cancer has grown into the top part of the vagina.

• Stage 2B cervical cancer- cancer has grown into the tissues around the cervix.
- Stage 3B cervical cancer- the cancer has blocked the ureter and descends towards kidneys.

- Stage 4A cervical cancer- cancer reaches bladder, rectum and into the adjacent organs.

- Stage 4B cervical cancer- the cancer reaches the lungs.

**Fig. 3.1: Pictorial presentation of cervical cancer**

### 3.2.4 Preventive Measures

The cervix should be checked by the visual inspection with acetic acid (VIA) Papanicolaou test, or Pap smear, for cervical cancer has been credited with reducing the number of cases of and mortality from cervical cancer.

**Barrier protection**

Barrier protection or spermicidal gel use during sexual intercourse decreases cancer risk and condoms offer protection against cervical cancer.

Evidence on condoms that whether they protect against HPV infection is mixed, but they protect against genital warts and other precursors to cervical cancer. They also provide protection against other STIs, such as HIV and *Chlamydia*, which are associated with greater risks of developing cervical cancer.

**Vaccination**

Two HPV vaccines (Gardasil and Cervarix) reduce the risk of cancerous or precancerous changes of the cervix and perineum by about 93% and 62%, respectively.
The vaccines should be stored at 2 to 8°C and must not be frozen. The dose is 0.5 ml intramuscular in deltoid. The recommended age for initiation of vaccination is 10–12 years. As of current licensing regulations in India, catch up vaccination is permitted up to the age of 45 years. Three doses at 0, 2 and 6 months are recommended with the quadrivalent vaccine (minimum interval between 1st and 2nd dose is 4 weeks and second and third dose is 12 weeks) and 0, 1 and 6 months with the bivalent vaccine. HPV vaccines can be given simultaneously with other vaccines such as Hepatitis B. Vaccine should be administered in a sitting/lying down position and the patient observed for 15 minutes post vaccination.

The vaccines are between 92% and 100% effective against HPV 16 and 18 up to at least 8 years.

Nutrition
Vitamin A, Vitamin B12, vitamin C, vitamin E, and beta-carotene are also associated with a lower risk of cervical cancer.

Screening
The cervical cancer screening is to be by VIA and PAP smear which can be performed at any time in the menstrual cycle, including during menses, during pregnancy and at a postpartum or postabortion checkup. The steps of VIA are as

- Inspect the external genitalia
- Insert the speculum fully so that the entire cervix can be seen
- Look at the cervix and check for evidence of cancer or infection (cervicitis)
- Soak a clean swab in dilute acetic acid solution (3–5%) and apply it to the cervix
- Once the cervix has been washed with the acetic acid solution, wait at least 1 minute for it to be absorbed and any acetowhite reaction to appear as shown in Fig. 3.2.

Test positive—Raised and thickened white plaques or aceto white epithelium

![Fig. 3.2: Cervix with VIA negative and positive](image)

Table 3.1: Shows screening and follow up process of cervical cancer. The algorithm for screening and management is shown in Fig. 3.3

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Age of Beneficiary</th>
<th>Methods of Screening</th>
<th>Frequency of Screening</th>
<th>If Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical</td>
<td>30–65 years</td>
<td>Visual inspection by acetic acid</td>
<td>Once in 5 years</td>
<td>Referred to PHC/CHC/ DH for further evaluation and management</td>
</tr>
</tbody>
</table>
Non-Communicable Diseases and Management Under National Health Programmes

![Flowchart](image)

**Fig. 3.3: Screening and Management algorithm for cervical cancer**

**Eligibility for Cryotherapy:**
- The lesions should not be spread over more than 2 quadrant of cervix
- The entire lesion is located in the ectocervix without extension to the vagina and/or endocervix
- The lesion is visible in its entire extent
- The lesion can be adequately covered by the largest available cryotherapy probe
- There is no suspicion of invasive cancer

**Cryotherapy is not recommended if:**
- Postcoital bleeding
- Postmenopausal bleeding

**Check Your Progress 1**

1) Name commonly occurring cancers in India.

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2) Name screening and diagnostic tests for cervical cancer.

3) List causes of cervical cancer.

