

Capacity building of primary care physicians of the tea garden hospitals in Dibrugarh, Assam: A demonstration project

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ABSTRACT

Background: The three most commonly occurring cancers in India are those of the breast, uterine cervix, and lip or oral cavity, together accounting for approximately 34% of all cancers. All the three cancers are amenable to prevention, early detection, and treatment through which the morbidity and mortality due to these cancers can be reduced. This pilot study was conducted to assess the operational feasibility of the national cancer screening guidelines. **Method:** This study was conducted in the Dibrugarh district of Assam in seven tea garden hospitals which serve as the primary health centers for the tea estate population in the Northeast region of India. The study intervention was a three-day training package designed to train primary care physicians in population-based screening for oral, breast, and cervical cancers. Knowledge evaluation and skill assessment were performed with a validated questionnaire and checklist, respectively. **Results:** Pre and posttraining knowledge assessment showed significant gain in the knowledge levels of the participants in all topics. The greatest knowledge increase was seen in breast cancer (96.3%), followed by cervical cancer (57.5%), oral cancer (35.5%) and general cancer-related information (16.7%). The skill assessment done for each participant individually at the end of the training indicated a need for retraining all participants in breast cancer screening. **Conclusion:** The learnings from this study will be of great help in scaling up the capacity building programme for cancer screening when the nation-wide population-based cancer screening programme will be rolled out in the country.

Keywords: Capacity building, cancer education, cancer screening, early detection, population-based cancer screening, skill assessment

Introduction

Cancer accounts for 8.3% of all deaths and 5% of disability adjusted life years (DALYs) in India.^[1] The three most commonly occurring cancers in India are those of the breast, uterine cervix, and lip or oral cavity, together accounting for approximately 34%

of all cancers.^[2] The northeastern part of the country has been found to be unfairly burdened with high incidence and mortality due to cancer. While the national average of reported cancer incidence is 80–110 cases per lakh population, this number varies between 150 and 200 cases per lakh in the northeast.^[3] This may be attributable to the lack of awareness, poor socioeconomic conditions, and lack of prevention and treatment facilities.^[4-6]

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The Ministry of Health and Family Welfare (MoHFW) has published operational guidelines for population-based cancer

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screening of the three common cancers—oral, breast and cervical through the National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular disease and Stroke.^[7] All these three cancers are amenable to the prevention, early detection, and treatment through which morbidity and mortality due to these cancers can be reduced. To implement this programme, the existing health care providers (HCPs) at all levels of health care will be trained in the screening and early detection of the common cancers and training modules have been developed by the MOHFW. The training module for medical officers consists of a 3-day hands-on workshop but the same has not been evaluated in the field.

Considering the high burden of cancers in the Northeastern part of the country, a cancer screening demonstration project was initiated by the Indian Council of Medical Research in collaboration with the TATA Amalgamated Pvt. Limited in the tea gardens of Dibrugarh district of Assam to provide early insight into the implementation challenges in the field. Capacity building of HCPs for population-based cancer screening was done as a part of the demonstration project. This paper presents the objective assessment of the skills and knowledge gained by the HCPs using the Ministry's training module.

Materials and Methods

Study area

This study was conducted in the Dibrugarh district of Assam in seven tea garden hospitals of Dibrugarh which serve as the primary health centres for the tea estate population.

Study population

The nine primary care physicians posted at the seven tea garden hospitals with no prior training in cancer screening.

Study design

This is an interventional study with a pre and posttest design and skill assessment done at the end of a 3-day workshop.

Intervention

The study intervention was a 3-day training package designed to train primary care physicians in population-based screening for oral, breast, and cervical cancer. The package included theoretical sessions covering the sociodemographic aspects of cancer in the country, risk factors, and etiology of oral, breast, and cervical cancer, their signs and symptoms, screening tests, diagnostic tests, treatment, and referral linkages. Specialist teaching faculty including dental surgeons, breast surgeons, and gynecologists from premier medical institutes of the country namely ICMR-National Institute of Cancer Prevention and Research, All India Institute of Medical Sciences, Delhi, and Assam Medical College and Hospital, Dibrugarh were engaged in delivering the interactive sessions using powerpoint slides, demonstration videos of screening procedures, and evaluation of screen positive cases. Demonstration models and mannequins

were made available to the study participants for the hands-on sessions along with demonstration in the outpatient clinics at the local medical college.

