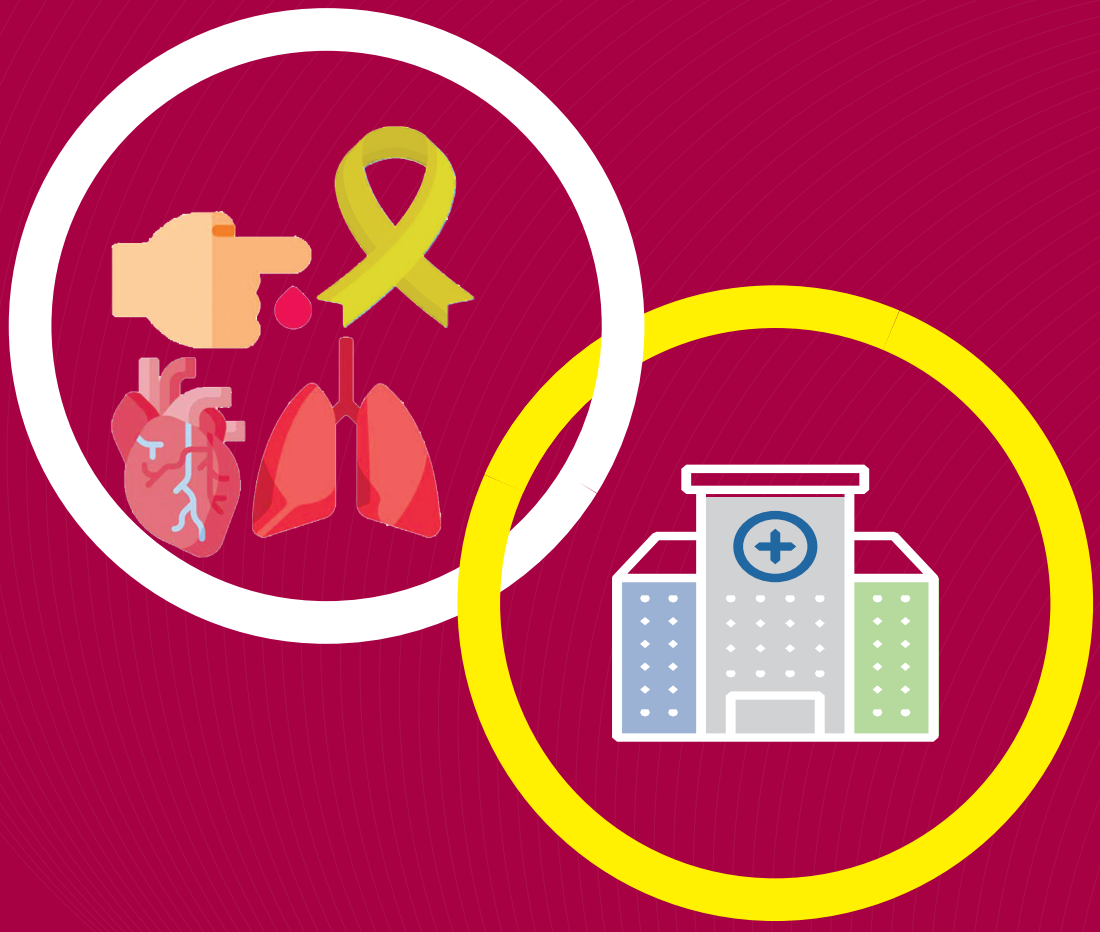
Edition 2080

PEN-Plus Training

For Management of Severe & Chronic NCDs in the First Level Referral Hospitals of Nepal



FACILITATORS GUIDE

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Ministry of Health and Population
Department of Health Services
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Teku, Kathmandu, Nepal

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Ministry of Health and Population
National Health Training Center
Teku, Kathmandu, Nepal

Disclaimer

This Manual is provided solely as a preliminary draft copy for the PEN-Plus Facilitators and is intended exclusively for training purposes at the PEN-Plus sites. The content and information contained within this Manual are subject to change and revision.

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Welcome

Welcome! Trainers, Mentors, Faculty members, and Health care providers to the Pen Plus Training Course Blended Learning. You have been selected to attend this exciting new course, which combines:

- **A self-paced, interactive knowledge update** through self-paced learning, completing the exercises and Virtual sessions. Followed by group-based learning (on-the-job training).
- **On-site Skills development and practice (skills standardization) in the classroom**
- **Practice with the client in the clinical setting and individual coaching** by the trainer (a mentor).

As a learner, you will continually be assessed throughout the course in a variety of ways. Ultimately, once you have completed the practice component of the course, the facilitator will determine if you have achieved the essential core competencies to become a qualified service provider.

What Is Blended Learning?

Innovative, technology-supported learning tools and methods can be mixed with more traditional training approaches to increase the efficiency and effectiveness of a learning event—the ultimate goal being to minimize the amount of time providers must spend away from the job, in a group-based learning activity. This mixing of training approaches is called—blended learning and can be constructed in many different ways. It can be a formal learning arrangement—such as a computer- or Web-based program to be completed—or more informal, such as through relationships, conversations, self-study and independent research.

This approach is appropriate in the context of this particular Training that is:

- **There is a need**
- **Resources are available—**Necessary technologies and equipment, as well as people who know how to use them, are available;
- **Learners are deemed willing and able to commit to self-paced learning—** Although independent learning is a hallmark of adult learning theory, this remains a serious consideration; and
- **Learners have the experience and technical competency** needed to be successful using this approach.

Contents of the Package

The PEN Plus clinical skills course package includes:

- PEN Plus clinical protocol as a reference manual. This document will serve as a valuable reference both during the course and when you are providing clinical care
- This Facilitator's guide includes key information about the course, the course syllabus and a range of tools that you'll need to navigate through this course. This contains self-paced learning outline and exercises to be completed.

Background and Introduction

What is PEN-Plus?

The PEN-Plus is a model for integrated health service delivery for severe or advanced chronic NCDs at the first-referral hospital built upon the WHO-PEN intervention. It incorporates integrated care teams to provide chronic care for below listed severe NCDs at first-level (district) hospitals-

- **Endocrinology:** Type I and Type II Diabetes Mellitus (DM)
- **Cardiovascular:** Rheumatic Heart Diseases (RHDs), Congenital Heart Diseases (CHDs), Hypertension, Ischemic Heart diseases
- **Respiratory:** Chronic Respiratory Diseases (CRDs)- asthma, COPD
- **Hematology:** hemoglobinopathies-Sickle Cell Disease (SCD), thalassemia
- **Oncology:** Cervical Cancer, Breast Cancer, Childhood cancer

By implementing this approach, with some modifications based on the context of the Nepalese health system and practices, can advance toward universal health coverage (UHC) for NCDs by strengthening the model of delivery of NCD services and the referral chain. To achieve this human resource development, and providing support to vulnerable patients and their families will be key. This approach will also expedite the process of decentralizing service delivery at the district hospital level regarding the common NCDs. PEN-Plus also aims to train and mentor the WHO-PEN mid-level providers to maintain the continuum of NCD care, to systematize a hierarchy of referral chain from PHCC to the first level center and then to the higher center, and ultimately protect the vulnerable population from financial hardship.

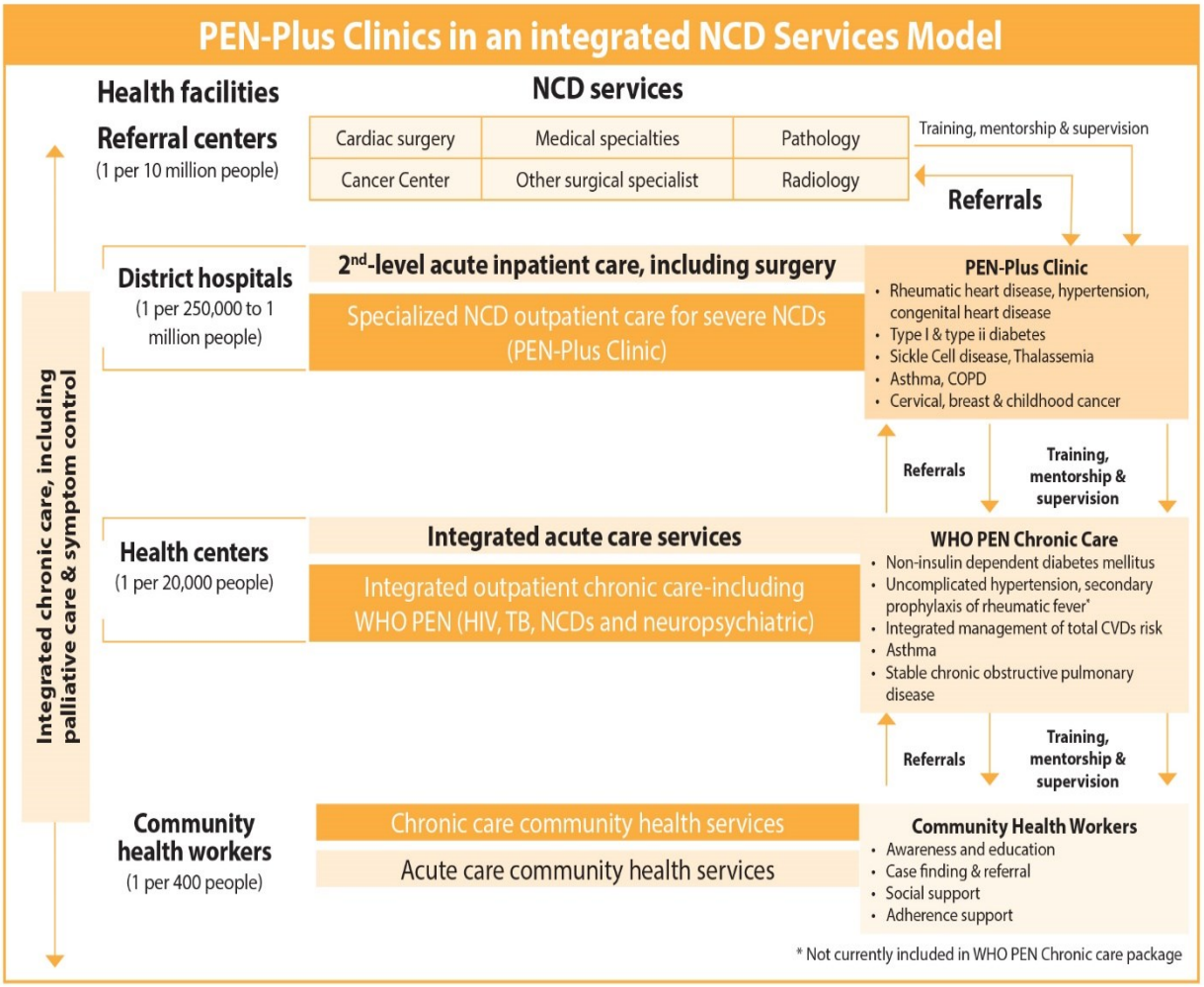
The rationale for PEN-Plus:

WHO-PEN provides basic NCD services for cardiovascular diseases (CVDs), Diabetes Mellitus, Chronic respiratory diseases, and cancer at the PHCC level in Nepal. There is still a gap in managing severe and complicated NCDs management at the first level of referrals. which compels individuals living in resource-poor settings to travel a long distance to the higher referral centers and spend out of pocket to avail of the services. Eventually, this has led to a huge disparity in service delivery when it comes to severe NCDs at the lower levels of health care in the country. Hence, this calls for an urgent need for the expansion of the services available in WHO-PEN to meet the prevailing health inequity. The PEN-Plus aims to sufficiently equip the first-level referrals with essential resources to establish them as PEN-Plus NCD clinics providing health services for the management of severe NCDs in the resource-constrained areas of the country.

This proposal aims at tailoring an exemplary integrated health service delivery system with PEN-Plus at the first-level referral hospitals. This will also help to reduce the case load of referral hospitals. This country-level partnership project could be a guiding stone for changing the narrative around NCD service delivery in Nepal. It would be a way forward to UHC, achieving SDG targets for the coming years, and would also build a foundation for the nationwide scale-up of a decentralized NCD delivery system.

Relation between PEN and PEN-Plus

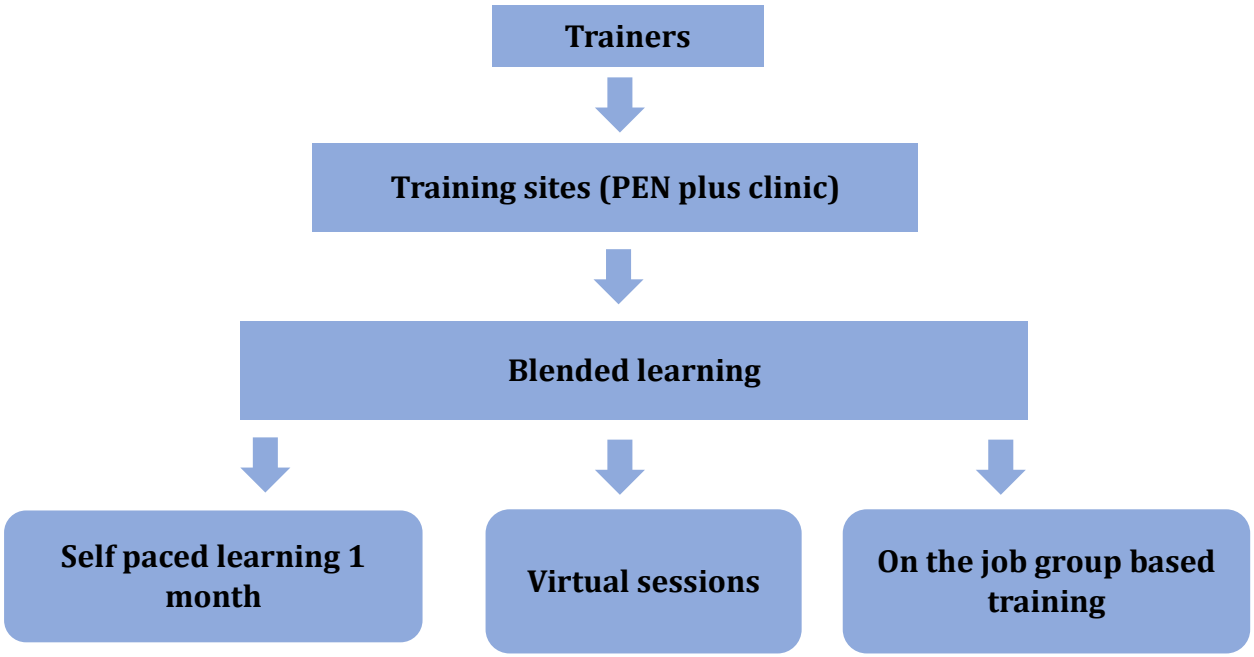
PEN-Plus aims at decentralizing NCD-related services and ensuring capacity building at the first-level referral hospitals of Nepal. As PEN-Plus builds upon the existing PEN intervention at the PHCC level, NCD cases from the PHCC/basic hospital level will be able to seek care for more severe and chronic NCDs at the first-level referral (district) hospital and follow up at the PHCC/ basic hospital whenever applicable. Similarly, the first-level referral (district) hospital could ensure early screening and diagnosis and timely referral of more complicated and advanced cases to the tertiary-level referral hospital without overburdening them. This maintains a continuum of care below the first level referral and above as well for NCD care services provision.



Course Description:

This training package is developed for health care providers (MDGPs, MD consultants, and Medical Officers) working in the first-level referral (district) hospitals of Nepal, where PEN Plus program is implemented. The course focuses on providing competencies needed for standardized management of advanced and chronic NCDs such as Acute rheumatic fever (ARF), rheumatic heart disease (RHD), hypertension (HTN), congenital heart disease (CHD), hemoglobinopathies l(sickle cell disease (SCD), Thalassemia,), common cancers (Cervical, breast, and common childhood cancers), Chronic respiratory diseases (asthma, Chronic obstructive pulmonary disease), and type 1 and 2 diabetes mellitus

Training approach:



Course Goal:

To prepare competent health care providers (MDGPs, MD consultants, and Medical Officers) working in the first-level referral (district) hospitals who will be able to provide quality of care in the following advanced and chronic NCDs:

- Acute rheumatic fever (ARF)
- Rheumatic heart disease (RHD)
- Hypertension (HTN)
- Congenital heart disease (CHD)
- Hemoglobinopathies (Sickle cell disease (SCD) and Thalassemia)
- Cervical, breast, and childhood cancers
- Chronic respiratory diseases (asthma, Chronic obstructive pulmonary disease)
- Type 1 and 2 diabetes mellitus

Course Competencies:

The desired core competencies required of qualified service providers are to be able to:

1. Assess, diagnose, and manage the cases of Type I and Type II Diabetes Mellitus (DM) and it's complications in child and adolescent, adult.
2. Assess, diagnose and manage the cases of Rheumatic Heart Diseases (RHDs), Congenital Heart Diseases (CHDs), Hypertension, Ischemic Heart diseases in child , adolescent and adult
3. Assess, diagnose and manage the cases of Chronic Respiratory Diseases (CRDs)- asthma, acute exacerbation of asthma, COPD and acute exacerbation of COPD in child ,adolescent and adult
4. Assess, diagnose and manage the cases of Sickle Cell Disease (SCD) and Thalassemia and their complications in child , adolescent and adult
5. Assess, diagnose, basic management and timely referral of the cases of Cervical Cancer, Breast Cancer and common Childhood cancer (Leukemia, lymphoma, retinoblastoma, wilms tumor, tumors of central nervous system)
6. Identify, provide initial counselling and appropriate referral for common neurodevelopmental disorders (Autism, Attention Deficit Hyperactive disorder, Seizure disorder, and)
7. Provide counselling support to the client and families

Course objectives:

After the completion of this course, learners will be able to:

1. Describe the concept of PEN Plus program
2. Carry out history taking in child , adolescent and adult
3. Perform the physical examination in child , adolescent and adult NCDs
4. Identify the investigation needed in child , adolescent and adult
5. Diagnose the NCDs among child , adolescent and adult
6. Screen the listed conditions among the routine OPD child , adolescent and adult patients
7. Provide Management based on clinical protocol for the above-mentioned NCDS for child , adolescent and adult
8. identify cases with complications of above mentioned NCDs in child , adolescent and adult
9. Manage the cases with complications for above mentioned in child , adolescent and adult
10. Communicate risk to the NCD patients and counsel them on the long-term management of NCDs
11. Provide appropriate referral to tertiary level hospitals based on their need
12. Identify the safe transport of referred pediatric cases
13. Document and report the services provided

Learning Objectives

Learning objectives from all modules are given below:

Module 1: Respiratory disease

A. Bronchial Asthma

1. Enumerate the risk factors of Bronchial Asthma
2. Describe the clinical features of bronchial Asthma and COPD
3. Conduct the pulmonary function test (Spirometry & Peak Expiratory Flow Meter) and Interpret the report
4. Outline the differential diagnoses of Bronchial asthma and differentiate Asthma from its differential diagnosis
5. Assess the severity of Bronchial Asthma
6. Manage case of Bronchial Asthma using SMART therapy
7. Operate Respiratory devices
8. Manage acute severe Bronchial Asthma
9. Provide patient education on -Self-monitoring and How to control the trigger of Bronchial Asthma

B. COPD

1. Describe the clinical features of COPD
2. Screen the COPD cases using Gold criteria
3. Conduct the pulmonary function test (Spirometry Peak expiratory flow meter)
4. Interpret the chest X-ray and pulmonary function test and laboratory parameter report
5. Diagnoses COPD
6. Differentiate COPD from its mimicker
7. Assess the severity of COPD
8. Describe Pharmacotherapy and Nonpharmacological management of COPD
9. Outline the long-term oxygen therapy in COPD
10. Describe the management of Acute exacerbation of COPD
11. Outline the Pulmonary rehabilitation.