3.3 BREAST CANCER

Breast cancer is cancer that develops from breast tissue. Signs of breast cancer may include a lump in the breast, a change in breast shape, dimpling of the skin, fluid coming from the nipple, or a red scaly patch of skin.

3.3.1 Signs and Symptoms

The first noticeable symptom of breast cancer is typically a lump that is different from the other breast tissue. More than 80% of breast cancer cases are diagnosed when the woman feels a lump. The earliest breast cancers are detected by a mammogram. Lumps found in lymph nodes located in the armpit scan also indicate breast cancer.

Lump may include thickening different from the other breast tissue, one breast becoming larger or lower, a nipple changing position or shape or becoming inverted, skin puckering or dimpling, a rash on or around a nipple, discharge from nipple/s, constant pain in part of the breast or armpit, and swelling beneath the armpit or around the collarbone.

Pain ("mastodynia") is an unreliable tool in determining the presence or absence of breast cancer, but may be indicative of other breast health issues.

Most symptoms of breast disorders, including most lumps, do not turn out to represent underlying breast cancer. Fewer than 20% of lumps, for example, are cancerous, and benign breast diseases such as mastitis and fibroadenoma of the breast are more common causes of breast disorder symptoms.

3.3.2 Risk Factors

The primary risk factors for breast cancer are female sex and older age.

Other potential risk factors include genetics, lack of childbearing or lack of breastfeeding, higher levels of certain hormones, certain dietary patterns, and obesity.

Recent studies have indicated that exposure to air pollution is a risk factor for the development of breast cancer.

Lifestyle

Smoking tobacco appears to increase the risk of breast cancer, with the greater the amount smoked and the earlier in life that smoking began, the higher the risk. In those who are long-term smokers, the risk is increased 35% to 50%.

A number of dietary factors have been linked to the risk for breast cancer. Dietary factors which may increase risk include a high fat diet, high alcohol intake, and obesity related high cholesterol levels.

Genetics

Genetics is believed to be the primary cause of 5–10% of all cases. Women whose
mother was diagnosed before 50 have an increased risk of 1.7 and those whose mothers were diagnosed at age 50 or after have an increased risk of 1.4.

In those with zero, one or two affected relatives, the risk of breast cancer before the age of 80 is 7.8%, 13.3%, and 21.1% with a subsequent mortality from the disease of 2.3%, 4.2%, and 7.6% respectively.

### 3.3.3 Preventive Measures

**Life-style**

Women may reduce their risk of breast cancer by maintaining a healthy weight, drinking less alcohol, being physically active and breastfeeding their children. The benefits with moderate exercise such as brisk walking are seen at all age groups including postmenopausal women.

High levels of physical activity reduce the risk of breast cancer.

High consumption of soy-based foods may reduce risk.

**Screening**

The screening follows the clinical breast examination for and lump or other deformity in the breast tissue. The clinical breast examination follows the following steps in Fig. 3.4 and the screening details for CBE are given in Table 3.2 and the referral algorithm is presented in Fig. 3.5.

#### Clinical Breast Exam (CBE)

1. **Inspect**: Visually breasts while patient is sitting up. Specialized positions may be required to assess positive findings.
2. **Palpate Axilla**:Probe axillary region for swollen lymph nodes. Move Patient’s arm from over head for easier access to this area.
3. **Palpate breasts**: Examine breasts with three finger pads, moving in vertical rows and checking for any Lumps or other irregularities.
4. **Inspect Nipples**: Grasp and compress nipple and areolar tissue between thumb and index finger. Check for discharge.

#### Table 3.2: Screening and referral of breast cancer

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Age of Beneficiary</th>
<th>Methods of Screening</th>
<th>Frequency of Screening</th>
<th>If Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>30–65 years</td>
<td>Clinical breast examination</td>
<td>Once in 5 years</td>
<td>Referred to surgeon at CHC/DH for confirmation using a breast ultra sound probe followed by biopsy as appropriate</td>
</tr>
</tbody>
</table>
3.4 ORAL CANCER

Oral cancer, also known as mouth cancer and is any cancerous tissue growth located in the oral cavity.

Oral cancer is the most common form of cancer in India. 130,000 people are affected to oral cancer in India annually. The reason for this high prevalence of oral cancer in India is primarily tobacco consumed in the form of gutka, quid or snuff. In the North East India, the use of areca nut is also a risk factor for oral cancer.