Ethics statement

This study was approved by the Institutional Ethics Committee at the ICMR-National Institute of Cancer Prevention and Research and ICMR-Regional Medical Research Center Dibrugarh. Date of Ethics committee approval: 16-03-2017.

Data collection/study questionnaire

A pretested questionnaire consisting of 30 multiple-choice questions with one right choice was administered for pre- and posttest evaluation [Annexure 1]. The questionnaire covered the different aspects of oral, breast, and cervical cancer including general information, risk factors and etiology, symptoms and signs of common cancers, screening tests, diagnostic tests, and treatment modalities.

Skill assessment was done for each participant individually on the third day by the trainers using a validated checklist to evaluate the step-wise procedure adopted by the participants for oral, breast, and cervical cancer screening [Annexure 2]. Stations were created for clinical breast examination, visual inspection by acetic acid, and oral visual examination at Assam Medical College and Hospital. Each station had one evaluator who observed and scored the participant as they performed the screening procedure on a patient. A written voluntary informed consent was obtained from the participants at the start of the training session.

Statistical analysis

Each item in the knowledge questionnaire and skill assessment checklist was given a score of "1" for a correct response/procedure practiced correctly and '0' for an incorrect response/procedure or if it was not answered or not practiced.

In order to test the data obtained from the knowledge assessment questionnaires for normal distribution, Shapiro-Wilk Normality test was performed. The *P* value for both pretest (*P* = 0.95181) and posttest (*P* = 0.26902) were greater than 0.05; hence, the data is said to be normal. The results showed no significant departure from normality. After testing for normality, data were evaluated in terms of percentage for their scores. Subject experts determined the minimum pass marks for knowledge questionnaire and skills assessment as 70% and 80%, respectively.

Paired *t*-test was performed on the pre- and posttest results for knowledge assessment questionnaires to evaluate the impact of the training package intervention on participants' knowledge about cancer and acquiring skills for cancer screening. A significant difference was found between the mean of pretest (*M* = 13.667, *SD* = 3.84, *SE* = 1.28, Range 8–20) and posttest (*M* = 21.111, *SD* = 4.25, *SE* = 1.41, Range 14–26) scores. Data was analyzed using the STATA 13 software.

Results

Of the nine physicians trained, two were female doctors and seven were males. The average number of years of service in their respective health centers was five years (range 1-12 years). Table 1 lists the average scores before and after training and the percentage of increase in scores for each topic. The greatest knowledge increase was seen in breast cancer (96.3%), followed by cervical cancer (57.5%), oral cancer (35.5%), and general cancer-related information (16.7%).

Results showed that out of total nine participants, with the passing score as 70%, no participant passed in the pretest assessment. The total individual pretest score of the participants ranged from 8 to 20 (max score 30). However, seven out of nine passed the knowledge assessment posttraining with the individual scores ranging from 14 to 26. The two participants who did not pass the posttraining assessment were retrained in all the topics. Paired *t*-test results showed significant difference in the knowledge level gained by the participants after the training $t(8) = -4.84, P = 0.0013$.

A total of six participants were presented with a skill assessment checklist after the hands-on session of screening procedures. Three participants could not attend the skill assessment as they had to attend an emergency meeting organized by the tea garden administration. All the six participants passed successfully (score >80%) in the cervical and oral screening procedures while none could clear the skill assessment for clinical breast examination [Table 2]. On scrutinizing the skill assessment

forms of breast cancer screening, it was found that 2 parameters were not performed by the participants due to which they could not clear this assessment; (1) Place a pillow under the patient's left shoulder and place the arm over the head (2) Show the patient how to perform a breast self-examination. These were reiterated by the experts and a repeat assessment was performed in which all the participants performed the procedure as per the instructions.