Module 2: Cardiovascular diseases

A. Acute rheumatic fever and Rheumatic heart disease-

By the end of this module participants will be able to -

- Enumerate the Clinical features of Rheumatic Fever
- Diagnose Rheumatic Fever cases
- Outline treatment Of Acute Rheumatic Fever
- Describe Prevention of Rheumatic Fever

B. Hypertension

By the end of this module participants will be able to –

- Describe the clinical features of hypertension
- Identify the target organ damage secondary to hypertension
- Diagnose hypertension based on clinical features
- Describe the management of Hypertension
- Identify t h e Secondary cause of Hypertension

C . Ischemic heart disease

By the end of this module participants will be able to -

- List Clinical features of Chronic Stable Angina and Acute coronary syndrome
- Describe the risk factor for Ischemic heart disease
- Ddentify Electrocardiogram changes in Ischemic Heart disease
- Outline the utility of cardiac biomarker for diagnosis of ACS
- Identify the role of Echocardiography in IHD
- Describe the management of Ischemic heart Disease

D. Congenital heart disease:

By the end of this module participants will be able to -

- Describe symptoms and signs to suspect congenital heart Disease
- Identify Electrocardiogram and X-ray Chest features of Common Congenital Heart disease
- Outline the Management of Hyper cyanotic spells

Module 3: Endocrinology

Diabetes type I and Type II

By the end of this module, participants will be able to

- Describe the pathogenesis of type 1 and type 2 diabetes mellitus
- Enlist clinical presentation of diabetes mellitus
- Carry out Screening of asymptomatic patients
- Interpret the fasting, post-prandial blood glucose and HbA1C report
- Interpret the 75-g oral glucose tolerance test report for diagnosing gestational diabetes mellitus
- Interpret blood pressure, lipid profile report
- Identify Pre-diabetes, Diabetes Mellitus and Gestational Diabetes
- Anticipate and diagnose hypoglycemia
- Outline the Assessment of glycemic targets and individualization
- Initiate Pharmacotherapy in diabetes mellitus
- Initiate insulin therapy in diabetes mellitus
- Screen for complications
- Prescribe medical nutrition therapy, exercise and behavioral therapy
- Counsel patients on non-pharmacological therapy

Module 4: Oncology

By the end of this module participants will be able to -

- Identify risk factors for common cancers.
- Differentiate between Invasive and preinvasive cancers.
- Enlist common signs and symptoms associated with cancer.
- Differentiate between screening and early diagnosis
- Enlist common childhood cancers.
- Describe sign and symptoms associated with some common childhood cancers and importance of early referral.
- Identify warning signs and symptoms associated with childhood cancer and the need for early referral.
- Counsel the parents of the children prior to referral who are newly diagnosed or receiving cancer treatment.
- outline difference between benign and malignant breast lump.
- Describe various risk factors associated with breast cancer.
- Describe the steps of self breast examination and clinical breast examination
- Enumerate the risk factors for oral cancer.
- Identify common pre-cancerous lesions and cancerous lesion of oral cavity.
- Provide Behavourial counseling with regards to risk factor for oral cancer.
- outline difference between benign disorders of cervix and cervical malignancy.
- Identify risk factors associated with cervical cancer.
- Interpret the results of cervical cancer screening with VIA.
- Describe Preventive measure of cervical cancer including vaccination for cervical cancer prevention
- Define Palliative care and common symptoms for palliation encountered in cancer patients.
- -Define pain and assessment of pain via pain tools.
- Describe the management of pain with 3 ladder pattern of pain management.
- Identify dosing of all forms of Morphine along with assessment of morphine dose for breakthrough pain.
- Identify management of common adverse events of morphine

Module 5: Hemoglobinopathies

A. Sickle cell disease

By the end of this module participants will be able to -

1. Describe the burden of SCD in the World and Nepal
2. Outline the pathogenesis of SCD
3. Describe the different genetic and environmental factors affecting clinical features of SCD
4. Ouline the differences of Genotypes and haplotypes in SCD

5. Screen asymptomatic patients/clients
6. Interpret CBC, PBS, Reticulocyte count, Sickling test, sickle solubility test, Hb Electrophoresis test and different Hb HPLC reports,report for diagnosing SCD
7. Identify Sickle cell trait, beta Thalassemia trait, beta thalassemia major, Hb E disease and trait, other haemoglobinopathies, Probability of Alpha thalassemia(HbH disease) from Hb HPLC reports
8. Describe the Anticipating and diagnosing sickle cell trait in SCD patients after blood transfusion
9. Outline Assessment of treatment and individualization
10. Identify initiation of Pharmacotherapy(Hydroxyurea) in SCD
11. Describe Titratation and monitoring toxicity of hydroxyurea therapy in SCD
12. Screen for acute painful complications of SCD
13. Prescribe Pain killer safely and adequately in chronic pain and acute pain in SCD
14. Demonstrate HB HPLC reporting technique
15. Demonstrate different Hb HPLC reports and uses
16. Demonstrate genetic counseling regarding risk of SCD/Haemoglobinopathy
17. Demonstrate counseling regarding pain management pharmacological management of SCD

B. Thalassemia

By the end of this module participants will be able to -

- Describe the burden of Thalassemia in the World and Nepal, Micromapping
- Ouline the pathogenesis of Thalassemia
- Describe the clinical features of Thalassemia
- Identify Alpha and beta Thalassemia
- Carry out Screening of asymptomatic patients/clients
- Interpret CBC, PBS, Reticulocyte count, Hb Electrophoresis test and different Hb HPLC reports for diagnosing Thalassemia
- Make a diagnosis of beta Thalassemia trait, beta thalassemia major, Hb E disease and trait, other haemoglobinopathies, Probability of Alpha thalassemia(HbH disease) from Hb HPLC reports
- Identify Need of genetic testing for alpha thalassemia diagnosis
- Describe Prenatal diagnostic features
- Outline Assessment of treatment and individualization
- Initiate Iron chelation in Thalassemia
- Titrate and monitor toxicity of Iron chelation therapy in Thalassemia
- Demonstrate HB HPLC reporting technique
- Demonstrate different Hb HPLC reports and uses
- Demonstrate genetic counseling regarding risk of Thalassemia/Haemoglobinopathy
- Demonstrate counseling regarding the pharmacological management of Thalassemia

Course duration:

Self-paced learning – 1 month with virtual session upon completion of each module.

Onsite group based training –7 days

Training Methods-

- Virtual sessions
- Interactive presentations
- Demonstrations
- Discussions
- Case studies and role-plays
- Skills-practice with coaching and feedback
- Clinical simulations

Certification criteria:

To be awarded a certificate of completion, the participant must achieve all criteria -

- Complete the pre-course knowledge assessment
- Complete selfpaced learning as per the provided outline
- Attend all the virtual sessions
- Attend all session of onsite group-based sessions total days with hours
- Score 85% in final knowledge assessment of all the modules
- Perform skill satisfactorily and satisfactory completion of logbook

Trainer's criteria:

- Trainers/Mentors are must have an MD in respective subjects (Internal medicine, Cardiology, endocrinology, oncology, hematology, pulmonology, pediatrics, Cardiology in pediatrics, in pediatric endocrinology, pediatric oncology, pediatric hematology, and pediatric pulmonology).
- Physicians, general practitioners, and pediatricians with skills standardization in PEN-Plus with CTS/TOT- with 2 Co- training experiences.
- They must be currently providing service at PEN Plus sites.

Participant's criteria:

- MD General practice, Internal medicine, pediatrics
- MBBS graduate (Medical officers)
- Registered in NMC

Learning resource package (LRP):

The trainer's guide consists of a n introduction, schedule, detailed session plans, skill checklist, and algorithms and answer keys.

The Facilitators guide will consist of introduction, schedule and reference materials for each session, skill checklist, exercises, and algorithms and answer keys.

Evaluation

- Pre-course knowledge assessment at the beginning of the course to identify the learning need of the participants.
- Self-paced learning and exercise completion.
- Post-course knowledge assessment at the end of each module using MCQs
- Skills performance using checklist
- Logbook evaluation for the satisfactory achievement of specified competencies will be evaluated for ECG and ECHO skills.
- Decision-making skills by evaluation using case studies
- Attitude (professionalism) evaluation by using role-plays and real client practice

Self -Paced Course Outline

Using the Self-Paced

The self-paced course is structured for self-study and supported by your facilitator (mentor). Activities are listed in a suggested weekly schedule; however, learning should be done whenever you have the opportunity. You may not be able to complete all activities in the suggested week, and this is all right. Try to make effective use of the meeting with your facilitator virtually to get answers to your questions and clarify information to help you.

Steps to Follow During Self-Paced Learning

1. Receive the training materials.
2. Pen Plus Protocol—Reference Manual
3. Learners guide
4. Communicate with your trainer/mentor, as per the requirement.
5. Read all chapters from the PEN Plus Protocol and complete all exercises and case studies in the learners guide (in the spaces provided), as instructed in the course outline.
6. If you have any queries, make a note to discuss them with your facilitator during the virtual session and group-based training or you can call your designated facilitator too. Virtual sessions are mandatory.

Note that all exercises and case studies are given in the learners guide (after each course outline for each chapter

List of equipment and supplies required for the training

S.N.	Items	Numbers
	Respiratory	
1	Spirometry	2
2	Peak flow meter	2
3	Respiratory device: MDI, MDI with spacer, Rotahaler, revolizer	2
4	Mouthpiece spirometer per device	50
5	Mask for MDI per device	50
	Cardiology	
1	ECHO	1
2	ECG	1
3	BP cuff and stethoscope	2
4	Lab reports for discussion	2
5	WHO risk prediction chart	15

Endocrinology		
1	Glucometer with battery	2
2	Spirit swab	50
3	Strips	50
4	Needle	50
5	Insulin injector	2
6	Insulin vial	2
Hematology		
1	Hb HPLC	2
2	Lab reports for discussion	2
Oncology		
1	Ophthalmoscope	2

Schedule of PEN-Plus Training

Self-paced and Virtual Sessions of all modules

Duration	Activities
1 day	Official Launch of PEN-Plus Training
3 days	Module 1 self paced
7 days	Module 2 self paced
3 days	Module 3 self paced
75 minutes	Module 1 virtual session
75 minutes	Module 2 virtual session
76 minutes	Module 3 virtual session
3 days	Module 4 self paced
3 days	Module 5 self paced
4 days	Module 6 self paced
75 minutes	Module 4 virtual session
76 minutes	Module 5 virtual session
77 minutes	Module 6 virtual session
1 day	Training Assessment(Online test)

On-Site sessions on all modules

Time	Minutes	Activities/Content
Day One		
08:00-08:15	15	Registration with Tea
08:15-08:35	20	Opening session and introduction
08:35-09:00	25	Objectives and importance of PEN-Plus ToT
09:00-09:15	15	Pre-test assessment
Module 1: Bronchial asthma		
09:15-10:15	60	Case scenario
10:15-11:40	85	Skill session: Spirometry, peak flow meter, MDI, MDI with spacer, rotahaler, revolizer, MDI with spacer with baby mask
11:40-12:20	40	**Healthy Lunch**
12:20-12:35	15	Role play on patient education and counselling
12:35-13:05	30	Role play on SMART therapy for Bronchial asthma
Module 1: Chronic obstructive pulmonary disease		
13:05-13:35	30	Case scenario
13:35-13:50	15	Tea Break
13:50-14:20	30	Role play for smoking cessation therapy
Module 2: Cardiovascular diseases		
14:20-15:00	40	Hypertension: Case scenario
15:00-15:40	40	Role play on DASH diet
15:40-17:05	85	Acute rheumatic fever (ARF) and Rheumatic heart disease (RHD): Case scenario
17:05-17:45	40	**Healthy Snacks**
Day Two		
7.45-8.00	15	Registration with Tea, Welcome and Review of Previous Day

8:00-9:10	70	Congenital heart disease: Case Scenario
15:00-16:00	60	Ischemic heart disease (IHD): Case scenario
16:00-17:15	75	Ischemic heart disease (IHD): Case scenario
17:15 onwards		**Healthy Snacks**
Day Three		
Module 3: Endocrinology (Diabetes mellitus)		
7.45-8.00	15	Registration with Tea, Welcome and Review of Previous Day
8.00-8.30	30	Role play: Diabetes self management education
8.30-9.00	30	Role play: Diabetic foot
15.00-15.20	20	Group Discussion: Diabetes advocacy for prevention of DM and obesity in society
15.20-15.40	20	Group discussion: Complications of diabetes
15:40-17:00	80	Case scenarios (Scene 5-8)
17:00 onwards		**Healthy Snacks**
Day Four		
7.45-8.00	15	Registration with Tea, Welcome and Review of Previous Day
8:00-9:00	60	Case scenarios (Scene 9-11)
15:00-16:00	60	Case scenarios (Scene 9-13)
16:00-16:30	30	Skill session: Demonstration of glucometer use, insulin injection technique
16:30 onwards		**Healthy Snacks**
Day Five		
Module 4: Oncology		
7.45-8.00	15	Registration with Tea, Welcome and Review of Previous Day
8:00-8:05	5	Introduction to Oncology Onsite Learning
8:05-8:15	10	Introduction of the cancer and risk factors associated with common cancers.
8:15-8:45	30	Introduction to childhood cancers and danger signals warranting early referral to tertiary centers.
8:45-9:15	30	Role play
15:00-15:15	15	Case scenario
15:15-16:25	70	Introduction of the breast cancers and risk factors associated with the breast cancer: Case scenario
16:25-16:35	10	Introduction of oral cancer, its risk factors and identification of pre-cancerous and cancerous lesions: Case scenario
16:35-17:15	40	Introduction of cervical cancer, its risk factors, signs/symptoms and screening with VIA: Case scenario
17:15-17:20	5	Introduction to Palliative care, pain and management of pain: Case Scenario
17:20 onwards		**Healthy Snacks**

Day Six		
Module 5: Hemoglobinopathies		
7.45-8.00	15	Registration with Tea, Welcome and Review of Previous Day
8.00-8.10	10	Introduction to Onsite Learning
8.10-8.30	20	Case scenario
8.30-8.55	25	Role play: Thalassemia counselling
8.55-9.00	5	Review of the day
15:00-15:10	10	Introduction to Onsite Learning SCD
15:10-15:40	30	Discuss the following using PowerPoint slides: Interpreting the Lab Reports
15:40-16:00	20	Role play 1
16:00-16:20	20	Role play 2
16:20-16:30	10	Case Study
16:30-16:45	15	Genetic counselling using Thalassemia/ SCD Kundali
16:45-17:05	20	Exercise of probability using Punnet square
17:05 onwards		**Healthy Snacks**
Day Seven		
Module 6: Essentials of Care and Practice		
7.45-8.00	15	Registration with Tea, Welcome and Review of Previous Day
8.00-8.05	5	Introduction to Onsite Learning
8.05-8.20	15	Activity 1: Barriers of Communication
8.20-8.30	10	Activity 2- Modeling Effective Communication Skill
8.30-8.40	20	Activity 3: First Level Response
8.40-8.55	15	Activity 4. Psychoeducation and Summarize the session
Module 6: Neurodevelopmental disorders		
15.00-15.20	20	A brief introduction to the outline of the sessions Activity 1: Identifying Intellectual Disability
15.20-15.35	15	Activity 2: Identifying Autism Spectrum Disorder
15.35-15.50	15	Activity 3: Identifying Attention Deficit Hyperactivity Disorder
15.50-16.15	25	Activity 4: Epilepsy
16:15-17:15	60	Case scenario
17:15-18:15	60	Case scenario
18:15-19:00	45	Closing
19:00 onwards		**Healthy Snacks**

Facilitating PEN Plus Training

Developing Competency among the learner

Below are the key points that the facilitator should reinforce below are key points that the facilitator should reinforce, by questioning learners about them or presenting them during discussions, to ensure that learners understand.

Competency Development.

In the process of developing competency development:

- Knowledge is -presented and opportunities to apply knowledge are provided in simulation and during clinical practice.
- Skills, including psychomotor skills, clinical decision-making skills and communication skills,- are described, demonstrated, practiced and assessed, first in simulation and later with clients.
- Attitudes- are modelled, explored, clarified and revised—both through a formal review of professional ethics and through informal behaviour modelling and self-assessment, first in the classroom, then in the clinic. No matter what type of skill is being taught, practice and feedback are needed to develop competency in that skill.
- Competency is the desired phase of skill development before services are provided to actual clients.
- The facilitator should use questions and feedback to help learners analyses or apply, not just recall, information.
- Feedback should be timely, specific and constructive.
- The facilitator should use an assessment tool to outline steps, highlight the most critical steps and bring objectivity to the assessment process. (The tool can be a checklist, protocol, counselling guide, etc.)

Learning is a partnership between the facilitators and learners.

The development and achievement of competency is responsibility and reward that they share. To facilitate means to make easier things easy or easier to learn. In the role of facilitator, the trainers aims to make learning easy or easier for learner. Though she/he does not over simplify information by bringing course content down to a lower level than it is. She/he has to do by enhancing the capability of learners through building a positive learning environment and using a variety of facilitation methods / techniques that are consistent with evident based learning principles.

Here are some tips and techniques which are helpful to facilitators are described in brief.

In trainings facilitator has to deal with the adult learners so it is highly important to identify certain characters of adult and use it. By knowing the adult character it will become easier to deal they and the facilitation become effective.

Adult learning

Adult learners;

1. Have high expectation for themselves and their trainer
2. Learning is more productive when they are ready to learn. For this they need a positive learning environment.
3. Are highly motivated to learn if they believe learning is relevant. They need to

be aware of what they need to learn, why it is important to them and how it relates to their work.

4. Desire variety in learning methods and techniques and also to participate and actively involved
5. Appreciate when learning builds on what they already know or have experienced.
6. Require ample opportunity to practice to learn
7. Have personal need and concerns that must be considered.
8. Desire to respect for their self-stem. Although immediate, ongoing feedback is essential to learn. It must be positive, constructive and non-judgmental. They must feel confident they can succeed.