3.4.1 Signs and Symptoms

Skin lesion, lump, or ulcer that do not resolve in 14 days located are on the tongue, lip, or other mouth areas

- All usually small
- Most often pale collared, may be dark or discoloured
- Early sign may be a white patch (leukoplakia) or a red patch (erythroplakia) on the soft tissues of the mouth, usually painless initially
- May develop a burning sensation or pain when the tumor is advanced
- Behind the wisdom tooth or behind the ear

Additional symptoms that may be associated with this disease:

- Tongue problems (Difficulty in Movement of tongue)
- Swallowing difficulty
- Mouth sores
- Pain and paraesthesia are late symptoms.
3.4.2 Screening and Management

The screening to be done by for any of the lesion or ulcer by the oral visual examination and if found positive for any of the above mentioned sign and symptoms the patient should be referred to higher facility. The broad overview for screening is given in the Table 3.3 and the algorithm for the referral is given in Fig. 3.6.

**Table 3.3: Screening and referral of oral cancer**

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Age of Beneficiary</th>
<th>Methods of Screening</th>
<th>Frequency of Screening</th>
<th>If Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>30–65 years</td>
<td>Oral visual examination</td>
<td>Once in 5 years</td>
<td>Referred to surgeon/ dentist/ ENT specialist/medical officer at CHC/DH for confirmation and biopsy.</td>
</tr>
</tbody>
</table>

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**Fig. 3.6: Screening and management algorithm for oral cancer**
Check Your Progress 2

1) List risk factors for breast cancer?

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2) List Signs and Symptoms for oral cancer?

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3.5 NATIONAL HEALTH PROGRAMME FOR CANCER

The National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) during 2010–11 after integrating the National Cancer Control Programme (NCCP) with National Programme for Prevention and Control of Diabetes, Cardiovascular Diseases and Stroke (NPDCS) keeping in view the needs of the society and the integration of the services provided at various health care levels.

It includes the domains of health promotion, early diagnosis, treatment and referral at various levels of health care.

1) Prevention through behaviour change: The major risk factors to cancer, hypertension, obesity, diabetes and cardiovascular diseases are unhealthy diet, physical inactivity, stress, consumption of tobacco and alcohol. Attempts were made to prevent these risk factors by creating general awareness about the Non Communicable Diseases (NCD) and promotion of healthy lifestyle habits among the community through various categories of mass media (electronic and print), community education and interpersonal communication.

2) Early diagnosis and referral.
   • Common cancers such as oral, cervical and breast cancers can be included in the screening package, but states will need to ensure that treatment centres for patients with detected cancers are accessible and affordable.

3.6 LET US SUM UP

The three common cancers as breast, cervical and oral cancer contribute to major portion of cancers and these cancers are preventable if diagnosed early. Therefore the screening strategies for these cancers are to be taken actively up by the health care providers for further referral and management.
3.7 MODEL ANSWERS

Check Your Progress 1


2) Screening by VIA, PAP smear, Biopsy, MRI.

3) Causes
   - Human papilloma virus
   - Smoking
   - Use of Oral contraceptives
   - Multiple pregnancies

Check Your Progress 2

1) The primary risk factors for breast cancer are female sex and older age.

Other potential risk factors include genetics, lack of childbearing or lack of breastfeeding, higher levels of certain hormones, certain dietary patterns, and obesity.

Recent studies have indicated that exposure to air pollution is a risk factor for the development of breast cancer.

2) Skin lesion, lump, or ulcer that do not resolve in 14 days located:
   - On the tongue, lip, or other mouth areas
   - Usually small
   - Most often pale coloured, may be dark or discoloured
   - Early sign may be a white patch (leukoplakia) or a red patch (erythroplakia) on the soft tissues of the mouth, usually painless initially
   - May develop a burning sensation or pain when the tumor is advanced
   - Behind the wisdom tooth or behind the ear

3.8 REFERENCES


3) WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre). Summary report on HPV and cervical cancer statistics in India.


5) International Federation of Gynaecology and Obstetrics.


7) IAPCOI. Human papilloma virus (hpv) vaccines <http://www.iapcoi.com/hp/pdf/17>


10) Merck Manual of Diagnosis and Therapy (February 2003). "Breast Disorders: Breast Cancer"