Discussion

Training the health care providers is an essential component for the successful implementation of any national health programme. All the national programmes in India including the cancer screening programme are integrated under the National Health Mission utilizing the existing public health personnel for their implementation.^[8] Training the HCPs can make them competent in implementing the cancer screening programme and adds advantage toward the larger mission of controlling the noncommunicable diseases in the nation. Currently, HCPs in the National Health Mission are trained in rolling out thematic programmes such as maternal and child health, control of infectious disease, and other national health programmes such as tuberculosis control, leprosy control, vaccination programmes, etc., Screening and management of noncommunicable diseases is one of the new components added to the existing services offered at the primary health care level. Hence, it becomes imperative to train HCPs at primary care level to carry out the screening of common cancers viz. oral, breast, and cervical cancer and refer the screen positives to higher centres for further evaluation and management.

In-person training is essential before the HCPs implement a population-based cancer screening programme because their knowledge about cancer and screening tests is minimal.^[9,10] This is reflected by the participants' low pretest scores in this study. The present study reiterates that the systematic training sessions which include theory and hands-on training are useful in increasing the knowledge and skill component of HCPs.

The limitation of our study is a small number of HCPs trained in the programme and all the participants could not take the skill assessment test. Such challenges will arise in the field and

Table 1: Participant's scores for pre and posttraining knowledge assessment

Knowledge parameter	Max score	Average Pretest score±SE (range)	Average Posttest score±SE (range)	% Increase in scores
General cancer information	4	2±0.29(1-3)	2.33±0.16 (2-3)	16.7
Cervical cancer	10	5.2±0.61 (3-10)	8.22±0.74 (3-10)	57.45
Oral cancer	9	3.4±0.4 (2-6)	4.67±0.33 (3-6)	35.48
Breast cancer	7	3.0±0.5 (0-5)	5.89 ±0.67 (2-9)	96.3
TOTAL	30	13.6±1.2 (9-20)	21.11±1.4 (14-26)	

Table 2: Results of Skill assessment in cancer screening procedures

Participants	TRAINING EVALUATION SKILL ASSESSMENT								
	Breast Cancer Screening (Total Score=17)			Cervical Cancer Screening (Total Score=30)			Oral Cancer Screening (Total Score=27)		
	Observed Total Score	% Observed Total Score	Pass (≥80%)	Observed Total Score	% Observed Total Score	Pass (≥ 80%)	Observed Total Score	% Observed Total Score	Pass (≥80%)
1	11	64.7	NO	27	90.0	YES	27	100	YES
2	12	70.6	NO	29	96.7	YES	22	81.5	YES
3	12	70.6	NO	27	90.0	YES	27	100	YES
4	12	70.6	NO	28	93.3	YES	27	100	YES
5	13	76.5	NO	27	90.0	YES	27	100	YES
6	10	58.8	NO	28	93.3	YES	27	100	YES

have to be considered during the actual roll out of the screening programme. Posttest assessments were done at the end of the 3-day training and there are chances of lower scores if the evaluation is done 4–6 weeks later.^[11] On the other hand, it reflects the situation on the ground as HCPs may not be available together as a group if assessment is done at a longer interval. To avoid the attrition in knowledge and skill, the screening programme should be rolled out alongside the training programme. On-site technical support and supervision is also essential for the HCPs and, in this study, it was arranged through visits by experts, local medical college faculty, and online re-training through online cancer training programme.

This is a pilot study to assess the operational feasibility of the national cancer screening guidelines. Eventually, population-based cancer screening programme will be rolled out in all districts of the country and HCPs at all health care facilities will be involved in the programme. The learnings from this study will be of great help in scaling up of the capacity building programme for cancer screening.

Declaration of patient consent

The authors certify that they have obtained all the appropriate participant consent forms. In the form, the participants have given their consent for their images and other clinical information to be reported in the journal. The participants understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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Annexure: 1

Pre-Post Training Evaluation Questionnaire

Dated: _____

Q1. What is cancer screening?