How something is said is as important as what is said. A trainer can make things easier to learn by

1. Creating a positive learning environment
2. Using the effective facilitation Skills and
3. Following a facilitation process

Creating a positive learning environment

Creating positive learning environment or atmosphere of capability is one of the major goals of facilitation. To help learners feel that achievement is within reach the effective facilitator

1. **Is clear and explicit about what is to be achieved**- let them know what they need to learn during the course.
2. **Builds logically and gradually** from simpler concepts and task to more complex
3. **Provides encouragement as well as positive specific and constructive feedback-** reinforcement for correct answer / correct way of doing something and suggesting specific way to improve.
4. **Creates an atmosphere of honesty and openness –** encourages learner to admit when a concept is difficult and unclear, admits when she/he doesn't know something , assuring learner that she/he will find the answer and get back to them (no one could be the source of all knowledge)
5. **Encourages discussion-** guides discussion, identifies barriers to learning and solution. Enable learners to learn from each other's related experiences and area of expertise.
6. **Request and responds to feedback from learners-** must not afraid to receive opinion of learners and make changes based on learner feedback as appropriate.

Basic Facilitation skills

During a training or session, the trainers must be comfortable facilitating a variety of learning activities (presentation, case study, and role play etc.) to develop knowledge, skills and attitude in the learners. To become an effective facilitator/ trainer one can use a range of techniques to involve learners, maintain interest and stay on track. These are

1. **Follow a plan**- which includes session objectives, introduction, body, activity, audio visual reminders, summary and evaluation. Prepare and use trainers note to enhance the execution of plan.
2. **Communicate in a way that is easy to understand**- A trainer should use simpler words, familiar words instead of jargon and acronyms of new content or subject.
3. **Maintain eye contacts with learners**- use eye contact to read faces. This is an excellent techniques for establishing rapport and getting nonverbal feedback on how learners understand

content

4. **Project your voice**- so that those in the back of the room can hear clearly. Vary volume, voice pitch, tone and inflection to maintain learner's attention. Avoid using a monotone voice, which is guaranteed to put learners to sleep.
5. **Display enthusiasm about the topic and its importance**- Smile, move with energy and interact with learners. The trainer's enthusiasm and excitement are contagious, directly affecting the morale and motivation of learners.
6. **Move around the room-** Moving around the room helps to ensure that the trainer is close to each learner at some time during the session. It is a good way for eye contact which keeps learner active.
7. **Use appropriate audio visual aids**
8. **Ask simple and challenging questions**
9. **Provide positive feedback**- it will encourage them
10. **Use learners name as often as possible-** This will foster a positive learning climate and help keep the leaners focused on presenter
11. **Display a positive use of humour**
12. **Provides smooth transitions between the topics / activities-** within a given presentation or training session a number of separate but related topics or activities may be included. When shift between topics or activities are abrupt, learner become confused and lose sight of how everything fits together in the bigger picture. The trainer must ensure the transition from one activity to next. This could be done by- brief summary, a series of questions or relating content to practice etc.
13. **Be an effective role model –** Trainers must be a positive role model in dress, appearance, manner and enthusiasm for the training course.
14. **Begin and finish at the schedule time –** keeping on time by trainers sets as example. Allowing you to expect/request that learners to do so as well.
15. **Use your time and other resources wisely-** It is important, then spend time on it. If not the content is already understood, do not bore the group by discussing/ repeating unneeded information.

The facilitation process

In addition to create a positive a learning environment, largely through applying basic facilitation skills the trainer should become proficient in the facilitation process. It is a sort template that applies to the course as whole and all training session / activities that trainer conducts. . In brief the process involves – introducing, conducting and summarizing the session/activities in a way that engages and enables the learners to get the most out of it. The process is described below-

1. Introducing training session / learning activities

The first minutes of initial part of the session are critical. Therefore effectively introducing training session or learning activities is an important component in the process.

The introduction should include:

- Review the learning objectives / goals of the activity
- Capture the interest of the entire group and prepare learners for information/task that follows
- Make learner aware of trainer's expectations including detail instructions if applicable
- Help maintain a positive learning environment

Sample Techniques to generate interest and enthusiasm about the topics -1.

- Ask series of questions about the topic
- Share a personal experience (topic related)
- Show a videotape

2. Conducting (facilitation) training session / Learning activities

Once a trainer has provided effective introduction, the learners are interested and know what to expect and do, trainer can begin

Conducting the session /learning activity. This is the main component of the facilitation process where trainer has. During this trainer has to shift into the coaching role. Coaching involves use of questioning as well as feedback and active listening .Use of effective Audio visual aids and interactive techniques are also important. This is the main component of the facilitation process where learner and trainer need to work together to develop and assess learners competency.

Effective facilitation of an activity should:

- Engage the learner on many level (visually, cognitively, physically etc.)
- Balance focusing on a specific topic or task with flexibility, allowing room for creativity and exploration.
- Be a two way process where both the facilitator and learner have role to play.
- Maintain a positive learning environment

4. Summarizing the training session /learning activity

After the trainer has facilitated a session, she/he should provide a brief summary. An effective summary is the final critical component in the facilitation process which should

- Be brief
- Reinforce key content and draw together the main points
- Involve engage the learners (through questioning, games)
- Transition into next topic or activity
- Highlight the overall all relevance (e.g. to what they will be doing at work place.

Effective use of questioning

Questioning can be used at any time to introduce the topic, stimulate discussion, engage the learners and assess learners understanding.

A. Use a variety of questioning techniques and to avoid same pattern as follows -

1. Ask question to entire group- the advantage of this technique is that those who want to volunteer may do so but some learner may dominate while other learner may not participate
2. Target the question to specific learner by using that individual's name before asking the question- the learner is aware that a question is coming, he/she can concentrate on the question and respond accordingly. The disadvantage is that once a specific learner is targeted other learner may not concentrate in the question.
3. State the question, pause and then target the question to a specific learner – All learner must listen to question in the event that they are asked to respond. The primary disadvantage is that the learner receiving the question may be

caught off guard and ask the trainer to repeat the question.

4. Use learners name in general during questioning – this is a powerful motivator and also helps to keep all learners involved.

B. Response appropriately to learners correct incorrect or lack of response

1. When a learner provides a correct answer:

- Provide positive reinforcement for responses to keep the learner interested in the presentation. Positive reinforcement may be in the form of- praise, displaying the work or restating the answer, using positive facial expressions, nods or other nonverbal actions.
- Repeat the learners correct answer / response- this provides positive reinforcement to the learner and allow rest of the group to hear the response.

2. When a learner's response is partially correct –

- Reward the correct portion and then improve the incorrect portion or you can redirect a related question to that learner or another learner.

3. When a learner's answer is incorrect –

Make a non-critical response and then restate the question to guide the learner to the correct response. If that learner cannot respond the right answer redirect it to another learner.

4**. When a learner makes no attempts to respond-**

Restate the question to guide the learner to the correct response or redirect the question to another learner. After receiving the desired answer be sure to draw the original learner into the discussion.

C. Be prepared to respond to learners question as well

When a learner ask question as a trainer you have three options- answer the question, respond with another question or defer the question but offer a rational for doing so . The trainer must draw on personal experience and ready knowledge to determine which option is appropriate in each situation.

- **When you can answer the question-** when the question is based on the current topic, it represents a valuable opportunity for learning. If appropriate try answering by asking the learner another question.
- **When you are unable to answer a question-** acknowledge it(admit not to knowing the answer) but explain that you will look into it and get back to the learners as soon as evidence based explanation can be found.
- **When learners ask questions that will guide the discussion away from the topic-** you must decide whether or not answering the question and allowing the ensuing discussion will be valuable.
- When learner will benefit and time permits you may wish to the new line of discussion but in a limited manner.
- If you do not think learners will benefit, you must move discussion back to topic, offering a rational to help keep the discussion going and protect learner self-esteem/ confidence. You can ask the learner to discuss it in the recent break.

Effective use of feedback

During any learning activity feedback is the most important component of effective facilitation. You may deliver feedback differently depending on the type of learning activity

If using either paper based or computer – facilitated exercise to reinforce knowledge, you may provide written feedback

In group setting, you provide feedback on answers provided and learner contribution to discussion. During discussion and presentations, feedback will be short. If it is for specific learner feedback will be more depending upon the situation.

No matter what the situation here are some basic rule for providing feedback:

1. **Be timely -**whenever possible, give feedback immediately after an answer to a question or a practice session
2. **Be specific, positive as well as constructive –** this is challenging for trainers. Feedback is only useful as it is specific. Firstly describe what was well done (positive) then what could be done better (constructive) – providing specific tips or guidance on how to improve. Use reference manuals or learning aids to help keep your feedback specific.
3. **Speak for yourself-** own your feedback. Even if training with others, use I not we when providing feedback. And start your comment with I rather than you especially when providing corrective feedback.
4. **Model receiving feedback for the learners-** demonstrate good behaviors related to receiving feedback. Ask for feedback about an activity, accept it and thank for it. Don't be afraid to ask for suggestion about how to improve and then demonstrate changes as a result of the feedback.

Effective use of active listening

Active listening is a powerful communication tool that can be used any time to shape learning and reinforce correct information, good practice and positive attitude in a supportive way.it can also draw the learner out to explore and expand further on their thought process, beliefs and feelings. When actively listening it is important to

1. Maintain a non-judgmental tone even you disagree
2. Refrain from question that have only one correct answer
3. Ask open non leading question
4. When asking probing questions avoid making it sounds like you are cross examining or doubting the learner
5. Ask for clarification when needed
6. Identify with learner's emotions

Effective use of Audio-visual aids

Audio-visual aids helps trainers to communicate information clearly and maintain learner interest. For example writing on a board or using diagrams in presentations reinforces or supplement course content. Audio-visual aids are useful not only for presentations but also for other learning activities like demonstration, introduction or summarizing the training session too. Examples of Audio-visual Aids –

- Paper hand out
- Writing boards
- Flip charts

- Computer graphics / Slide presentation
- Videos

Basic rules for Using Audio visual aids –

- Prepare and or review aids before hand, if possible and appropriate, particularly if they are complicated
- Make sure aids are easy to read (not overcrowded with text or design elements)
- Use them to emphasize important information (further emphasis can be achieved with underlining, boldface etc.)
- Always check any equipment needed ahead of time
- Make sure aids are visible from anywhere in the room
- Always face and focus the learners not the aids. And use text provided as prompt not a script to be read aloud.

GUIDE FOR USING AUDIOVISUAL AIDS (JOB AID)

Follow these steps to select and use visual aids:

1. Select one or more of the following visual aids for use during your course:
   - Paper hand outs
   - Writing board
   - Flip chart
   - Computer graphics/slides (e.g., PowerPoint)
   - Video
2. Follow the guidelines in this module to develop your visual aids.
3. Practice using your visual aids in advance.
4. Set up or prepare your visual aids in the room before the learners arrive.
5. Check that all audio-visual equipment is working before the learners arrive.
6. Make sure that all learners can see the writing board, flip chart, screen, videomonitor, etc.
7. Prepare any copies of hand outs in advance and have them in the room when thelearners arrive.
8. When appropriate, have questions or instructions for exercises (e.g., case studies,role plays) prepared for use after using the visual aids.
9. When appropriate, include questions related to information delivered through thevisual aids (e.g., key points from a video) on tests/knowledge assessments.
10. Make notes about how effective the visual aids were in helping the learners learn,and how you might use the visual aids in future presentations.

Tips for facilitating some learning activities

Apply basic facilitation skills and the facilitation process of introducing, conducting and summarizing for each learning activity discussed. The following tips focus on guidance that is specific or especially critical to given activity.

Interactive Presentation

- An effective presentation can be one of the most rewarding aspects of the training and

learning experience.

- The goal of a presentation is to help a variety of learners, each with a unique learning style, gain new knowledge and integrate that knowledge with their practice.
- The trainer who is able to keep learner engaged with an existing dynamic delivery using a variety of learning techniques is more likely to be successful in helping learner progress from basic understanding of concepts to applying them to practice.
- In addition using basic facilitation skills and adhering to basic facilitation process, here are some tips that are especially relevant to interactive presentations,
- To keep things interesting, enhance learning and maintain energy as well as assess learner's understanding-

- Builds in group/small group activities – such as discussions, case study or short games
- make ample use of coaching techniques – Asking questions and providing feedback frequently make presentations less one way and more interactive
- Move around the room- keeping moving helps to ensure that you are not blocking view of any learners. Moving towards learner also serves to reinforce certain learner behaviors (asking / answering questions) and discourage others (e.g. Having side conversation)
- Use Audio visual Aids but remember not to pay more attention to them than the group
- Spend no more than 45 minutes on a given presentation , learner will begin to lose attention no matter how important the topics

Group activities

Building on the basic facilitation process, tips for conducting group/ small group activity-

Before dividing the learners into the groups

- Clearly describe the activity to all learners, specifying exactly what individual in the group are supposed to do. Explain how they should keep notes or write decisions, recommendation etc.,
- Suggest how each group discussion should be reported back to the larger group
- Provide them time limit

While the groups are at work

- Move among the learners to monitor the progress
- Remind learners of time and task
- If needed offer suggestion to the groups that are having difficulties or straying from main task.

After the groups have completed their activity, bring them together to report back to the larger group and discuss the activity. This may involve:

- Oral reports
- Responses to questions
- Role plays (developed by learners in small groups and presented to the large group)
- Recommendations

Always summarize the group activity by stressing main points and relating them to the learning objectives

Brain storming sessions

Brainstorming stimulates thoughts and creativity and as used as basis of group discussion or an

introduction of an activity/topic.

It rapidly generate list of ideas thoughts or possible solution that focuses on specific topic or problem for a certain period of time.

The key to successful brain storming is to keeping it dynamic/creative. Fun and useful.

In addition to using basic facilitation process here are some tips that are especially relevant to brain storming.

Before the brain storming session –

Explain ground rule – there are three basic rules

1. All ideas /thoughts/ suggestions are accepted(added to the list)
2. All discussion of the ideas / thoughts/ suggestions is deleyed until the list is generated
3. No criticism of ideas/thoughts / suggestion is allowed

Clearly state the objectives of the brainstorming session to keep it focused.

During the brainstorming session

- Maintain a written record on a flip chart or writing board/computer – this will prevent repetition,
- keep learner focused on the topic and useful when it is time to discuss
- Provide opportunity to everyone
- Involve all learners and provide positive feedback in order to encourage more input,
- Avoid allowing a few learners to monopolize the session, and encourage those not offering suggestion

Conclude

By reviewing, discussing and evaluating the ideas.

Conducting Group discussion sessions

A group discussion is an opportunity for learners to share their ideas, thoughts, questions and answers in a group setting with a facilitator. A discussion that relates to the topic and stays focused on the learning objectives can be a very effective teaching method. Guide the learners as the discussion develops and keep it focused on the topic at hand. In addition to group discussion that focuses on the learning objectives, there are two other types of discussions that may be used in a learning situation:

- **General discussion** that addresses learners'questions about a learning topic. For example, a learner asks about a situation she observed in the clinic. You decide that this is an important question and therefore devote five minutes to a general discussion.
- **Panel discussion** in which a moderator conducts a question-and-answer session among panel members (e.g., clinicians, patients, recent graduates from the same training) and learners.

In addition to using basic facilitation skills and adhering to the basic facilitation process, here are some tips that are especially relevant to group discussion.

Note: Plan for discussion by determining the objectives of the activity, considering what learners already know about the topic (too much and the discussion may be pointless, too little and it may be hard to keep going), making sure that there is a way to record responses and suggestions (e.g., flip charts, writing boards).

Before the group discussion (as part of your introduction) —

- Have a very clear idea in mind of what the group will discuss and what you hope to gain through the discussion. State the topic/objective as part of the introduction (you may even want to write it on a flip chart or board). *Example*:

  -To conclude this presentation on counseling the sexually active adolescent, let's take a few minutes to discuss the importance of confidentiality.‖

- Make the time limit very clear, as discussions may be difficult to end once they gain momentum.

During the group discussion (as part of conducting)—

- Continually **shift the conversation to the learners**, ensuring that everyone has a chance to share their thoughts. Actively engage quieter learners by asking them specific questions, while keeping others from dominating. *Examples*:

  -Abdul, would you share your thoughts on...?‖

  -Srijana, I can see that you have been thinking about these comments. Can you give us your thoughts?‖

  -Another interesting point, Dr. Om, Malati, do you agree?‖

  -Jivan, you have contributed a great deal to our discussion. Let's see if someone else would like to offer..... ‖

- Allow the group to direct/lead the discussion, if appropriate, but **act as a referee**, interceding only when necessary to ensure that the discussion stays on the topic at hand. *Example*:

  -It is obvious that Alain and Ilka are taking opposite sides in this discussion. Alok, let me see if I can clarify your position. You seem to feel that..... ‖

  -Monica, would you clarify for us how your point relates to the topic?‖

  -Let's stop for a moment and review the purpose of our discussion.‖

A poorly directed discussion may move away from the subject and never accomplish the learning objectives. If the trainer does not keep the objective firmly in mind and maintain control over the direction of the discussion, a few learners may dominate the activity while others lose interest.

- **Summarize the key points of the discussion periodically**, providing feedback on learners' comments when appropriate. *Examples:*

  -Let's stop here for a minute and summarize the main points of our discussion.‖

  -Actually, confidentiality is essential for counseling and testing for HIV. Can anyone tell me why?‖

- **Acknowledge the contributions of each learner and provide positive reinforcement.** Point out differences or similarities among the ideas presented by different people. Encourage interaction. *Examples:*

  -That is an excellent point, Rasmi. Thank you for sharing that with the group.‖
  -So, Om, you would support Malati's statement about the practice, but hold a

different opinion about….‖

-Rabindra has a good argument against the policy. Bigyan, would you like to take the opposite position?

Educational Games and Exercises

Educational games and exercises are a great way to check learners‘understanding of key points, generate discussion and foster changes in attitude—energizing the group at the same time.

Unlike warm-ups and ice-breakers, whose sole purpose is to energize and foster cohesion in the group, this type of activity should be directly tied to course objectives and may add excitement through an element of playfulness or competition.

Games/exercises can be developed for large groups, small groups or even individuals working on their own.

Examples of games/exercises that may be readily adapted to specific learning objectives include: races and other competitions, debates, word puzzles, matching games, simulation/role play-related games and board games.

In addition to using basic facilitation skills and adhering to the basic facilitation process, here are some tips that are especially relevant to educational games/exercises.

Before the educational game/exercise (as part of your introduction)—

- Make sure -ground rules‖/expectations, instructions and the point of the activity (i.e., that it is not all about having fun) are perfectly clear.
- Announce the availability of small prizes (e.g., candy, colored pens), if available and appropriate, for -winners/winning team‖—to add to the fun and encourage full participation.

During the educational game/exercise (as part of conducting)—

- Try not to intervene while the game/exercise is under way, except to help the activity stay on track and to handle unexpected situations that might arise (confusion, arguments, etc.).

After the educational game/exercise

- Acknowledge the participation
- Clarify the confusions
- Highlight the important information

Conducting case study sessions

Case studies are…*Scenarios designed to meet specific learning objectives*

- Case studies present realistic scenarios/situations that focus on a specific issue, topic or problem, which may be related to the diagnosis or treatment of patients, interpersonal skills, or any of a wide range of managerial or organizational problems.
- Learners typically read, study and react to the case study individually or in small groups.
- In addition to using basic facilitation skills and adhering to the basic facilitation process, here are some tips that are especially relevant to case studies.