- A. Identifying an unrecognized disease without signs or symptoms
- B. Scan of whole body
- C. X-ray of the body
- D. Blood test

Q2. What is recommended age for cervical cancer screening as per National guidelines?

- A. 20-60
- B. 30-65
- C. 18-60
- D. Don't know

Q3. What are the primary causative agents/risk factors for development of oral cancer?

- A. Tobacco
- B. Areca nut
- C. Both
- D. Don't Know

Q4. How is cervical cancer treated?

- A. Hysterectomy
- B. Radiotherapy
- C. Chemotherapy
- D. All of the above

Q5. What do you understand by term **VIA**

- A. Visual inspection by magnifying glass
- B. Visual inspection by doctor
- C. Visual inspection with acetic acid
- D. Visual inspection with naked eye

Q6. What do you understand by term **VILI**

- A. Visual inspection by doctor
- B. Visual inspection with lugol's iodine
- C. Visual inspection with acetic acid
- D. Visual inspection of vagina

Q7. The next step of management if VIA positive

- A. Colposcopy
- B. Hysterectomy
- C. Laparotomy
- D. Only observation

Q8. How do you prepare acetic acid for VIA test?

- A. 5 ml acetic acid + 95 ml distilled water
- B. 95 ml acetic acid + 5ml distilled water
- C. 5 ml iodine + 95ml distilled water
- D. Do not know

Q9. Which of the following terminologies are currently being used for preinvasive disease of cervix?

- A. Premalignant Lesion
- B. Premalignant Condition
- C. Potentially Malignant Disorder
- D. Cervical Intraepithelial Neoplasia

Q10. What is the current recommendation regarding the age group & frequency of oral cancer screening?

- A. Above 30 yrs of age, once in every 5 yrs
- B. Above 60 yrs of age, once in every 6 yrs
- C. Above 30 yrs, once in every 10 yrs

Q11. What is breast self-examination BSE?

- A. Breast examination by doctor
- B. Breast examination by herself
- C. X-ray of breast
- D. Breast lump test

Q12. What is the ideal time for breast self-examination

- A. Before menstrual periods
- B. 5–10 days after menstrual periods
- C. During periods
- D. Do not know

Q13. Which of these cancers is hereditary?

- A. Oral cancer
- B. Cervical cancer
- C. Breast cancer
- D. Prostate cancer

Q14. How frequently BSE should be done?

- A. Once in a year
- B. Once in three month
- C. Once in a month
- D. Once in a week

Q15. Which is NOT a term describing a normal part of breast?

- A. Duct
- B. Lymph nodes
- C. Adipose tissue
- D. Mastalgia

Q16. Which is the most common form of breast cancer?

- A. Invasive ductal carcinoma
- B. Ductal carcinoma *in situ*
- C. Infiltrating (invasive) lobular carcinoma
- D. None of the above

Q17. What are some breast cancer risk factors for women?

- A. Bearing children after 30
- B. Consumption of alcohol
- C. Being overweight after menopause
- D. All of the above

Q18. Is there a link between hormone replacement therapy (HRT) and breast cancer?

- A. Yes
- B. No
- C. Don't know

Q19. What are the early signs of Oral cancer?

- A. White patch in mouth
- B. Red patch in mouth
- C. White & Red patch in mouth
- D. A non-healing ulcer
- E. All of the above

Q20. Oral Leukoplakia is clinically characterized by (more than one options are correct):

- A. A white patch only
- B. A red patch only
- C. A mixed white & red patch

Q21. Areca nut is the primary causative agent for?

- A. Oral Leukoplakia
- B. Oral Lichen Planus
- C. Oral Submucous Fibrosis
- D. Erythroplakia

Q22. Which is the characteristic diagnostic feature of any of the subtypes of Oral Lichen Planus?

- A. Generalized Blanching of the oral mucosa
- B. White Reticular Striae
- C. A granular, velvety Erythematous patch
- D. A White patch with cracked-mud appearance

Q23. Which are the most common sites for development of oral cancer?

- A. Tongue, Floor of the mouth
- B. Buccal mucosa, Gingiva
- C. Retromolar trigone, Tongue
- D. Gingiva, Palate

Q24. How often do you have Pap tests?

- A. Every 12 months
- B. Every 18 months
- C. Every 2 years
- D. Every 3 years

Q25. Pap test is necessary even if there is no family history of cancer.

- A. True
- B. False
- C. Don't know

Q26. Which of the following HPV strains are high risk types?

- A. 20 & 25
- B. 16 & 18
- C. 11 & 16
- D. Don't know

Q27. What percentage of the Indian Population consumes tobacco?

- A. 25%
- B. 30%
- C. 35%
- D. 28%

Q28. Name the state in India having the highest frequency of Tobacco-related cancers

- A. Mizoram
- B. Goa
- C. Assam
- D. Punjab

Q29. The highest rate of malignant transformation occurs in

- A. Leukoplakia
- B. Oral lichen planus
- C. Erythroplakia
- D. Oral submucous fibrosis

Q30. A white non-scrapable patch requires an urgent biopsy when located in

- A. labial mucosa
- B. buccal mucosa
- C. tip of tongue
- D. floor of mouth

Annexure: 2

SKILL ASSESSMENT TOOL

Breast Cancer Screening

Skill Assessment Checklists for Breast Examination

Note for the Trainer: Give the score of “1” against each task done satisfactorily and “0” for tasks not done or not done satisfactorily. Add the total score and total score% achieved by the participant. To be competent in the skill, the participant must score $\geq 80\%$.

Checklist for Breast Examination	
Step/Task	Cases
Getting Ready	
Greet the woman respectfully and with kindness	
Tell the woman you are going to examine her breasts	
Ask the woman to undress from her waist up. Have her sit on the examining table with her arms at her sides	
Wash hands thoroughly and dry them. If necessary, put on new examination or high-level disinfected surgical gloves on both hands	
Skill/Activity Performed Satisfactorily	
Breast Examination	
Look at the breasts and note any differences in:	
shape	
size	
nipple or skin puckering	
dimpling	
Check for swelling, increased warmth or tenderness in either breast	
Look at the nipples and note size, shape and direction in which they point. Check for rashes or sores and nipple discharge	
Look at breasts while woman has her hands in two different positions, once over her head and second when she presses her hands on her hips	
Have her lie down on the examination table	
Look at the left breast and note any differences from the right breast	
Place a pillow under the woman’s left shoulder and place her arm over her head	
Palpate the entire breast using the spiral technique with the pads of the first three fingers. Note any lumps or tenderness	
Squeeze the nipple gently and note any discharge	
Repeat these steps for the right breast. If necessary, repeat this procedure with the woman sitting up with her arms at her sides	
Have the woman sit up and raise her arm. Palpate the tail of the breast and check for enlarged lymph nodes or tenderness	
Repeat this procedure for the right side	
After completing the examination, have the woman cover herself. Explain any abnormal findings and what needs to be done. If the examination is normal, tell the woman everything is normal and healthy and when she should return for a repeat examination	
Show the woman how to perform a breast self-examination	
Skill/Activity Performed Satisfactorily	
Total Score	

Result: Circle the appropriate result based on the score and score% achieved.

Pass **Needs Improvement**

Cervical Cancer Screening

Skill Assessment Checklists for VIA

Note for the Trainer: Give the score of “1” against each task done satisfactorily and “0” for tasks not done or not done satisfactorily. Add the total score and total score% achieved by the participant. To be competent in the skill, the participant must score $\geq 80\%$.