Effective case studies:

- Have clear objectives
- Have clear instructions
- Help learners analyze, not just repeat information

Ask learners to:

- Respond to a clinical situation with specific interventions
- Evaluate clinical decisions made
- Identify impact of decisions
- Analyze causes of a problem
- Identify attitudes that may impact behavior

Tips for conducting case study

Before (introduction)

- *Provide case scenario*
- *Ensures that the learners have understood the case scenario for the analysis*
- *Allow time to prepare*
- *Ensure each learner is engaged occupied*

During (conduction)

- *Ask learner to response- Questions the learners in each step for **assessment, diagnosis, care provision and evaluation** of the case scenario*
- *Responds the learners with positive reinforcement and corrective feedback in each steps*
- *Use probing Question*
- *Provide alternative /hypothetical scenario*

After (summarization)

- Summarizes each steps and help develop clinical decision making skills
- Reinforce key points for the clinical decision

Conducting Role Plays sessions

- In a role play, learners play out different roles or parts—such as of a patient and a provider— in a simulated situation.
- Role plays promote learning through behavior modeling, observation, feedback, analysis and conceptualization.
- They are also often useful for exploring, discussing and influencing the behaviors and attitudes of learners, as well as for helping learners develop skills such as history-taking, physical examination and counseling.
- In addition to using basic facilitation skills and adhering to the basic facilitation process, here are some tips that are especially relevant to role plays.

Before the role play (as part of your introduction)—

- Brief the learners on their roles.
- Although a role play is typically brief and to the point, it usually provides learners with questions or activities to help them to focus on the main concept(s) being explored. Review these together.
- Explain what the other learners (those not playing a role) should be looking for during the role play and how to document and share their feedback afterward. For example: Should they observe for verbal communication skills? Nonverbal communication? The use of questioning?
- Provide time duration for role play

During the role play (as part of conducting)—

- Try not to intervene as facilitator while the role play is being performed (even if you are playing a part), except to help the activity stay on track and to handle unexpected situations that might arise (confusion, arguments, etc.).

After the Role play (as a part of summarizing)

- Providing feedback after the role play is performed is as important as the role play itself—essential to the effectiveness of this teaching method.
- It is important to ensure that all learners have an opportunity to receive feedback from you, their peers and other trainers.
- To help organize the feedback session, follow the structured observation guidance you gave learners prior to the role play.

Conducting Clinical Simulations sessions

- A clinical simulation presents the learner with a carefully planned, simulated patient management situation.
- Clinical simulations are an excellent method for developing clinical decision-making skills and can take a variety of forms (Exhibit).
- Through this activity, learners interact with persons and things in the environment, apply previously/newly acquired knowledge and skills in responding to a problem and then receive feedback about those responses **without having to be concerned about real-life consequences**. Clinical simulations are often conducted with a small group of learners—one learner may be the primary responder while other learners provide feedback, or all learners in the group may be involved in the exercise.
- In addition to using basic facilitation skills and adhering to the basic facilitation process, adhere to the following guidelines.

Clinical simulations are -

- Use to develop clinical decision-making skills
- Use to practice rare or emergency situations
- May be used to assess clinical decision-making skills in simulation before clinical practice
- Require structure and objective answers

Note: Before any clinical simulation, set up the area as realistically as possible. Ensure that anatomic models, equipment or supplies or other props that will be needed are in place.

Tips for conducting clinical Simulation

Before (Introduction)- Briefing

- Clarify the objectives and role
- Present the situation
-

During (conducting)

- Ask question and allow to respond/perform
- Continue to provide piece of information
- Ask questions – What/why
- provide feedback as appropriate

After (Summarizing) – debriefing
This is the heart of the clinical simulation

- Debrief or discuss important steps and whole management
- Ask learners for self reflection on decision made and performed
- Provide feedbacks as appropriate
- Ask Questions

Exhibit - Different Types of Clinical Simulations

Case study simulations* involve the presentation of a real case (from past experience) by one group of learners to another. Through a sequence of question-and-answer sessions, more of the case is revealed and decisions made are evaluated and discussed.

Live simulated-patient scenarios involve the use of persons trained to act the role of the patient. They are given a very specific script to follow while interacting with the learner. The interaction may be videotaped or observed so that feedback can be provided to the learner.

Mediated simulations use audio or visual media to present the problem, represent an interpersonal situation or help in the analysis of a problem or situation. For example, a video of people interacting may be shown, or audiotapes of heart sounds may be played, to provide information for the learner to use in the simulation.

Structured role play simulations* allow the learner to take on the role of an individual involved in

a clinical situation. The main purpose is to give the learner new insights into behaviors and feelings of other people.

Simulations using anatomic models* (physical simulators) that closely resemble the human body (or parts of it) are often used for developing psychomotor skills. A physical simulator may be used along with a role play in a clinical simulation that requires learners also to demonstrate technical skills.

Written simulations are pencil-and-paper presentations of actual problems or cases about which the learner must make decisions as if performing in the real-life situation. After making each decision, the learner receives feedback on the effects of that decision, and incorporates it into the next decision. These simulations may be used in assessing learners'

CONDUCTING SKILLS DEMONSTRATION AND PRACTICE SESSIONS

- **Skills demonstration** is absolutely critical to the skills development process, in both simulated and real environments, and is especially important when a skill is relatively complex, for example, the skill of performing a vasectomy.
- Clinical skills such as taking a history, performing a physical examination, providing a specific treatment or conducting a surgical procedure often can be clearly demonstrated by showing a video or -acting outl the skill with a simulated patient or anatomic model.
- Other methods are needed, however, to demonstrate communication and clinical decision-making skills.
- These methods include role plays, case studies and various clinical simulations.
- The most important step in teaching and learning skills is **skills practice**.
- Practice is the performance by learners of the skill in the presence of a teacher, tutor or clinical instructor.
- After you introduce, demonstrate and discuss a skill, observe and interact with learners as they practice it.
- Monitor learners' progress and coach them—through questioning, feedback and active listening—as they overcome challenges and move toward competency.
- **Feedback is especially critical here**, ensuring that learners gain experience with a skill and improve their proficiency where needed.
- Initial skills practice sessions should be relatively easy and short, so that learners experience success and positive/constructive feedback right away.
- As learners build competence, you can introduce more difficult skills.
- In addition to using basic facilitation skills and adhering to the basic facilitation process,here are some tips that are especially relevant to skills development and practice.

Skills Demonstration

Before the skills demonstration (as part of your introduction)—

- Introduce and provide an overview of the skill:
  - What the skill is,
  - Why the skill is important,
  - When it should be used,
  - The objectives of the demonstration, and
  - Highlight important steps involved in performing the skill.
- Assess to what degree learners understand the information provided by asking them questions. *Examples*:

  -*Why is this skill important?*‖

  -*When should you use this skill?*‖ -*What are the main steps in performing the skill?*‖
- Be sure to ask if anyone has any questions before proceeding.

During the skills demonstration (as part of conducting)—

- Make sure everyone is able to see what you are doing/the demonstration. Move people around if needed.
- When applicable, provide competency-based learning tools (e.g., checklists) to help learners follow the steps as you demonstrate the skill.
- Demonstrate the skill in as realistic a manner as possible, using a variety of methods, props and as much as possible of the equipment, supplies, materials, etc., that would actually be used.
- Use audiovisual aids, anatomic models or other appropriate tools/methods (e.g., role plays, simulated patients) to enhance and increase the effectiveness of the demonstration.
- Whenever possible, use the -whole-part-whole‖ approach to demonstrate a skill (or a procedure that involves a number of skills or tasks):
  - Demonstrate the whole procedure from beginning to end to introduce learners to the entire procedure;
  - Isolate or break down the procedure or activity into parts (e.g., pre-operative counseling, getting the patient ready, performing the procedure, etc.) and allow practice of the individual parts of the procedure; and
  - Demonstrate the whole procedure again and then allow learners to practice it from beginning to end.
- Continually interact with the learners. It is not enough to perform the skill correctly and visibly. You must emphasize the important points, as well as—
- **Explain** to learners what is being done—especially any steps that are difficult or hard to see. Take enough time so that they can observe and understand each step.
- **Ask questions** of learners to keep them involved, such as: -What should I do next?‖ or -What would happen if...?‖ Encourage questions and suggestions. Again, a handout or other learning tool (e.g., checklist) will help learners learn the necessary points.

- Always demonstrate the skill correctly. Obviously, you must never demonstrate incorrect methods. Remind the learners to follow along with the competency-based learning tool if one is available. Correctly perform the steps of the skill in the proper sequence and according to the performance standards. This includes demonstrating -nonclinical‖ steps such as delegation of tasks to staff, pre- and postoperative counseling, communication with the patient, and decision-making about diagnosis and treatment.

Use equipment and materials correctly and make sure that learners see clearly how they are used. You should also make sure that the necessary equipment will be available to the learners when they are working in the field.

After the skills demonstration (as part of summarizing)—

- Briefly **review and discuss the competency-based learning tool** (if available), in relation to the demonstration. This is an excellent time to ask learners questions to assess their understanding of the skill.
- Encourage learners to ask questions as well.

Skills Practice Session

Before the skills practice session (as part of your introduction)—

- Review the skill with the learners, including the steps that will be emphasized during the session. Ask if they have any questions before they begin.
- Explain how audiovisuals, tools/methods (e.g., role plays, case studies) and other materials (e.g., equipment, anatomic models) will be used.
- If competency-based learning tools are available (e.g., checklists), ask learners to refer to them during the practice session—if they are either practicing or observing others practicing.
- Discuss the roles of the teacher/trainer (and other tutors or instructors), learners and others during the session—specifying who will practice, who will help (if applicable) and who will observe and give feedback.
- If the group of learners is large and the number of teachers/trainers (and other tutors or instructors) is limited, there are several options you can choose from, including:
  - Dividing the learners into small groups, and having them do a staggered rotation through the practice area.
  - Identifying other persons, such as tutors or more senior learners, who could observe the learners during practice and give feedback.
  - Asking learners to work in pairs or groups of three and taking turns practicing, observing and giving feedback to each other. In this option, the teachers/trainers (and other tutors or instructors) should move from group to group to observe learners as they practice.

During the skills practice session (as part of conducting)—
During the practice and feedback session, a great deal of two-way communication should occur to reinforce the development of skills within a positive learning climate.

- If competency-based learning tools are available (e.g., checklists), follow along while watching the learners practice.
- Encourage learners to explain what they are doing and why they are doing it.
- Continually interact with them. It is not enough to observe quietly. Here is where coaching really comes into play!
  - Ask questions of learners to keep them thinking about what they are doing, what comes next, etc. Again, a handout or other learning tool (e.g., checklist) will help learners learn the necessary points.
  - Provide feedback, noting and praising correct practice, offering specific suggestions to address errors or improve techniques.
  - Actively listen to their explanations of what they are doing and their reasons why, to their answers to your questions, and to their responses to your feedback.

After the skills practice session (as part of summarizing)—

- Ask learners how they felt about their own performance. Begin by asking them what they believed they did well and what they would like to improve, or what they would do differently next time. Refer to a competency-based learning tool, if one is available, for a quick review of the steps, and ask learners where they experienced difficulty.
- Then discuss the strengths of their performance and offer specific suggestions for improvement. Determine if they need additional practice and, if so, arrange for additional independent or facilitated practice sessions.
- Finally, try to come to agreement with the learners on what will be the focus of the next practice session.

How to Implement PEN-Plus Training Effectively

How to be an effective trainer

1) **Prepare for the training**

Whether you have been invited to facilitate a training session or are the focal point of a training session, you can prepare and organize yourself in advance in a number of ways to avoid obstacles during the sessions. A checklist can help trainers make sure they have the necessary materials and resources ready and that the venues and facilities meet their expectations.

2) Know the training arrangements

- Check the training timetable
- Be sure you know exactly what day and time you are scheduled to facilitate the training session.
- Check the venue you will be training in.
- Take all relevant documentation with you: (letters from the organization, outline the training details, names of people coordinating the training, ensure participant's availability, the names of any support or administration staff who may be available to help you, and the names of other trainers who may be attending your training session.

3) Know the materials

- Trainers must be familiar with the materials they are presenting. Read over the materials before the presentation. Be prepared to answer questions about it. A reference list would be handy so you can let participants know where they can find additional information on a specific subject.
- A session plan can help guide the length of question time and when to suggest that the group move on to the next subject. Gather training materials, in more than one format, e.g., PowerPoint presentations. Ensure availability of necessary equipments, logistics, materials etc.
- Ensure availability of Trainers guide, Trainee's Manual, exercise sheet, etc
- Ensure availability of necessary adequate stationary

4) Know the environment

- Arrive early at the training facility and find out the location of the training room.
- Orient yourself to the area.
- Make sure the training room is appropriate.

- It should be large enough for all participants and allow you to conduct the training activities e.g., for forming small groups. If you feel that the room is not adequate, inform the facility administrator and see if another room is available. Trainees can always be redirected to the new room as they arrive.
- Minimize distractions.
  - If the environment is noisy or there is a great deal of movement in the corridors, etc., close the doors before you start presenting.
  - If the doors are closed, the ventilation and temperature inside the room must be regulated to ensure comfort.
  - If you are the first to arrive, don't be afraid to arrange furniture to suit the needs of the training. This can save time later.
  - Be familiar with the location of light switches and controls for blinds, curtain strings, etc.

5) Know the Equipment
   - Determine in advance, all equipments are available for the training. It will be impossible to present a PowerPoint session when the facility has only an overhead projector available.
   - When you arrive make sure all equipments and instruments needed are available. Check this off on the checklist.
   - Practice using each piece of equipment to make sure it is working correctly. Make sure that the overhead machine or slide projector is focused adequately for your presentation. The screen should also be visible to all participants in the training room.

6) Know the Audience

If possible, try to obtain a list of the trainees for the training course in advance. The list should contain their positions and place of employment. This information is important for a number of reasons:

- Knowing the number of trainees attending allows trainers to plan activities and group work adequately.
- Knowing the professions of the trainees, will give trainers an idea of the trainees' level of education.
- Knowing the trainees' place of employment helps determine the following:
  - The field each participant is working in so the various examples or case studies can be made relevant to their experiences,
  - How many of the participants come from a similar organization.
  - Knowing the trainees' positions will give trainers an idea of the range of seniority among the group. This may be important in identifying junior trainees so that they can be encouraged to contribute to the training session to the same extent as senior trainees.
  - Knowledge of the average trainee's level of education and degree of background
  - Knowledge allows trainers to pitch the training content and materials at the correct level. The trainees should not find the training too difficult or not challenging enough.
  - Knowing the audience also gives trainers an understanding of the social and cultural background of the trainees.

Presentation skills

Some people are naturally gifted and entertaining speakers, but almost anyone can learn basic skills to help them present information. These presentation skills are broken down into a series of "micro-skills" to make them easier to learn.

Getting attention

One of the functions of the introductory part of the session is to gain the attention of the trainees. The trainer can gain attention by:

- Explaining how the session is relevant to the trainees;
- Asking the trainees what their expectations are from the sessions;
- Providing a relaxed and an open learning environment;
- Using humor or an activity as an icebreaker;
- Using novelty, variety, or a surprise in the introduction;
- Using a case study or narrating a story, relevant to the situation of the trainees;
- Using interesting pictures or seek audiovisual help at the start of the session; and
- Use quizzes as a means of identifying gaps in knowledge.

Maintaining interest

For adults to focus on learning, they need to remain interested throughout the session. The trainees must recognize the relevance of the session and be able to participate in the sessions therefore every session has to be presented in an interesting way. The trainer can help the trainees remain interested by:

- Personalizing the presentation–smiling, making eye contact, and addressing trainees by name when interacting;
- Keeping the subject relevant and emphasizing how the topic relates to their needs;
- Being enthusiastic;
- Make sure the pace is neither too fast nor too slow;
- Using a variety of presentation styles;
- Introducing a new activity or providing valid information,
- Encouraging the trainees to participate;

- Using stories as examples;
- Having brief physical activity or game breaks;
- Using humor; and
- Using appropriate and consistent non-verbal behaviour

Selecting appropriate presentation styles

Using more than one technique in each session will help capture and retain interest by targeting different trainees' learning styles. The technique used will depend on the following:

- Trainer–knowledge of topic and group, skills, personal style;
- Content–whether the aim is to learn knowledge or skills or change attitudes;
- Trainees–number, abilities, needs, and experience; and
- Environment–location, room set-up, time of day, day of week.

The following activities can be used with groups of different sizes:

Type of Activity	**Large group**	**Small group**	**Pairs**	
				individuals
Lecture	√	√		
Group discussion	√	√		
Question and answer	√	√	√	√

Type of Activity	**Large group**	**Small group**	**Pairs**	
				individuals
Case study	√	√	√	
Brainstorming	√	√	√	
Quiz	√	√	√	√
Game	√	√	√	
Hypothetical situation	√	√		
Past Experiences	√	√	√	√
Problem solving		√	√	√
Role play		√	√	√
Demonstration		√	√	√

Use Non-verbal communication

While watching someone present different types of information more is learned from his or her nonverbal communication (body language) rather than from words spoken. Non-verbal communication includes a range of signals which convey a message to the audience beyond

what the speaker's words may be. It can also prove to be a powerful tool, reinforcing what the trainer is saying or it can contradict the trainer's message. Trainers should try to be aware of their non-verbal communication messages.

Non-verbal communication includes:

- **Voice.** The trainer should speak clearly and project his or her voice. Basically, displaying loudness and a high/ low pitch helps sustain the trainees' interest. The trainer can adjust his/ her voice to emphasize important points that the trainees need to learn.
- **Dress.** Use formal and smart dress. Looking good may also give the trainer an added confidence.
- **Eye contact.** In order to make the trainees feel involved, the trainer needs to make eye contact with them. In a large group the trainer should try and make eye contact with as many trainees as possible.
- **Posture.** Depending on the size of the group, the trainer may need to stand upright to help project his or her voice to the whole group. Even within a small group, posture is important. The trainer should attempt to look relaxed (i.e., not stiff) without slouching or looking too casual.
- **Position.** Where the trainer stands is also important. When using audiovisual devices such as a board or a screen, the trainer should stand back from the board or screen or to the side so that the device can be seen. If the trainer has to write on a board, he or she should finish doing that first and speak to the trainees facing them. The room should be set up to minimize barriers of any kind.
- **Movement and gestures**. A trainer should move about the room from time to time but not too often, since this may distract the trainees. The trainer should also use gestures for emphasis or explanation, as he or she would in conversation, but these should also not be distracting.

What to do if Trainer becomes Nervous

Many people can get nervous before and during a presentation. Practice can help settle the nerves, but even the most experienced trainers may feel nervous before a training session. Here are some ideas to help you overcome nervousness and anxiety:

- Be well rested. Have plenty of sleep the night before and allow enough time to get to the training venue early.
- Be well prepared and familiar with your session plan, and do everything on your training preparation checklist (review Session Plans).
- Do a practice run of your presentation before the training session.
- Try to greet the trainees as they arrive. If you see some friendly faces you may not feel as if you are presenting to strangers.