Checklist for Via Counseling and Clinical Skills	Cases
Step/Task	
Pre-Via Counseling	
Greet woman respectfully and with kindness	
If cancer screening counseling not done, counsel woman prior to performing pelvic (VIA test) examination	
Determine that the woman has decided to have VIA done	
Assess woman’s knowledge about cervical cancer and VIA test	
Respond to woman’s needs and concerns about cervical cancer and the VIA test	
Describe the procedure and what to expect	
Getting Ready	
Check that instruments, supplies and light source are available and ready for use	
Check that the woman has emptied her bladder and washed her genital area	
Have the woman undress from waist down. Help her get on to the examination table and drape her	
Wash hands thoroughly with soap and water and air dry them.	
Palpate the abdomen	
Put one pair of new examination or high-level disinfected surgical gloves on both hands	
Arrange instruments and supplies on high-level disinfected tray or container	
Visual Inspection with Acetic Acid	
Insert speculum and fix blades so that entire cervix can be seen clearly	
Move light source so cervix can be seen clearly	
Check the cervix for cervicitis, ectropion, tumors, Nabothian cysts or ulcers and clean cervix with cotton swab if necessary. Dispose off the swab	
Identify the cervical os, Squammo-columnar junction (SCJ) and transformation zone	
Apply 3-5% acetic acid to cervix with a swab on a stick and wait 1 minute. Dispose off the swab	
Check if cervix bleeds easily. Check for any raised and thickened white plaques or acetowhite epithelium	
Remove any remaining acetic acid from the cervix and vagina with a swab. Dispose off the swab	
Remove speculum and place it in 0.5% chlorine solution for 10 minutes for decontamination	
Perform the bimanual examination and rectovaginal examination if indicated	
POST-VIA TASKS	
Wipe light source with 0.5% chlorine solution or alcohol	
Immerse all used instruments in 0.5% chlorine solution for 10 minutes for decontamination	
Wash both hands with soap and water and air dry	
Have the woman get dressed	
Record the VIA test results and other findings in woman record	
Discuss the results of VIA test and pelvic examination with the woman and answer any questions	
If VIA test is negative, tell her when to return for repeat VIA testing	
If VIA test is positive or cancer suspected, discuss recommended next steps	
After counseling, provide treatment or refer to a higher appropriate facility for management	
POST-VIA COUNSELING	
Assure woman that she can return for advice or medical attention any time	
Provide follow-up instructions	
Total Score	
Total Score%	

Result: Circle the appropriate result based on the score and score% achieved.

Pass Needs Improvement

Oral Cancer Screening

Skill Assessment Checklists for Visual oral examination

Note for the Trainer: Give the score of “1” against each task done satisfactorily and “0” for tasks not done or not done satisfactorily. Add the total score and total score% achieved by the participant. To be competent in the skill, the participant must score ≥80%.

Checklist for oral examination Counseling and Clinical Skills	
Step/Task	Cases
Pre examination counselling	
Greet the individual respectfully and with kindness	
If cancer screening counseling not done, counsel him/her prior to performing oral examination	
Determine that he/she has decided to have oral examination done	
Describe the procedure and what to expect	
Getting Ready	
Check that the supplies and light source are available and ready for use	
Wash hands thoroughly with soap and water and air dry them.	
Put on examination gloves on both hands	
Oral Visual Examination	
Inspect the individual’s lips and the vermilion border	
Evert the lips and carefully inspect the labial mucosa	
Ask the individual to partially open the mouth	
The buccal mucosa is examined by stretching it with a pair of tongue depressors or mouth mirrors	
Opposite side buccal mucosa is examined in the similar manner	
Ask the individual to protrude the tongue	
The dorsal surface of the tongue is examined by holding the tongue gently by the fingers and a gauze sponge	
The lateral borders of the tongue are examined by grasping the tip of the tongue with a gauze sponge	
The ventral surface of the tongue and the floor of the mouth are visualized by having the person touch the tip of the tongue to the roof of the mouth	
The gingivae are examined with the mouth partially opened and the lips retracted	
The anterior part of the hard palate is better visualized using an intraoral mirror	
The soft palate is examined by depressing the base of the tongue with a tongue depressor and asking the subject to say “aah”	
The examination for cervical lymph nodes is carried out by standing behind the individual and slightly flexing and bending the neck to the side	
POST-ORAL EXAMINATION TASKS	
Immerse all used instruments in 0.5% chlorine solution for 10 minutes for decontamination	
Dispose the gloves in leakproof container or plastic bag.	
Wash both hands with soap and water and air dry	
Record the oral examination test results and other findings in the record	
If the individual is tobacco user, counsel about the ill effects of tobacco and provide tips to quit tobacco	
Discuss the results of oral examination with the individual and answer any questions	
Provide follow-up instructions	
Total Score	
Total Score%	

Result: Circle the appropriate result based on the score and score% achieved.

Pass Needs Improvement

STANDARD OPERATING PROCEDURES (SOP)

Procedure of Visual Inspection with Acetic Acid examination:

- Explain the screening in detail to the woman. The woman should be reassured that the procedure is painless, and every effort should be made to ensure that she is fully relaxed and remains at ease during testing.
- Written informed consent should be obtained before screening.
- The woman is invited to lie down in a modified lithotomy position on a couch with leg rests or knee crutches or stirrups.
- Gently introduce the speculum and open the blades of the speculum to view the cervix in the presence of good light source.
- Identify the external os, columnar epithelium (red in colour), squamous epithelium (pink) and the squamocolumnar junction.
- Proceed to identify the transformation zone, the upper limit of which is formed by the squamocolumnar junction. (Cervical neoplasias occur in the transformation zone nearest to the squamocolumnar junction).
- Gently, but firmly, apply 5% acetic acid using a cotton swab soaked in acetic acid. The secretions should be gently wiped off. The swabs after use should be disposed of in the waste bucket.
- The curdy-white discharge associated with candidiasis is particularly sticky, and if particular care is not taken to remove it properly, it may mimic an acetowhite lesion, thus leading to a false-positive result.
- After removing the swab, carefully look at the cervix to see whether any white lesions appear, particularly in the transformation zone close to the squamocolumnar junction, or dense, non-removable acetowhite areas in the columnar epithelium.
- The results one minute after application of acetic acid should be reported. Note how rapidly the acetowhite lesion appears and then disappears

Procedure of Oral Visual Examination:

- Examination of the oral cavity should be carried out with adequate lighting from an external source such as fixed or head-mounted examination lights or hand-held flashlights, supplemented by room lighting.
- The procedure should be explained to the person and every effort should be taken to ensure that the subject is relaxed and not anxious.
- The examiner should be alert during the entire procedure to identify any change in colour and/or texture of the mucous membrane, inflammatory areas, erythema, hyperpigmentation, macules, papules, vesiculobullous lesions, white lesions, greyish white lesions, red lesions, induration, ulceration, swellings and growth in the oral mucosa.
- Oral examination commences with the visual examination of the lips and the vermilion border and by palpation after removing any lipstick. The lip is usually smooth and pliable.
- Evert the lips and carefully inspect the upper and lower labial mucosa.
- The buccal mucosa is examined by stretching it with a pair of tongue depressors or mouth mirrors after the subject partially opens the mouth. The opening of the parotid salivary gland duct, the Stensen duct, may be observed as a small papillary or punctate soft tissue mass on the buccal mucosa adjacent to the maxillary second molar tooth. Milking of the parotid gland may expel saliva at the duct opening.
- After examination of the buccal mucosa, the dorsal surface of the tongue is examined by asking the subject to protrude the tongue and attempt to touch the tip of the chin, alternatively the tip of the tongue may be held gently by the fingers and a gauze sponge.
- The dorsal surface of the tongue is normally uniformly covered by numerous fine-pointed and cone-shaped filiform papillae; dozens of mushroom-shaped fungiform papillae, each of which contains one or more taste buds are interspersed among them. The papillae containing numerous taste buds, 8–10 in number arranged in a V-shaped fashion, are located at the junction of the anterior two thirds and posterior third of the tongue. Occasionally, fissuring of the dorsal surface of the tongue may be observed.
- The lateral borders of the tongue are examined by grasping the tip of the tongue with a gauze sponge, extending and rotating it laterally and retracting the buccal mucosa on the same side with the tongue depressor.
- Alternatively, the lateral border of the tongue can be examined by asking the person to touch the opposite buccal mucosa with the tip of the tongue and retracting the buccal mucosa with a mouth mirror. Vertical fissuring may be observed more along the lateral border of the tongue.
- The ventral surface of the tongue and the floor of the mouth are most easily visualized by having the person touch the tip of the tongue to the roof of the mouth. Folds of tissue, the plica sublingualis, can frequently be observed extending from the ventral surface of the tongue. The saliva pooled in the floor of mouth during an oral examination is removed with a gauze sponge. The openings of the submandibular ducts, the Wharton ducts, are usually visualised as midline papillae on either side of the lingual frenum. Saliva oozes out of the Wharton ducts when the submandibular salivary glands are bimanually palpated.
- The gingivae are examined with the mouth partially opened and the lips retracted with the fingers, a tongue blade, or plastic lip retractor. The attached gingivae adjacent to the teeth appear pale, firm and firmly attached to the underlying bone and are frequently pigmented. The gingival mucosa is darker in colour than the rest and extends from the mucogingival junction to cover the buccal sulcus.