- Help yourself relax. Try standing up straight and breathing deeply. Relax your muscles and even do some stretching.
- Try to talk to yourself positively. Tell yourself that you are well prepared, you know the subject and that everything will be all right.
- Wear comfortable clothes. If you feel constricted or are unable to move freely around the training room, you may not be able to present confidently.
- Have a glass of water handy in case you develop a dry throat or nervous cough.
- At the start of the session, once you have been introduced to the trainees, give a summary of your experience in the field. This helps to establish credibility and serves as a reminder that you are the right person to be conducting the training.

Personal style

There is no "right" way to train. At the start of the session, when you think about presentations you liked, you probably thought of presenters with different styles. Some of the characteristics of personal style are:

- Use of appropriate humor
- Use of relevant anecdotes
- Personal enthusiasm
- Self-confidence
- Ability to develop rapport with trainees
- Knowledge of the subject

Selecting Appropriate Audiovisual Aids

When choosing audiovisual devices, make sure they are relevant, simple, and not distracting. Fancy PowerPoint presentations with many colors and sounds can distract the trainees from the content. The technology available at the training venue, as well as its reliability, is also an important factor to be considered. If no computers are available, PowerPoint is not a viable option. The following are some general tips for using audiovisual equipment.

- Do not stand in front of or obscure the screen.
- Use a pointer.
- Cover all information until you are speaking about it. Otherwise, trainees will read the information rather than concentrate on what you are saying.
- Make sure all the trainees can see the audiovisual device.
- Talk to the audience, not the board or screen.
- Check that all slides or overheads are properly focused before starting.

- If using slides or computer projection, check that the room is not too bright. Ask someone to help you adjust the lighting.
- Use only one audiovisual device at a time.
- Have a backup. For example, if using PowerPoint™ slides, also have overhead transparencies just in case the equipment does not work.
- Keep the layout simple, with minimum detail.
- Use colors that can be seen clearly (not red or green for text).

Some tips for using specific audiovisual equipment are as follows: PowerPoint:

- Keep the slides simple.
- Avoid placing too much text on one slide. Use two slides.
- Avoid using many different colors and sounds.
- Make the text large enough so it can easily be read by the trainees.

Whiteboard:

- Write legibly.
- Use the right type of pen.
- Cover or keep blank when not in use.
- Use more than one color–preferably blue or black, which can easily be read from a distance.
- Finish writing and turn to face your audience before speaking.

Flipchart:

• Cover pages that are not being used. Alternate blank and written pages.

Handouts:

- Consider an appropriate time to hand these out. When distributed at the start of the presentation, the trainees may focus on reading the handouts and not listen to your presentation.
- On the other hand, distributing handouts early can enable the trainees to follow the discussion without taking notes.

Managing Common Difficulties in Training

Even the most experienced trainers can face difficulties while presenting or facilitating a session with a group. It is important to be aware of common problems and to understand ways to address them.

No one is a perfect trainer; we all have shortcomings which we constantly need to be aware of when managing a session. Below are common problems and practical responses that to get the session back on track.

Mixed group expertise and experience (high to low)

The trainees may have a wide range of knowledge and experience. Some of the following strategies can be effective in meeting this challenge:

- If a highly expertise trainer is there then use more examples rather than content as per participants' knowledge status and their capacity to learn, e.g., to provide examples based on their experience.
- Split the trainees into different groups based on ability, knowledge, or experience.

The trainee who doesn't want to be there

Early in the session, the trainer will become aware that one or more persons would rather not be at the training session. They may be indicated by being unwilling to participate in activities, talking to others, or just generally showing disinterest. In response, the trainer can:

- Ask the persons how they feel about being present at the training.
- Offer them the option of leaving the training: "It is OK by me if you don't want to stay." Usually, they will choose to stay.
- Ask them what can be done to make the session relevant to their needs. You could perhaps clarify their objectives in attending the training and suggest how the training can meet their needs.

Late arrivals

Enforcing punctuality among trainees can be a challenge. Those who arrive late can delay the start of the session or disrupt training that has already begun. Other trainees should not be penalized for the late arrival of others.

- At the onset of training, it is important to stress the necessity of arriving on time to allow the training to start at the designated hour.
- Tell the trainees that you will begin the training session at the designated time and will not wait for people to arrive.
- Set group rules. Most groups usually agree that punctuality is important. Peer group pressure can be very effective in encouraging trainees to be punctual.
- Ensure that all trainees are aware of the timetable. Ask them if they are happy with the current timetable and if there is any reason that they cannot arrive on time.
- Stress the importance of punctuality in any promotion or invitation letters for the course.

Non-attendance

Attendance of the trainees for all sessions and their entire duration is important. People who leave early or skip sessions can slow down the progress of the group, as they will need time to catch up. If they have been assigned to a particular group, the rest of their team is at a disadvantage. To help ensure full attendance at the training:

- At the start of the training, inform the trainees that those who do not attend the whole course will not receive certificates (unless they have a valid reason for being absent and miss only a small part of the training).
- A trainee who misses any segment should be briefed on his or her return about the portions missed.
- If a trainee cannot complete a course due to an emergency, negotiate with his or her trainer to complete the missed segments at a future course and obtain a certificate at that time.

Lack of time

Trainers often run out of time. It is easy to underestimate the time needed to teach a certain subject. This holds true especially with regard to group activities which generally take longer than expected. Time management may also be a problem if you are teaching a particular session or conducting a training program for the first time. Use the following strategies to keep on time:

- Keep an eye on the time. Check it regularly but discreetly. Use your session plan to allocate the time needed for each topic.
- Skim topics and refer to the reading list if there are subjects that cannot be covered during the time available. Avoid skipping planned activities as these are an important part of reinforcing the learning process.
- Acknowledge the problem and negotiate with the trainees for an extension of time,
- Provide an overview of the remaining material and ask the trainees what they consider important and relevant to their work
- Offer to forward to the trainees a summary of the remaining material.

Equipment failure

Virtually every trainer faces equipment failure at some point in his or her career. The more sophisticated the technology, the more likely it is to malfunction or cause difficulties. Preparation is the best strategy for avoiding equipment failure or overcoming it.

- Check the equipment make sure it is working, although sometimes equipment failures are unavoidable. Arrive early and familiarize yourself with the equipment especially if you have not used it before. Check the source of power.
- Apologize and remain calm. Tell a joke and move on.
- Write key points from manual on news print or on a whiteboard.
- Know your subject so you can present without equipment. A good trainer who is well prepared should be able to present without the aid of sophisticated technology.

When trainees do not respond to calls for feedback or questions after a focal activity

You can throw the questions among the participants:

- Open and closed questions. Open questions are much more likely to get a response. The differences between closed and open questions are illustrated below.

- Closed: “Any questions? Any points people want to raise?”
- Open: “What are some of the key points raised by the session/video?”

For dominating trainees

- Be respectful and courteous. Trainees are unlikely to respond if you are angry or aggressive. Be assertive and confident in your manner.
- Verbal responses. You can try a range of verbal strategies. For example, “Thank you very much. I would now like to hear what (use name) has to say on this topic.” Do not say “Why don’t we come back to this later?” If you do not intend to return to the topic.
- Non-verbal responses. Orient your body away from the dominating trainee so you disengage from eye contact and your body language discourages him or her from continuing to speak. Combine this with a verbal response such as inviting another trainee to contribute.

Unresponsive trainees

Some groups are naturally talkative and easy to work with. Others are unresponsive and may require you to call on additional techniques to engage them.

What you can try:

- Use silence to pressure the group. Ask a question that you know someone in the group can answer and wait for an answer. Remain silent and do not answer the question yourself. Eventually (in most cases) someone will respond.
- Identify one or two people in the group whom you can ask to say something.
- Be controversial or challenging. Used carefully, this technique can get a group going. In NCDs case management at PHC setting there are usually many controversial issues, so finding something that challenges the group at some level should not be too difficult.
- Ask for feedback. Say: “I sense that there is not a lot of interest in this subject” or “I sense that you feel this subject is not relevant to you.”
- Introduce an activity, something to energize the trainees and get them to respond either as a whole or in small groups.

Sleeping or inattentive trainees

- Walk near the person, while talking to the group. Do not single the person out by looking directly at him or her. Stand next to the person for a while without necessarily looking at or drawing any other attention to him or her.
- Throw a question at the inattentive person, but remember to allow him or her to save face. Ask a question that the person is likely to know the answer to, or provide a quick summary of the current issue and then ask the question.

DO NOT say, “While you were asleep…” rather say, “Let me explain what we are up to.”

The argumentative trainee

Some trainees may be argumentative. They may be genuinely upset or disturbed by something and choose to demonstrate this by arguing with the presenter or other members of the group.

- Don’t get hooked into the power struggle. It is not your duty as a trainer to win the argument, even though you may strongly disagree with the person’s opinion. The more you assert your opinion, the more likely it is that the person will stop listening to you.

- Don't use personal attacks. In challenging the argumentative trainee, do not use personal attacks. These tend to put people on the defensive and undermine your credibility as a facilitator.
- Use assertive communication: "I can see how you would think that. However,…"; "Some people feel that…"; "There is a range of opinions on this subject…".
- Redirect discussion to other trainees. Ask if anyone else in the group has a different opinion.
- Use direct and calm but assertive body language.

Evaluating Your Training

Many stakeholders are involved while conducting the training sessions including the trainer, the trainees, the training institution, and the organization purchasing the training. Different stakeholders may have different expectations of the training and anticipate different outcomes. It is important to speak with different stakeholders to understand what they need to know about the training.

What are the benefits of evaluating the training?

Evaluating specific aspects of training can benefit all stakeholders. The possible benefits may include the following:

For trainers:

- Information regarding ways to improve the training (contents, process, tools);
- Information about possible improvements in training process, style and skills.

For trainees:

- Assessment of whether they have achieved their learning goals;
- Consideration of how the knowledge and skills learned can be applied to their work;
- Decisions about whether training has been a worthwhile investment of time, effort, and money.

For Management offices and sponsors:

- Information about the extent to which the training was worth the time and money they invested in it.
- Information about staff that are capable, including their limitations and readiness for new responsibilities.

What does evaluation measure? Goals.
Inputs. Evaluation can give us information about:
Training tools:

- Was the course content targeted at the appropriate level for the trainees?
- Were the handouts easy to understand?
- Was the appropriate audiovisual equipment used?
- Did the audiovisual device work?

Training environment: Were the training facilities (e.g., room size, ventilation, temperature, refreshments, and audibility) adequate?

Processes. Evaluations can tell us about the quality of the training, including the following: Training framework:

- Was the training too long or too short?
- Were there enough breaks?
- Were the sessions in logical sequence? Training techniques:
- Was a variety of techniques (e.g., group work, role plays, games, exercises, didactic teaching used?
- Which techniques worked best? Trainer's style:
- Did the trainer have good teaching skills (e.g., maintained the interest of the group, used a variety of teaching techniques, facilitated discussions, and created a supportive environment for trainees)?
- Was the trainer friendly, personable, approachable?
- Did the trainer know the materials (e.g., could he or she answer questions about the materials confidently)?

Outputs. Evaluating outputs can tell us about the immediate benefits of training, including the following:
Change in trainee knowledge: Trainers need to be sure that trainees have understood the course content.

Trainee satisfaction:

- Did the course meet the trainees' expectations?
- What did the trainees like about the course and what didn't they like?

Methods and tools used to evaluate the trainings.
A number of methods and tools can be used to evaluate the trainings. These include evaluation by the following:

Trainer:

- A checklist for pre-training evaluation to assess readiness for training, e.g., to check that the necessary equipment, materials, and tools have been prepared and are ready (quantitative);

Trainees:

- A training evaluation form, mostly for assessing training processes (quantitative and qualitative measures);
- Pre- and post-course knowledge tests for trainees;
- Assignments or "homework";
- Discussion questions at the end of each session to assess the level of knowledge and understanding;
- Problem-solving using a case study and information discussed previously; and
- Skill testing through role-play.

Training Methodology

The training has been designed to be fully interactive on the part of the participants, and to enable them to learn at an optimum level. In order to do this, various methodologies were used including:

i. Short lectures/ presentations
ii. Group discussions/work
iii. Role plays
iv. Demonstrations
v. Brain-storming
vi. Case studies and reports
vii. Games
viii. Videos

Short lectures/presentations:

Short lectures and presentations are used to provide basic information on a particular topic. Visual aids illustrating major points are also used. Trainers/facilitators are encouraged to facilitate full participation from their audience during mini-lecture sessions by:

- Asking questions and encouraging participants to ask questions
- Designating group exercises and presentations
- Brain-storming among the participants
- Problem-solving on case histories

Following group work and presentations from the participants, the facilitator, with the help of the participants, lists the major points and summarizes the topic using these presentations.

Group discussions/work:

Depending on the number of trainees, it is recommended that groups of four to six people be formed.

Each group should be given a task to carry out. This helps participants become actively involved in problem-solving and more comfortable with sharing their experiences. It also makes for an interesting and stimulating session, as each member will have to be prepared for a group presentation and be ready to answer questions from other participants. Additionally, this approach allows for the development of personal relationships. Such group work also helps the facilitator evaluate the trainees' existing knowledge on the topic, and their capacity for absorbing the material being taught. This is also useful in designing future training sessions.

Role-plays:

During a role-play session, the facilitator explains the objectives of the topic being covered (i.e. effective communication or history-taking) and asks the participants to form groups and choose individual roles.

The facilitator then explains the scenario to the group and instructs each individual to play their role as convincingly as possible. Participants forming part of the audience are instructed to observe the scenarios carefully and to provide feedback or comment on what they see once it is completed. The facilitator should be prepared to help or guide the role-play session when necessary, and to encourage observers to comment on the positive and negative aspects of what they witnessed.

Demonstrations:

There are several sessions involving demonstrations in this training manual which are expected to help participants improve their practical skills in NCDs case management, and to develop confidence. The facilitator explains what the demonstration session entails and its objectives.

Participants are asked to carefully observe so that skills demonstrated can be included in their practice. After the demonstration, the facilitator interacts with the participants and asks them to provide feedback. The facilitator then provides his own comments, answers any queries the participants might have, and later emphasizes the significant aspects covered in the session.

Brain-storming:

Brain-storming sessions are used to extract knowledge from participants on specific topics. These help participants to engage, allowing them to become attentive and alert which is conducive to effective learning. During the brainstorming sessions the facilitator raises several questions on the topic being studied, and asks participants to respond to them either individually or as a group. The answers are to be written down according to their level of importance on a whiteboard or flip chart, and read aloud.

The facilitator then provides his/her own comments, highlighting the positive aspects of the outcome, and does a follow-up presentation.

Case studies:

Case studies are designed to help participants acquire the management and confidence necessary for dealing with patients experiencing various conditions. The cases presented are real or imaginary, characteristic of problems indicating a particular disease related to a major disease included in the PEN-Plus protocol The participants are guided on how to locate these characteristics through a number of sequential steps. Case studies can be used to introduce a particular training session or topics, assess participants' knowledge of the disease, or used as a follow-up exercise after the completion of a specific session.

In the latter, the facilitator provides a case history and asks participants about the correct approach for that condition

Audio-visual aids and other equipment:

Multimedia visual aids (LCD projector, Laptop computer) will be used to facilitate lectures and oral presentations. However, illustrations with pictures, NCDs slides, flow charts, and videos will be incorporated wherever feasible. Similarly white boards, large sheets of papers/newsprints, photographs, posters and other materials will also be used.

Pre Testing

Time	Training of Trainers	Minutes

Objectives of Activity

Trainee and training Management team aware on:

1. Identify the knowledge, information, skills and attitude status of participants
2. Give feedback to the facilitators regarding the depth of knowledge of trainees.
3. Evaluation of training at reaction and learning level during the training period

Design of Implementation

Methods

- Multiple choice question
- True or False and Short question Materials needed
- Pretest questionnaire
- Clock

Introduction:

A pre-test is done to evaluate the existing knowledge of the participants which then helps facilitators gauge the depth of knowledge and information to be delivered during the training. The test involves multiple choice questions (MCQs) or true/false questions to assess basic general knowledge based on the content being studied. It should preferably cover all important chapters to be discussed during the session.

Trainer Instruction Related to Pre testing

The facilitator explains the objectives of the pre-test and the time given for it. He/she asks the participants to put a symbolic code on the paper instead of their name for anonymity. The facilitator will inform participants that the test objective is to evaluate the overall knowledge of group and the individual. They must also be informed that by doing so, it will assist the trainers/facilitators in determining the groups' depth of knowledge or skills on each of the different topics. Therefore, there is no need for collaborative group work on the pre-test.

After the completion of the test, the facilitator collects them and issues a score.

Keep it separates and compare the marks after the scoring of post-test after the completion of training at the 4th day.

Tea Break (15 Minutes)

- 10 minutes for tea
- 5 minutes for Physical Exercise

Module 1: Respiratory diseases

Session plan for Virtual session

Preparation for virtual session • Review PEN Plus clinical protocol chapter 1 Respiratory diseases • Review all the exercises with the correct answer in the facilitators guide Module 1 Respiratory • Review case scenarios with learners for discussion – identify the probing question for the case • Review session plan for the sessions • Prepare pen and notebook for the session to note			
Virtual session on Module 1 Respiratory diseases			
Session	**Methods and activities**	**Materials and Methods**	**Time**
Virtual	• Welcome all the learners • Introduce yourself and ask them to introduce themselves • Ask them to share the self-paced learning experience – ask them to share best part of self-paced learning and difficulties they encountered during the self-paced learning. (ask few of them, encourage all the learners to share their own if they had different from the stated) • Encourage all to participate. Ensure you are involving the quitter learners • Ask participants to share difficult contents to understand if any • Difficult or not solved question to solve • Note all difficulties and questions • Ask them to hold till last if all the issues are not addressed during discussion as they will be addressed in the last of the session		10 min
	• Then discuss the correct answers of the exercises one by one with brief rationale of each. • Involve all the learners in the discussion by asking them to share their right answer.		25 mins
	Now, discuss the case scenario-based questions that the learners had completed in the self-paced session using PPT slides. While facilitating the discussion do not forget to use probing questions why they answered this Sometimes you can use hypothetical scenarios too what they will do in this condition.	PEN–Plus Protocol and Learners Guide: Module 1	25 mins

	Ensure the previously shared difficult questions and contents are discussed If any content or question yet to discuss cover it.	PEN–Plus Protocol and Learners Guide: Module 1	10 mins
	Ask them for their queries if any and respond accordingly. Close the session by highlighting and summarizing the session with key points of the module. Thank them for their participation and ask for their feedbacks. (might be a structured questionnaire- google sheet) ask them to complete the mid-course knowledge assessment questionnaire which will carry 20 % for the final evaluation inform them if they do not score 85 percent in the final evaluation they have to repeat test for certification.		5 mins

Onsite Learning: Bronchial Asthma

Onsite Session Plan			
Session	**Topic**	**Materials and method**	**Time**
	Final knowledge assessment		
	Discuss the following case scenarios using PPT slides **Case 1:** 24 years female from Jhapa, past history of Asthma, presented to OPD with complaints of noisy breathing and colds for 6 days. **Ask the participants:** •What else would you ask for in history? Fever, symptoms of upper respiratory tract: sore throat, nasal discharge, shortness of breath, how many such episodes in the last 1 year. • What is the level of severity? Severity will be decided based on history of symptoms, night time awakenings, use of reliever medications, and lung function On Examination: GCS: 15; RR 20 cpm, BP 120/70mmHg, SpO2 97% RA; Chest: B/L wheezes widespread CVS: Normal **Ask the participants:** • What other physical examination information would you seek? Signs of respiratory distress: use of accessory muscles of respiration, cyanosis, can patient speak in complete sentences, signs of complications such as pneumothorax: unilateral hyper resonance on percussion, deviation of the trachea, signs of pneumonia such as bronchial breath sounds, crackles. • How will you further investigate the scenario? 1. Chest Xray: to consider pneumonia consolidations, pneumothorax 2. ABG: features of CO2 retention that may suggest progressive respiratory failure (Type 2 respiratory failure) 3. CBC: Leucocytosis, eosinophilia	PowerPoint presentations	60 minutes

	• Role of Spirometer? (Indication, Interpretation) ○ To assess lung function in patients with asthma ○ To verify the presence of airways obstruction in patients with suspected asthma ○ Interpretation: as per the topic of the spirometer in the PEN-Plus • Role of Peak Flow Meter? (Indication, Interpretation) ○ To ascertain the level of severity in an exacerbation prior to treatment ○ To ascertain the level of improvement in severity after treatment of exacerbation ○ To help the patient maintain a record of lung function variability at home, and to make decisions on adjusting the dose of bronchodilator therapy at home by the patient. ○ Interpretation: PEN-Plus peak flow meter module • How to advise further? ○ Patient education must be done ○ All bronchodilator devices are to be properly demonstrated to patient, and verified by trained personnel ○ How to avoid known triggers ○ Nutrition ○ How to manage an exacerbation at home prior to hospital arrival • Exacerbation event: How to manage? ○ Oxygen therapy may be required via facemask at >6 litres per minute ○ Head end elevation position ○ Check level of consciousness ○ Nebulization with Salbutamol, and ipratropium bromide intermittently at intervals of 5 to 10 minutes, with repeated assessment of patients clinical status ○ Patient may require systemic corticosteroids ○ Hospitalization of discharge? Clinical decision must be made, refer to PEN-Plus clinical protocol on asthma management		

	Case 2: An 8-year boy with Asthma for 3 years on intermittent inhaled salbutamol therapy presented in OPD with recurrent cough and wheezing for one month. Wheezing occurs about 3-4 days in a week during the daytime and 1-2 episode in a month during the nighttime. **Ask the participants:** • What are you dealing with? ○ Is it pneumonia: chest x-ray,CBC for leukocytosis may be helpful ○ Is it exacerbation? ○ Are there frequent triggers of exacerbation in patient's home? We have to minimize the source of triggers • Enlist the management plan ○ The management plan will be based on severity of the asthma Refer to the management of Asthma in the PEN- Plus clinical protocol ***Identify gaps of knowledge if any and review the information based on the need.***		

Skill Session:

	Spirometry performance and interpretation	30 minutes
	Learning modality Demonstrate and practice Spirometry **Logistics needed** ● Spirometer device ● Mouthpiece ● Spirometer checklist ● Prepared tracing for spirometer and printer ● MDI Salbutamol	
	Session objectives At the end of the session, the learners will be able to ● Describe the steps of the spirometer ● Practice spirometry using checklist ● Practice reversibility test ● Interpret spirometry report	
Time	**Methods and activities**	**Materials and resources**
10 minutes	**Spirometry demonstration** ● Describe the steps of spirometry and demonstrate it to the whole group using the spirometer device ● Make sure that the demonstration is visible to all the participants	PEN-Plus Protocols • Video + Hands-On
10 minutes	**Practice session** ● Ask two participants to volunteer for spirometry ● Allow them to practice ● Ensure they are doing high- quality spirometry ● Provide them spirometry report and ask them to interpret the report	● Spirometry checklist ● Spirometer device
10 minute	**Provide learners the following type of spirometry report one by one. Ask them to interpret the given report. Correct the learners based on interpretation.** ● Normal spirometry report ● Obstructive spirometry report ● Obstructive pattern with reversibility report ● Restrictive pattern of spirometry report ● Mixed Pattern (Obstructive and Restrictive)	● Actual patient spirometer reports (Reports viewed in PowerPoint slides simultaneously)

Session	Skill session Topic	Time
	Peak flow meter performance and interpretation	25 Minutes
	Learning modality Demonstrate and practice Peak Expiratory Flow Meter **Logistics need** **Peak expiratory flow meter** device Peak expiratory flow meter checklist	• (Peak Flow Meter report will be interpreted using the standard reference values from PowerPoint slide)
	Session objectives At the end of the session, the learners will be able to ● Describe the steps of the peak expiratory meter ● Practice Peak expiratory flow meter using checklist ● Interpret peak expiratory flow meter report	
Time	Methods and activities	Material and resources
10 minute	Peak Expiratory Flow Meter demonstration ● Demonstrate and discuss every steps of Peak Expiratory Flow meter ● Make sure that demonstration is visible to all the participants ● Provide them PEF report and ask them to interpret the report	PEN-Plus Protocol
10 minute	Practice session	
	● Ask two participants to volunteer for the Peak Flow Expiratory Meter ● Allow them to practice ● Ensure they are doing high-quality Peak Flow Expiratory Meter	
5 min	Discuss the interpretation of Peak Flow Expiratory meter report	

Session	Skill session topic	Time
	Learning respiratory device use: MDI, MDI with spacer, Rotahaler, Revolizer Session objectives At the end of the session, the learners will be able to • Describe the steps of the MDI, MDI with spacer, Rotahaler, Revolizer • Practice MDI, MDI with spacer, Rotahaler, Revolizer using checklist	30 min
	Learning modality Demonstrate and practice use of MDI, MDI with spacer, Rotahaler, Revolizer **Logistic required:** ● Metered dose inhaler (Placebo) ● Spacer device ● Rotahaler ● Revolizer ● Baby mask ● Checklist of MDI, Spacer device, revolizer, rotahaler	
Time	Methods and activities	Materials and Resources
3 min 3 min 3 min 3 min 18 min	**Demonstration of MDI USE** ● Demonstrate and discuss every steps of MDI ● Ensure that the demonstration is visible to all the participants **Demonstration of MDI with spacer use** ● Demonstrate every steps of use of MDI with spacer use **Demonstration of Rotahaler use** ● Demonstrate of every steps of rotahaler use **Demonstrate Revolizer use** ● Demonstrate every steps of revolizer use **Demonstrate use of MDI with spacer with baby Mask** ● Demonstrate every steps of MDI with spacer with baby mask **Practice session** ● Ask one participant each to demonstrate MDI, MDI with spacer, rotahaler, revolizer, MDI with spacer with baby mask ● Allow participants to practice ● Demonstrate every steps of MDI with spacer with baby mask	MDI Spacer Rotahaler Revolizer Baby mask Checklist of MDI, spacer, rotahaler, Revolizer

Session	Topic	Time
1	**Role play on Patient Education and counselling**	**15 minutes**
	At the end of this role play, the learner will be able to **1. Educate and counsel the patient regarding Bronchial Asthma** **2. Explain the patient how to control triggers and maintain their symptoms**	
	Choose 3 participants for the role play ● One act as doctor, one as patient and one patient relative ● Explain the case situation to all the participants of the role play and ask the medical team to perform a roleplay on patient education, and counselling	
2	**Role play for starting SMART therapy for Bronchial Asthma**	**30 minutes**
	At the end of this role play, the learner will be able to 1. Use SMART therapy protocol for bronchial asthma. 2. Know to choose the devices for pharmacotherapy	
Time	**Methods and Activities**	**Materials and resources**
10 min	Choose 3 participants for the role play ● One act as doctor, one as patient and one patient relative ● Explain the case situation to all the participants of the role play and ask medical team to use SMART therapy protocol ● Ask the doctor ● Show the slide of SMART therapy protocol ● Show the slide about selection of devices for pharmacotherapy	
20 min	**Role play**	
10 min	**Summary** ● Ask participants what are the good points they have done during communication ● Ask what need to be corrected ● End of session by summarizing how the SMART protocol easy to select treatment and how to choose device.	

Onsite learning: COPD

Session	Topic	Materials and methods	Time
5 min	**Discuss the case scenarios (given in PowerPoint slides)** **Case 1: A 65- year old male presented to OPD with cough for 3 years and shortness of breath for 6 months. Smoking history-20 cigarettes/day for 20 years.** **Ask the participants:** • What more information would you want in the History? o Characteristics of cough such as hemoptysis, amount, postural, variations, color, consistency o Shortness of breath: history of orthopnea, PND, swelling of body chest pain o Past medical history of similar illness, hospitalizations and pneumonias • What is the probable diagnosis? o Case of chronic cough associated with dyspnea: diagnosis is COPD, with differentialsof bronchiectasis, ILD, heart failure • How to approach? o Proper history followed by a thorough physical examination o Decide on level of severity of COPD o Manage airways, breathing and circulation, followed by specific COPD therapy: oxygen, bronchodilators and corticosteroids o Consider role of antibiotics based on history of infection, CBC and Chest x-ray reports On Clinical Examination: alert, cachectic, pursed-lip breathing, RR 26 cpm, HR 110 bpm, SpO2 88% RA; Clubbing present; Pallor present		30 minutes

	Chest: Increased AP diameter, Hyperresonance B/L, B/L rhonchi CVS: Holosystolic murmur, Tricuspid area **Ask the participants:** • What are the important examination findings? o Findings are presence of wasting (cachexia), pursed-lip breathing, tachypnea, tachycardia, hypoxia, clubbing and pallor o Others: increased AP diameter, hypersonance on percussion, and presence of rhochi o Presence of holosystolic tricuspid area murmur suggests for cor pulmonale • Question: What is the likely diagnosis? oCOPD with Corpulmonale • Question: How to investigate now? o Chest x-ray, ABG, PFT, ECG, and echocardiography, moreover, CBC is be done to document anemia. **Same patient**, 2 weeks later presents to the Emergency Room with problems of progressive difficulty in breathing for 3 days, associated with productive cough**.** **Ask the participants:** • What more information would you want? o Is there fever? Pleuritic chest pain (pneumothorax)? Alteration in sensorium? (Atypical pneumonia) • What is the probable diagnosis? o Probable exacerbation of COPD with differentials of pneumonia/ acute bronchitis • How to manage this scenario? o Need for oxygen therapy to be decided o Antibiotics when infection such as pneumonia is probable cause, with addition of fluroquinolone for atypical pneumonia o Bronchodilator therapy and corticosteroids ***Identify gaps of knowledge if any and review the information based on the need***		

Session	Topic	Time
	Role play for Smoking cessation therapy	30 min
	At the end of this role play, the learner will be able to ● Use 5 As intervention strategies for smoking cessation therapy ● Use good communication skills for smoking cessation therapy	
Time	Methods and Activities	Material and resources
10 min	Choose 3 participants for the role play One acts as a doctor, one as patient and one as patient relative Explain the case situation, and ask participants to apply the 5As intervention technique for smoking cessation therapy. Show the slide for the 5As intervention technique	
10 min	Roleplay	
10 min	Summary Ask participants what are the good points they have done during communication Ask what needed to be corrected End of the session by summarizing how the 5As intervention strategies for smoking cessation.	
	Complete the exercise: Day 1	

Module 1 Checklist Checklist for using Spirometry

S for Satisfaction and U for unsatisfactory

S.N	Necessary Prerequisites	Cases			
1)	The participant ensures the patient is stable				
2)	The participant assures smoking is withheld for at least 4 hour prior to the spirometry.				
3)	The participant makes certain the age is more or equal to 5.				
4)	The participant makes sure inhaler therapy is withheld for 4 hours				
5)	The participant makes sure proper instruction is given prior to the procedure				
6)	The participant ensures any sort of physical exercise is avoided on the day of spirometry				
7)	The participant ascertains that the patient avoids heavy meals prior to spirometry				
	Following steps to be followed				
1)	The participant ensures the patient sits up straight.				
2)	The participant makes sure of a good seal around the mouthpiece				
3)	The participant assures to encourage the patient to blow out hard as fast as possible				
4)	The participant makes sure to count exhaling till the patient can't blow.				
5)	The participant makes certain the patient blows out hard as fast as possible.				
6)	The participant assures that the patient continues exhaling till the patient cant blow.				
7)	The participant ascertains the patient expire continuously for at least 6 seconds.				
8)	The participant ensures to repeat the above process at least 3 technically acceptable times.				
9)	The participant assures to repeat the test after 10-15 minutes of administration of 2-4 puffs of salbutamol to check reversibility.				

Checklist for Using Meter Dose Inhalation

S.N	Steps of using Meter Dose Inhalation	Cases			
1)	The participant assures to remove cap from MDI and spacer.				
2)	The participant makes sure to shake MDI 5 sec before using.				
3)	The participant makes certain MDI is inserted into spacer.				
4)	The participant makes sure to attach mask to other side of spacer.				
5)	The participant ascertains to make a tight seal of mask over nose and mouth of child.				
6)	The participant encourages the patient to breathe out.				
7)	The participant assures MDI to be pressed.				
8)	The participant assures patient to breath in and out for 10 seconds				
9)	The participants makes sure the patient holds breath for 10 seconds				
10)	The participant makes certain to repeat as necessary.				

Checklist process of Nebulization

S.N	Nebulization Process	Cases			
1)	The participant makes sure their hand has been washed well.				
2)	The participant assures the nebulizer machine, tubing, medicine cup, and mouthpiece or mask are put together				
3)	The participant ensures to put prescribed amount of medicine into the nebulizer cup				
4)	The participant makes sure the patient places mouthpiece in and close the lips around it to form a tight seal				
5)	The participant ascertains to turn on the nebulizer machine.				
6)	The participant makes sure to take the normal breath through the mouth until the medicine cup is empty.				
7)	The participant assures to take out mouthpiece (or remove your child's mask) and turn the machine off				
8)	The participant make sure the patient rinses the mouth with water and spit it out, if the medicine used is inhaled corticosteroid				

Steps for Peak expiratory flow meter

S.N	Peak expiratory flow meter	Cases			
1)	The participant assures a clean mouthpiece is connected				
2)	The participant makes sure to set the marker at ZERO				
3)	The participant ascertains the patient stands up or sits upright				
4)	The participant encourages to take a deep breath and hold it				
5)	The participant assures the mouthpiece is placed in and a tight seal formed around it				
6)	The participant makes sure the patient breathes hard and as fast as possible				
7)	The participant ascertains to observe and record the recording				
8)	The participant assures the process is repeated 3 times and the highest record should be recorded				
9)	The participant assures to interpret the result Green zone (80-100%), Yellow zone (50-80%), and Red zone (less than 50%).				

Checklist for Metered dose inhaler with spacer

S.N	Steps for Metered dose inhaler with spacer	Cases			
1)	The participant makes sure the inhaler is shaken well for 5 seconds.				
2)	The participant assures to remove the cap from the inhaler and insert the inhaler's mouthpiece into the flat end of the spacer.				
3)	The participant ascertains the cap is removed from the spacer mouthpiece.				
4)	The participant makes sure the patient places the mouthpiece of the spacer between teeth and close the lips around it.				
5)	The participant ensures the patient presses the top of the inhaler and they are encouraged to breathe slowly in.				
6)	The participant ascertains the patient holds the breath for 5-10 seconds. takes the spacer out of the mouth and breathes out away from the mouthpiece				
7)	The participant makes sure the patient rinses mouth after use.				

Checklist for Rotahaler inhalation

SN	Steps for Rotahaler inhalation	Cases			
1)	The participant ascertains to unscrew the cover and hold the rotahaler vertically				
2)	The participant makes sure the rotacap is firmly pressed such that top end of rotacap is in level with the top of the hole.				
3)	The participant makes certain that the patient holds the mouthpiece firmly with one hand and rotate its base				
4)	The participant assures the patient breathes out gently and not inside the inhaler.				
5)	The participant ascertains the mouthpiece is gripped between the teeth and sealed with the lips around it.				
6)	The participant makes sure the patient breathes in through the mouth as deeply as they can				
7)	The participant makes sure the patient removes the rotahaler from mouth and holds the breath for at least 10 seconds or as long as they feel comfortable				
8)	The participant assures that the patient exhales out and repeat above steps if more than one dose is required				

Module 1 Exercise Answer key

Question 1- Among the following mentioned which inhaler device would you choose for a 5-year-old boy with bronchial asthma?

1. Pressurized metered dose inhaler plus dedicated spacer with mouthpiece
2. Pressurized metered dose inhaler plus dedicated spacer with face mask
3. Nebulizer with Face mask
4. Nebulizer with the mouthpiece

Question 2- Patient Y has a respiratory rate of 25 rpm, HR 115 bpm, and oxygen saturation of 93%, and complains of breathlessness. The choice of treatment would be:

a. Initiate oxygen therapy, Stat oral Prednisolone, SABA 4-10 puffs by pMDI with spacer every 20 minutes for one hour, assess response after one hour, discharge if saturation 95% and above.
b. Refer to high care without delay
c. Stat oral Prednisolone, SABA 4-10 puffs by pMDI with spacer every 20 minutes for one hour, assess response after one hour, discharge if saturation 95% and above.
d. Initiate oxygen therapy, nebulized salbutamol, and ipratropium, Inj. hydrocortisone and admission.

Question 3- Specify the type of risk factor as modifiable (M) or non-modifiable (NM)

S.N	Risk factors	Type
a	Tobacco	modifiable
b	Atopy	non -modifiable
c	Family history	non -modifiable
d	Obesity	modifiable
e	Age	non -modifiable
f	Cow-milk	modifiable
g	Respiratory viral infection	modifiable
h	Allergens	modifiable

Question-4 All of the following are risk factors for COPD except

1) Exposure of certain gases or fumes in workplace
2) Smoking
3) Physical inactivity
4) Frequent use of cooking fire without proper ventilation

Question-5 Verify whether each statement below is true or false.