- The anterior part of the hard palate is better visualised using an intraoral mirror. The anterior portion of the hard palate is covered by many fibrous ridges. The presence of a large number of minor salivary glands makes the hard palate a common location for minor salivary gland tumours.
- The soft palate is examined by depressing the base of the tongue with a tongue depressor and asking the subject to say “aah”. Part of the oropharynx, particularly the accessory lymphoid tissues in the posterior pharyngeal wall that appear as pale mucosal papules, is visible during this procedure.
- The tonsillar pillars are examined by moving the tongue laterally. Accumulation of desquamated epithelial cells and food may present in the tonsillar crypts as debris.
- Examination of the teeth should be the final part of the oral examination.
- Clinical examination of the head and neck is an integral part of oral examination and provides valuable information on the overall assessment of possible oral diseases. The examination for cervical lymph glands is carried out by standing behind the individual and slightly flexing and bending the neck to the side so that the sternocleidomastoid muscle becomes relaxed and palpation and identification of any enlarged nodes will be easier.
- Bimanual palpation is useful in differentiating submandibular salivary gland swellings from enlarged submandibular lymph nodes.

Procedure for Clinical Breast Examination

- The CBE screening technique involves visual inspection and palpation of both breasts by a health-care provider.
- A visual examination should be performed with the woman in three different standing positions: with her arms relaxed at her sides, with her hands pressed firmly on her waist and leaning forward (a), and with her arms above her head (b). The provider looks for subtle changes in breast contour and skin and nipple changes that appear asymmetrically (i.e. not seen in both breasts).
- During palpation, the provider uses the soft pads of the middle three fingers to examine all areas of both breasts and axillae for the presence of lumps and thickening of breast tissue and lymph nodes. Palpation is performed with the woman in sitting and supine positions.
- Palpation is done with the finger pads of the middle three fingers, and pressure is applied with circular motions at each site. Three levels of pressure – superficial, medium, and deep – should be applied at each palpation site.
- Palpation of the supraclavicular and axillary nodes is done with the woman seated, and re-palpation of the axillary nodes is done with the woman supine.
- Palpation of the breasts is performed over an area extending from the mid-axillary line to the mid-sternum and from above the subcostal margin (fifth rib) to the clavicle, including palpation of the nipple and areola.
- Palpation should be done systematically, either in vertical strips or in circular motions from the centre to the periphery or vice versa.
- For the lateral half of the breast, the woman should be asked to rotate her body slightly in the opposite direction (right side for left breast, and left side for right breast); for the medial half of the breast, the body should be rotated laterally in order to spread out the breast tissue.
- When an abnormality in shape or contour is detected, the corresponding area of the other breast should be examined. If the finding is not bilateral, further investigation is required.