S. no	Statement	True/False
a)	The presence of post-bronchodilator FEV1/FVC <0.7 suggest persistent airflow limitation	T
b)	Hyperinflated lung, a flattened diaphragm, and hyperlucency can be appreciated in Bronchiectasis	F
c)	Chronic bronchitis is defined as a persistent cough for 3 months in a 2 consecutive year	T
d)	Predominated symptoms of chronic bronchitis is shortness of breath	F
e)	Long Term monotherapy with oral corticosteroid is an alternative in old patient	T
f)	Theophylline is safe to use because of its efficacy and less adverse effect	F
g)	Group A (low symptoms, low risk) patient are treated with short acting Beta Agonist (SABA)	T
h)	A patient has asthma attacks at least once a week and no nocturnal awakenings, symptomatic management with Salbutamol is the treatment of choice.	T
i)	A 40 years male has daily asthmatic attacks with 4-5 times nocturnal awakening per month, he would be treated as a severe case of asthma.	T

Question-6 Circle the correct answer

All are the indication for hospitalization during exacerbation of COPD except

1) Marked reduction in activities of daily living due to dyspnea
2) Altered Sensorium
3) Respiratory rate 30/min
4) Peripheral Cyanosis

Question-7 Discharge criteria for COPD from the hospital includes all except

1) Partial or complete resolution of the symptoms
2) No Cyanosis
3) Systolic blood pressure > 90 mmHg
4) RR >30/min

Question 8- complete the table

5A's intervention for smoking cessation

Ask	Quantity of smoke, duration of smoke
Advise	Discuss harmful effects, advise to quit
Assess	The willingness of the patient to quit
Assist	Help create the best plan for quitting
Arrange	Follow up

Question 9 –List the key elements of patient education

- Educating patients and caregivers about asthma management
- Health care providers should educate the patient regarding the disease, expected goals (asthma day symptoms ≤2 day/week, night symptoms ≤1/month), ways to minimize the triggers (avoiding dust, smoke, fumes, cold weather), and methods of delivering medicine.
- Minimizing emergency visits, asthma symptoms control, and hospital admission

Case scenarios:

Question 1: An 11-year-old male presents to the emergency with shortness of breath, chest tightness and cough associated with wheezing since 5 days which has worsen since 3 days.

A. Enlist the symptoms noticed?

- Shortness of breath since 5 days which has worsen since 3 days
- Cough
- Chest tightness
- Wheezing

B. What history do you like to ask to establish the diagnosis of bronchial asthma?

- H/o of such symptoms previously
- H/o sputum expectoration
- H/o of allergic reaction to dust, exercise, pollen, cold, etc previously
- H/o fever, night sweats, chest pain, abdominal pain, bowel, bladder, feeding and sleep habits, exposure to any toxins, smoke, etc.
- Ask if the patients' breathlessness affects his conversation, limits his daily activity, has sweating during conversation due to breathlessness, difficulty during physical exercises.
- Past medical h/o and history of hospitalization and regular medication
- Family history

C. What are the clinical examination will you carry out and what are the expected findings? Fill in the below table.

Clinical examinations	**Expected findings**
Vitals: PR RR SPO2 Temperature	Normal or Tachycardia Normal or Tachypnea Normal or May be decreased Normal or febrile
Clinical examination	
Inspection:	Patient may be agitated, use of accessory muscle for breathing, cyanosis, urticarial, nasal polyp
Palpation	To verify for presence of fremiti (increased/decreased)
Percussion:	Bilateral breath sounds equal or reduced on one or both sides
Auscultation:	Bilateral polyphonic wheezes, silent chest,

d. What diagnostic tests would you like to carry out and list the expected findings?

Diagnostic tests	Expected findings
• Pulmonary function test • Spirometry	FEV1/FVC less than 0.7 FEV1 reduced
• Chest x-ray	Focal opacity, increased Broncho-vascular markings, bronchial wall thickening
• CBC	Eosinophilia

Question 2: A 24-year-old female with a history of bronchial asthma presented to Emergency with increased shortness of breath for 2 days:
Examination findings are:

- Respiratory rate: 34/min, Pulse: 120/min, Spo2: 88%
- Respiratory examination: Bilateral polyphonic wheeze

A. Enlist the abnormal findings in the above case? What other history would you like to ask and what would be your differential diagnosis?

- Shortness of breath for 2 days
- Tachypnea
- Tachycardia
- SPo2 decreased
- Bilateral polyphonic wheeze

Clinical history:

- H/o chest tightness, chest pain, cough, sputum expectoration, fever, respiratory tract infection, palpitation.
- Exposure to cold, smoke, heavy physical activities, dust, household allergens
- H/o allergic reactions
- Occupation for occupational exposure to dust or toxins
- Formula feeding or cow milk during infancy
- Family history of asthma or atopy

B. What other examination and its finding would you like to look for?

Clinical examinations	**Expected findings**
Vitals: PR RR SPO2 Temperature	Tachycardia Tachypnea Decreased Normal or febrile
Clinical examination	
Inspection:	Patient may be agitated, use of accessory muscle for breathing, cyanosis, urticarial, nasal polyp
Palpation	To verify for tactile fremiti (may be increased or decreased)
Percussion:	Bilateral breath sounds may be equal or reduced on one or both sides
Auscultation:	Bilateral polyphonic wheezes, Others: silent chest, diminished breath sounds Normal heart sounds or murmur may be present

C. Classify the severity of this case

Scenario 1: The patient has such episodes of shortness of breath around 2 times a week with no night time awakening. On spirometry the FEV is >80%

Components	**Classification of Asthma severity>12 years of age**			
	Intermittent	**Mild persistent**	**Moderate persistent**	**Severe persistent**
Symptoms	≤2days/week	>2 days/week but not daily	Daily	Continuous
Nighttime awakening	≤2 days/month	3-4/month	>1/Week but nightly	Nightly
Use of reliever medicine	≤2 days/week	>2days/week but not daily	Daily	Several times a day
Lung function*	FEV1>80%	FEV1>80%	FEV1: 60-80%	FEV1<60%

Ans: Intermittent

Scenario 2: The patient has such episodes of shortness of breath with cough and chest tightness daily on exertion and has to wake up at least 2 times in a week in the middle of sleep and is relieved only with medication.

Components	**Classification of Asthma severity>12 years of age**			
	Intermittent	**Mild persistent**	**Moderate persistent**	**Severe persistent**
Symptoms	≤2days/week	>2 days/week but not daily	Daily	Continuous
Nighttime awakening	≤2 days/month	3-4/month	>1/Week but nightly	Nightly
Use of reliever medicine	≤2 days/week	>2days/week but not daily	Daily	Several times a day
Lung function*	FEV1>80%	FEV1>80%	FEV1: 60-80%	FEV1< 60%

Ans: Moderate persistent

Question 3: 59-year-old male was brought to the emergency department with complaints of increased shortness of breath. He has shortness of breath on climbing stairs and on exertion. He has to take a rest in the middle. He has been having these symptoms for past 1 month but didn't visit the doctor. He has a history of smoking for the past 40 years and smokes at least 10 cigarettes a day since the past few months. He consumes alcohol once a week during gatherings. His father died of cardiovascular disease. He does not know the exact type.

A. Enlist the symptoms noticed?

- Shortness of breath since 1 month, increased since few days, occurs on climbing stairs or on exertion. He has to take a rest in the middle

B. What history do you like to ask to establish the diagnosis of COPD?

- H/o smoking
- H/o cough, sputum expectoration, fever, chest pain, chest tightness
- Family history of COPD or cardiovascular disease
- Past medical history: recurrent childhood infection, bronchitis, etc in past

C. What clinical examination will you carry out and what are the expected findings? Fill in the below table.

Clinical examinations	**Expected findings**
Vitals: PR: RR: Temp: BP:	 Normal or increased Normal or increased May be febrile or normal May be normal
Clinical examination	
Inspection	 Barrel shaped chest, subcoastal recession, pursed lip breathing, use of accessory muscles of respiration, retraction of suprasternal, supraclavicular and intercostal spaces during inspiration, cyanosis, clubbing Altered mental status (confusion, delirium, somnolence) due to hypoxemia/hypercapnia
Palpation	Normal or hepatomegaly Pitting leg edema
Percussion	bilateral equal air entry or diminished on one or both sides
Auscultation	Normal vesicular breath sounds or hyperresonant notes on both side or one side, diminished breath sounds on one or both sides Wheeze Normal heart sounds or murmurs may be noted

D. What diagnostic tests would you like to carry out and list the expected findings?

Diagnostic tests	Expected findings
Pulmonary function test Spirometry	FEV1/FVC less than 0.7 FEV1 reduced
Chest x-ray	hyperinflated lung, a flattened diaphragm, bullae, and hyper lucency
CBC, electrolytes, renal function test, liver function test, ABG and sputum analysis	Anemia (nutritional or chronic disease associated) or polycythemia, and normal leucocyte counts Electrolytes, RFT, Liver function test may be deranged or normal ABG: may show hypoxemia and hypercapnia Sputum analysis may show acid-fast bacilli for Pulmonary TB
ECG	May demonstrate evidence for cor pulmonale (P wave ≥2.5 mv, R/S ratio in V1> 1, right axis deviation), arrhythmias (atrial fibrillation, atrial flutter, multifocal atrial tachycardia).
ECHO	May show Cor-pulmonale or other cardiac comorbidities

E. What are the differential diagnosis?

- COPD, bronchiectasis, interstitial lung disease, and heart failure

Virtual session plan: 1

- Orientation: One and half hour
- Participant welcome
- Course Introduction: Goal, Objective, core competencies
- Orientation on Self-Paced learning, usage of training material
- Pre-Course: online

Virtual session plan: 2

- Exercise discussion
- Address learner's queries and clarify them
- Identify the gap in knowledge and level of understanding

Module 2: Cardiovascular Diseases

Session plan for Virtual session

Preparation for virtual session • Review PEN Plus clinical protocol chapter 2 Cardiovascular Diseases • Review all the exercises with the correct answer in facilitators guide Module 2 Cardiovascular • Review case scenarios with learners for discussion – identify the probing question for the case • Review session plan for the session • Prepare pen and notebook for the session to note			
Virtual session on Module 2 Cardiovascular Diseases			
Session	**Methods and activities**	**Materials and Methods**	**Time**
Virtual	• Welcome all the learners • Introduce yourself and ask them to introduce themselves • Ask them to share the self-paced learning experience – ask them to share best part of self-paced learning and the difficulties they encountered during the self-paced learning. (ask few of them, and encourage all the learners to share their own if they had different from the stated) • Encourage all to participate. Ensure you are involving the quitter learners • Ask participants to share difficult content to understand if any • Difficult or not solved question to solve • Note all difficulties and questions • Ask them to hold till last if all the issues are not addressed during the discussion as they will be addressed in the last of the session		10 min
	• Then discuss the correct answers of the exercises one by one with brief rationale of each. • Involve all the learners in the discussion by asking them to share their right answer.		25 mins
	Now Discuss the case scenario-based questions that the learners had completed in the self-paced session using PPT slides While facilitating the discussion do not forget to use probing questions about why they answered this Sometimes you can use hypothetical scenarios too what they will do in this condition.	PEN–Plus Protocol and Learners Guide: Module 2	25 mins
	Ensure the previously shared difficult questions and contents are discussed If any content or questions yet to discuss cover it.	PEN–Plus Protocol and Learners Guide: Module 2	10 mins
	Ask them for their queries if any and respond accordingly. close the session by highlighting and summarizing the session with key points of the module. Thank them for their participation and ask for their feedback. (might be a structured questionnaire- google sheet) ask them to complete the mid-course knowledge assessment questionnaire which will carry 20 % for final evaluation inform them if they do not score 85 percent in the final evaluation they have to repeat the certification test.)		5 mins

Onsite Learning Session: Cardiovascular diseases

Onsite Session Plan			
Session	**Topic**	**Materials and method**	**Time**
1	**Hypertension** At the End of the session the learner will be able to : ● To diagnose Hypertension ● To understand the clinical features and the target organ damage secondary to hypertension ● To understand the management of Hypertension ● To suspect a secondary cause of Hypertension		**80 minutes**
	Discuss the case scenarios (given in PowerPoint slides) **Case scenario 1** • 45-year-old male presented to your clinic with complaints of Headaches on/off. His father has a history of Hypertension. • On examination, his BP on his right arm was 150/100 and his left arm of 150/100 mmHg. Last month BP was 150/100 mmHg. • He hasn't taken any medication. **What is the diagnosis?** -Hypertension **What additional symptoms you want to ask in the history?** • Headaches, dizziness • Blurred vision • Chest pain, • Shortness of breath, • Palpitations, • Peripheral edema, • Nocturia, hematuria, • Claudication • TIA, Stroke **What are the risk factors?** • Diabetes • Dyslipidemia • Smoking • Physical Inactivity • Stress • Past history of Cardiovascular disease • Chronic kidney disease • Family history of cardiovascular disease	19 slides	40 minutes

	What lab Investigation and why? • Blood test (Sodium, potassium, sr. creatinine, eGFR, lipid, fasting blood glucose) • Urine test: Dipstick urine test • 12-lead ECG: Detection of atrial fibrillation, left ventricular hypertrophy (LVH), ischemic heart disease **What is Hypertension Mediated Organ Damage (HMOD)?** - Defined as Structural or functional alteration of the arterial vasculature and/or the organs it supplies that is caused by elevated BP. **What are its effects?** • Brain - Stroke • Heart - Myocardial Infarction, Heart failure • Kidney – Chronic kidney disease • Arteries – atherosclerosis • Eyes – Retinopathy **What are the lab investigations?** • Urea – 30 mg/dl • Creatinine – 0.9 mg/dl • RBS – 90 mg/dl • Urine RME- WNL His 12 lead ECG is as shown below. Is it normal ?- Left ventricular hypertrophy **The Patient was planned to start medication.** **When to initiate Medication?** • Should start no later than four weeks following diagnosis of HTN. • If systolic ≥160 mmHg or diastolic ≥100 mmHg) or there is accompanying evidence of end-organ damage • For individuals with existing cardiovascular disease, left ventricular systolic dysfunction, proteinuria, diabetes mellitus and systolic blood pressure of 130–139 mmHg. • **Monotherapy:** First-line single agent includes thiazide diuretics, CCB and ACE inhibitors or ARB. • Use monotherapy for low-risk patients with stage 1 hypertension, very high-risk patients with high–normal BP, frail older patients. CCB or thiazide diuretics preferred for age > 65 years. The patient was started on monotherapy with tab amlodipine 5 mg. The patient Came after 1 month later Still BP 150/90 **What will you Do?** Start combination therapy.		
	Initiation with 2 first line agents of different classes		

	either as separate agents or in fixed dose combinations is recommended with stage 2 hypertension and an average BP more than 20/10 mmHg above their target. Combination can be done as enlisted below. • Step 1. Single pill dual low dose combination.A+C • Step 2. Single pill dual full dose combination. A+C • Step 3.Triple combination. A+C+D • Step 4. Add Spironolactone or other antihypertensive groups for resistant hypertension • (A:ACE inhibitors/ARBlocker;C: Calcium Channel Blocker; D: Diuretics). **What non pharmacological/ lifestyle modifications would you advice?** -DASH diet -Physical activity: 30 minutes per day and 5 days a week -Smoking cessation -Alcohol consumption **Case scenario 2:** • 65 65-year-old male presented to the emergency department with acute shortness, Shortness present even at rest. He also gave a history of pink frothy sputum. His BP is 200/120 mmhg and pule is 110/min and SPO2 is 90 % **What is your Diagnosis?** - Hypertensive emergency with acute pulmonary edema **What is hypertensive urgency vs emergency?** -Systolic BP more than 180 and/or DBP>120 is severe hypertension. Severe hypertension without acute target organ damage is **hypertensive urgency**. If acute target organ damage it is called **hypertensive emergency.** **How do You manage?** -Nitroglycerine -IV Labetolol IV enlapril **How fast to decrease BP in hypertensive emergencies?** -As per Table 21: Timeline and Target BP Control in Hypertensive Emergencies of PEN-Plus clinical protocol **Identify gaps of knowledge if any and review the information based on the need.** **What are the Common medications used?** • Nitroglycerine (5 ugm/min increased to		

	100/ugm/min) • Labetalol (0.1-0.3mg/kg max 20mg iv over 10 minutes) • If available esmolol (loading dose of 500-1000 ugm/kg/min over 1 minute followed by a 50 ugm/kg/min infusion) or enaliprilat (initial 1.25mg over 5 minutes increase upto 5mg every 6 hours). **When to Suspect secondary Hypertension and refer?** • Disproportionate target organ damage(TOD) for degree of hypertension • Onset of hypertension in young adults <30 years • Abrupt onset of hypertension • Exacerbation of previously controlled hypertension • Accelerated /malignant hypertension • Drug induced/resistant hypertension • Unprovoked hypokalemia		
	Ask the participants to perform a role-play on DASH diet At the end of this role play, the learner will be able to • **Educate the Patient and the patient relative regarding DASH diet**	10 slides	20 minutes
	Choose 3 participants for the role play ● One act as doctor, one as patient and one patient relative ● Explain the case situation to all the participants of the role play and ask the medical team to perform a roleplay on DASH diet		15 min
	Review and summarize the session		5 minutes
2	**Acute Rheumatic Fever (ARF) and RHD**		
	At the end of the session, the learners will be able to : 1. Enumerate the Clinical features of Rheumatic Fever 2. Making Diagnosis Of Rheumatic Fever 3. Treatment Of Acute Rheumatic Fever Prevention of Rheumatic Fever		85 minutes
	Case scenario 1 of ARF 1. A 14-year-old girl presented to your clinic with complaints of joint pain of B/l knee and ankle for 1 weeks. She also give history of sore throat 2 weeks back.	15 slides	45 minutes

	On Examination: - Tenderness present at knee and ankle joint - Systemic Examination revealed- pan systolic murmur at the apical area Ask the participant **What is the likely diagnosis?** -Acute Rheumatic Fever with likely Carditis **What investigation to be done to make a diagnosis?** - ECG - Her ECG shows Normal Sinus Rhythm - ESR - 50/mm hr - CRP - positive - Echocardiography - If Available ASO titer , Anti Dnase B , Positive quick strep test **Discuss the major and minor manifestations of rheumatic fever and evidence of preceding GAS infection as per Figure 17: Diagnosis of Acute Rheumatic Fever (ARF) of the PEN-Plus clinical protocol** **What is the role of Echocardiography?** -To detect Subclinical carditis , confirm Clinical carditis . **What are the changes seen in her echocardiography?** ---Mitral Regurgitation **What are the Echocardiography Features seen in RHD ?** -Thickening of Mitral valve **How will you manage this case?** • Antibiotic to eradicate GAS infection • Anti-inflammatory therapy for symptomatic relief, • Management of heart failure if present and other supportive treatment. • Prevent future reinfection, **How will you prevent the disease, its recurrence and progression of the disease**? -As per the content on the Prevention of RHD from PEN-Plus clinical protocol **What is the Duration of therapy for Secondary Prevention of acute rheumatic fever?** As per the Table 29: Duration of therapy for secondary prevention of acute rheumatic fever from PEN-Plus clinical protocol		

	Case scenario 2 of ARF and RHD 35 year male presented to emergency with c/o of Shortness of breath since 15 days . He also gives h/o of	6 slides	20 minutes
	orthopnea and Paroxysmal nocturnal dyspnea since 4 days. He also complains of Palpitation since 4 days. He give past history of rheumatic fever during childhood O/E : Patient ill looking Pulse : 130/min Irregularly irregular Sp02= 90% room air BP : 110/60 mm Hg RR- 28/min Chest : B/L Vesicular Breath sounds with B/L Basal crepitations CVS- Mid Diastolic Murmur at mitral Area **What is the clinical diagnosis?** -Rheumatic Heart disease in Heart Failure **What is the NYHA class of the patient?** - NYHA IV **What are the investigation to be done?** • Blood investigation , CBC , RFT, ECG, x-ray chest, Echo **Show the ECG and ECHO results of the patient and ask about the rhythm?** • ECG: AF with fast ventricular rate • ECHO: Rheumatic Mitral stenosis **How will you Manage the case?** • O2 therapy • IV Diuretics • Rate control with IV digoxin • After stabilization of HF refer to tertiary Center for intervention • Penicillin therapy for secondary prevention What are the other treatment required? • Anticoagulation with warfarin to target INR 2 to 3. **When to refer?** • All asymptomatic or symptomatic severe valvular heart disease should be referred for further evaluation and intervention in tertiary center.		

	Case scenario 3 of ARF: Ask the participants: • A 30 year old Male presented with complaints of increased Shortness of breath since 20 days associated with Paroxysmal nocturnal dyspnea and orthopnea. • His vitals Pulse – 90/min regular BP- 110/70 Spo2 - 91% Chest – b/L VBS with b/l Basal creps	5 slide	15 minutes
	CVS – pansystolic murmur at mitral area His CBC, RFT within normal limit ECG shows – Normal sinus rhythm Ask the participant **Identify the abnormality in Echo clip** - RHD severe MR with LVEF 40 % **What is the diagnosis** • Rheumatic Heart Disease – Severe Mitral regurgitation in Heart failure ,NYHA class IV **How will you Manage?** • O2 therapy • IV Diuretics • ACE/ARB, B blockers and Aldactone • After stabilization of HF refer to tertiary Center • Penicillin therapy for secondary prevention **When to refer?** • All asymptomatic or symptomatic severe valvular heart disease should be referred for further evaluation and intervention in tertiary center.		
	Review and summarize the session		5 minutes
3	**Ischemic Heart Disease**		
	At the End of the session the learner will be able to : ● To understand the Clinical features of Chronic Stable Angina and Acute coronary syndrome ● To understand the risk factor for Ischemic heart disease ● To understand Electrocardiogram changes in Ischemic Heart disease ● To understand the utility of cardiac biomarkers for the diagnosis of ACS ● To understand the role of Echocardiography in IHD ● To Understand the management of Ischemic heart Disease		135 minutes

	Discuss: **Case scenario 1** • 45 year old male with history of hypertension presents to OPD Retrosternal chest pain for 7 months . He is asymptomatic at rest and chest pain is precipitated by exercise, cold weather or emotional stress with duration of 2 to 10 min and relieved by rest. There has been no change duration and intensity of chest Pain. **What is the likely Diagnosis ?**	4 slides	40 minutes
	-Chronic Unstable Angina **How would you approach to the case? How do you manage this case?** -Chronic stable Angina **Investigation :** **1.** ECG to look for ischemic Changes 2. Xray chest to rule out other causes of chest pain 3. Echocardiography to look for regional wall motion abnormalities and evaluation of Ventricular function. 4. Basic Lab Investigation : Complete Blood count, kidney function test, lipid profile, blood glucose. 5. Referral for Exercise Stress testing: in Low to intermediate pretest probabilty of CAD, Tread Mill Exercise testing: For those who can exercise. Pharmacological stress testing: who cannot exercise to an adequate workload. 6. Referral for CT Coronary angiogram: In Low to intermediate pretest probabilty of CAD, 7. Invasive Coronary angiogram: Referal for an invasive coronary angiogram is indicated in patients with frequent, significant symptoms, patients with high risk features on non-invasive testing. **Management:** The treatment of stable angina includes anti-anginal medication, medication to modify atherosclerosis and aggressive treatment of causative risk factors. **A. Recommendations on lifestyle management and risk factor modifications:** 1 Stop Smoking. 2. Patients with previous acute MI, coronary artery bypass graft (CABG), percutaneous coronary interventions (PCI), stable angina pectoris, or stable chronic heart failure should be enrolled in exercise programs. Exercise should be gradually instituted and exercise prescription should be individualized with a goal of at least moderate-		

	intensity aerobic exercise training, >3 times a week and 30 min per session. 3. Weight reduction in overweight and obese people is recommended to have favorable effects on blood pressure and dyslipidemia, which may lead to less CVD. More precisely, it is recommended to attain BMI <22.9 kg/m2 and Waist Circumference (WC) (men: 90 cm; women: 80 cm) to minimize the cardiovascular risk. 4. All SIHD patients should be treated with statins (Atorvastatin 20 to 80 mg/d or rosuvastatin 10 to 40 mg/ day)to achieve optimal LDL-C goal <70 mg/dl.		
	5. All SIHD patients with hypertension should be recommended to attain the SBP/DBP goal of 130/80 mmHg with medical management. 6. HbA1C of <7.0% should be the objective while treating SIHD patients with diabetes. 7. Patients should be counseled regarding proper diet with an aim to reduce dietary saturated fat and cholesterol, sugar, and other refined carbohydrates and increase fruits, vegetables and dietary fiber intake. **B. Pharmacological Management** **a. Relief of angina symptoms** 1. Short-acting nitrates are indicated for the immediate relief of anginal symptoms. 2. Beta-blockers and/or CCBs are the initial agents for long-term symptoms management and heart rate control based on co-morbidities, contraindications and patient preference. 3. The combination of non-DHP CCB with beta-blocker should be avoided in patients with anticipated risk of atrioventricular block or severe bradycardia. 4. The addition of long-acting nitrates, trimetazidine, ivabradine, ranolazine or nicorandil is proposed in case of intolerance or contraindications or failure in achieving control by beta-blockers and/ calcium channel blockers. 5. Ivabradine may be considered in symptomatic patients who do not tolerate beta-blockers or in whom the resting heart rate remains above 70 bpm, despite administration of the full tolerable dose of beta-blockers. 6. When two hemodynamically acting drugs fail to achieve the desired results in reducing angina, preference may be given to cardio-metabolic agents like trimetazidine or ranolazine as they have a different mode of action and may offer		

	better efficacy in combination with a hemodynamic agent. **b. Recommendations on event prevention:** 1. Daily low-dose aspirin 75 mg OD is recommended in all SIHD patients if not contraindicated. 2. Clopidogrel 75 mg po OD is recommended in patients with aspirin intolerance. 3. High-intensity statins should be prescribed in all patients with SIHD irrespective of lipid levels. 5. All stable angina patients with diabetes, hypertension, heart failure or chronic kidney disease should be recommended to receive ACEIs/ARBS if not contraindicated. 7. The rest of the patients with SIHD also be recommended to receive Angiotensin-converting enzyme inhibitors (ACEIs/ARBS).		

	Revascularization: Needs referral for revascularization when patient symptoms are uncontrolled by optimal medical therapy alone and/or have high-risk features in noninvasive testing. **Case scenario 2** 65 -years- old male with a history type 2 DM and HTN presents to emergency with new onset retrosternal chest pain for 15 days. Chest pain increased on mild exertion and was relieved by rest but since today morning chest present even at rest. ECG shows no significant changes And cardiac enzyme is normal. **What is the likely Diagnosis? Unstable Angina** **Case scenario 3** 65 years old female with a history type 2 DM presents to emergency with Retrosternal chest pain increased on exertion and relieved by rest but since yesterday chest present even at rest. ECG shows ST depression in lead V2 to V6 And cardiac enzyme revealed Cardiac Troponin positive and raised CPKMB level **What is the likely Diagnosis?** Non-ST elevation myocardial infarction **How would you approach to the case? How would you manage the case?** Non-ST elevation MI **Medical Therapy :** Aspirin loading dose (LD) of 300 mg orally or, followed by 75 mg PO OD. Clopidogrel LD of 600 mg orally, followed by 75 mg OD. High dose statin therapy (Rosuvastatin 20 to 40 mg) Sublingual or i.v. nitrates and early initiation of beta-blocker treatment to be started in patients with ongoing ischemic symptoms and without contraindications. IV nitrates are recommended in patients with uncontrolled hypertension or signs of heart failure. In Low molecular weight heparin (LMWX) or Fondaparinoux Dose : LMWX 1mg/kg BD if Creatinine clearance <30ml/min : 1mg/kg od for 5 to 7 days. ACE inhibitors (or ARBs in cases of intolerance to ACE inhibitors) in patients with heart failure with reduced LVEF (<40%), diabetes, or CKD unless contraindicated (e.g. severe renal impairment, hyperkalaemia, etc. Beta-blockers in patients with systolic LV dysfunction or heart failure with reduced LVEF (<40%).		

	Mineralocorticoid receptor antagonist (Aldactone) in patients with heart failure with reduced LVEF (<40%). **Referral for: An immediate and early invasive management strategy (2 to 24 hrs.)** in patients with at least one of the following: **Very high-risk criteria:** • Hemodynamic instability or Cardiogenic shock. Recurrent or refractory chest pain despite medical treatment. • Life-threatening arrhythmias. Mechanical complications of MI. • Heart failure clearly related to NSTE-ACS. • Presence of ST-segment depression >1 mm in >_6 leads additionally to ST-segment elevation in aVR and/or V1 **High-risk criteria:** Diagnosis of NSTEMI with Dynamic or presumably new contiguous ST/T-segment changes suggesting ongoing ischemia. • Transient ST-segment elevation. **Case scenario 4:** 68 years old female with a history Type 2DM, Dyslipidemia presents to emergency with severe Retrosternal chest pain for 30 mins, Chest pain is associated with nausea and sweating. ECG shows ST elevation in lead II, III, and aVF as shown. **What is the likely Diagnosis?** Acute Inferior wall MI **How would you approach the case? What would be your treatment approach?** Absolute bed rest. • Continuous hemodynamic monitoring and ready access to defibrillation should be available. • Intravenous (IV) access is mandatory. • Oxygen supplement if clinically significant hypoxemia (SPO2 < 90 %.) or if there is evidence of heart failure. • Pain management: For STEMI Patients with ongoing ischemic discomfort Morphine sulphate (2 to 4 mg IV) is the analgesic of choice. It could be repeated at 5 to 15 minutes intervals with increment of 2 to 8 mg IV. IV Pethidine with prochlorperazine can be considered. • Sublingual nitroglycerin 0.5 mg (can repeat every 5 minutes for a total of 3 doses, after that intravenous nitroglycerin should be considered • Antiplatelet therapy :		

	- Aspirin ~ chewable tablet 300 mg. - Clopidogrel ~ 300 mg orally if thrombolytic therapy (600 mg, if Primary PCI) is planned.		
	• High-dose statin therapy (Atorvastatin 40 / 8o mg or Rosuvastatin 20 to 40 mg) • Reperfusion Therapy • Primary PCI is recommended if the patient can be transferred to a Primary PCI capable hospital within 120 minutes of first medical contact. • If the time duration is > 120 minutes or no such facility is available then fibrinolytic therapy should be initiated within 10 minutes of STEMI diagnosis • It is recommended to transfer the patient for coronary angiogram to PCI capable hospital 2-24 hrs. even after successful thrombolysis (pharmaco-invasive therapy) or for rescue PCI in case of failed thrombolysis **Indication of thrombolytic therapy:** 1. ST elevation as described above. (STEMI) 2. Symptom onset less than 12 hrs. Prior to the presentation. 3. No contraindications Discuss also fibrinolytic therapy and thrombolytic therapy and other medications.		
	ECG in IHD ● Ask the participant about the major ECG changes in stable Ischemic Heart disease and Acute coronary syndrome	6 slides	30 minutes
	Utility of Cardiac biomarker for diagnosis of ACS ● Discussing the Utility of Cardiac biomarkers for the diagnosis of ACS	3 slides	15 minutes
	Echocardiography in IHD ● Discussing the role of Echocardiography in IHD ● Demonstration of ECHO video	1 slide	5 minutes
	Management of IHD Role play and clinical simulation ● Case Module for Management of Ischemic Heart Diseases ● Case Module for management of unstable angina /NSTEMI ● Case Module for management of STEMI	7 slides	40 minutes
	Review and summarize the session		5 minutes
4	**Congenital heart disease**		

	At the End of the session the learner will be able to ● To understand symptoms and signs to suspect Congenital Heart Disease ● To understand Electrocardiogram and X-ray Chest features of Common Congenital Heart disease		
	● Management of Hyper cyanotic spells		
	Case scenario 1 • 2 2-year-old boy with a history of heart disease presented with paroxysms of rapid and deep respirations, irritability and prolonged crying, and increasing Bluish discoloration of lips, tongue and finger. The event was triggered by excessive crying. Spo2 monitoring shows SPO2 of 84 % on room air **What is the likely diagnosis?** -Cyanotic Congenital heart disease **What are noticeable signs you will look in the case?** --Hypercyanotic spells **How would you approach for the management of this case?** • Hypercyanotic spells require immediate intervention. • The first steps are to place infants in a knee-chest position (older children usually squat spontaneously and do not develop hypercyanotic spells) • Establish a calm environment Give supplemental oxygen • Give IV fluids for volume expansion • If the spell persists, standard medical therapy includes morphine, phenylephrine, and beta-blockers (propranolol or esmolol) needed.	1 slide	20 minutes

	Electrocardiogram and X-ray, Chest features and ECHO of Common Congenital Heart disease • Normal ECG -Right axis deviation, increased amplitude of P waves with rSR' pattern (right bundle branch block) in right precordial leads , Left or superior axis deviation in primum ASD • ECG in ostium second: o QRS axis -30 to +150 □ OS-ASD o OS-ASD □ rsR' in V1 in 95% patients o **Presence of RVH** (qR pattern or upright T wave in V1, increased amplitude of R wave in V1 or S in V6 > 95th percentile, or abnormal R/S ratio in lead V1 or V6) **is s/o PAH, in patients with OS ASD** • **ECG changes in VSD** o The electrocardiogram for a patient with a VSD depends on the size of the defect and the age of the patient. o ***Small VSD*** – Normal ECG o ***Moderately restrictive VSD*** – **LAE** (wide terminal negative P wave in lead V1) with **LVH** (deep, narrow Q and	9 slides	45 minutes
	prominent R waves in inferior & lateral precordial leads) o ***Large VSD*** – **BVH** – Katz-Wachtel pattern (large equiphasic QRS complexes in mid-precordial leads) o ***Eisenmenger VSD*** – RAD, RAE, Tall monophasic R in V1 with deep S in V5-V6, absence of 'q' in lateral leads o First ECG: o Slight widening of the P waves in lead II (left atrial enlargement), deep S waves in lead V1 and tall R waves in leads V5 and V6 (left ventricular hypertrophy). o Second ECG: o **Two-month-old patient with severe ventricular septal defect:** Signs of left ventricular hypertrophy with deep S waves in lead V1 and tall R waves in leads V5 and V6. Tall R waves in leads V1-V3 and deep S waves in leads V5 and V6 with negative T waves in leads V2 to V5 (juvenile T wave pattern) are secondary to the age-specific predominance of the right ventricle. • ECG changes in PDA: o Small PDA – Normal ECG o Moderate to large PDA – same as non-restrictive VSD o LVH with ST-T changes of ischemia indicates associated Aortic stenosis/LVOTO		
	Review and summarize the session		5 minutes

Module 2 Checklist

Checklist for WHO Risk Prediction chart

Tick S for satisfactory and U for Unsatisfactory

S.N	WHO Risk Prediction chart	Cases			
1)	The participant assures proper selection of the appropriate chart using epidemiological sub-region and depending on the presence or absence of diabetes.				
2)	The participant ascertains to select either male or female tables.				
3)	The participant makes sure to select smoker or nonsmoker boxes.				
4)	The participant ensures to select the age group box (if the age is 50-59 years select 50)				
5)	The participant makes sure to look within the box for the nearest cell where the individual's systolic blood pressure (mm Hg) crosses				
6)	The participant ensures to look within the box for the nearest cell where the individual's total blood cholesterol level (mmol/l) crosses				
7)	The participant assures to observe the colour of the cell which will determine the 10-year cardiovascular risk.				

Checklist for Blood Pressure measurement

Tick S for satisfactory and U for Unsatisfactory

S.N	Prerequisite for blood pressure measurement	Cases			
1)	The participant assures that the patient avoids caffeine, exercise, and smoking for at least 30 min before measurement.				
2)	The participant makes sure the patient is relaxed and is sitting in a chair (feet on floor, back supported) for more than 5min.				
3)	The participant ensures the patient has emptied their bladder.				
4)	The participant makes sure neither the patient nor the observer talks during rest period or during measurement.				
5)	The participant makes sure to remove the thick clothing covering the location of cuff.				

	Steps for blood pressure measurement				
1)	The participants make certain the patient's arm is supported (e.g. resting on a desk).				
2)	The participant ascertains the middle of the cuff is positioned on the patient's upper arm.				
3)	The participant makes sure to use the correct cuff size such that the bladder encircles 80% of the arm				
4)	For auscultatory determinations, the participant makes sure a palpated estimate of radial pulse obliteration pressure is used to estimate SBP and the cuff is inflated 20–30 mm Hg above.				
5)	For auscultatory readings, The participant assures cuff pressure is deflated at the 2 mm Hg per second, listening for Korotkoff sounds				
6)	The participant makes certain to record SBP and DBP on the onset of the first Korotkoff sound and the disappearance of all Korotkoff sounds.				
7)	The participant ascertains BP is recorded in both arms. If the difference between two arms is more than 15 mmHg, measurement is repeated. If the difference persists, the blood pressure of the arm with high recording is considered.				
8)	The participant ensures to take a second measurement if the blood pressure in the clinic is 140/90 mm Hg or higher, If the two are substantially different, a third measurement is taken. The lower of the last 2 measurements is recorded as clinic blood pressure.				

ECG CHECKLIST

Click S for satisfactory and U for unsatisfactory

S.N	Procedure for ECG	Cases			
1)	The participants ensure all the jewelry or lockets is removed				
2)	The participants make sure all the clothes are removed above the waist and covered with a gown or sheet and exposing only the necessary skin				
3)	The participants ascertain to maintain the privacy of the patient.				
4)	The participants ensure the patient is in supine or semi fowler position				
5)	The participant assures the patient has placed their arms down by their side and relaxed their shoulder.				
6)	The participants ascertain the patient's legs are uncrossed				
7)	The participants ensure the electrodes are attached to chest, arms and legs				
8)	The participants make sure to remove any electrical device such as a cell phone away from the patient as they may interfere with the machine.				
9)	The participants ascertain the patient is lying down calm with no movement, electrodes are well placed and no improper grounding				

ECHO CHECKLIST

Click S for satisfactory and U for Unsatisfactory

S.N	Trans thoracic ECHO procedure	Cases				
1)	The participants make sure the patient is lying down in semi-recumbent with his/her head elevated					
2)	The participant assures the left arm is tucked under the head and the right arm lies along the side the body					
3)	The participants ascertain that standard positions on the chest wall are used for the placement of transducers called “echo windows”					

Module 2 Exercise answer key

Question 1: According to the Jones Criteria, which of the following sets of symptoms would indicate a positive diagnosis of Rheumatic fever? Select all that apply.

A. Carditis, fever, and an elevated WBC count

B. Positive strep throat culture, arthritis, chorea

C. Recent scarlet fever, carditis, fever, arthralgia

D. Elevated C-reactive protein, carditis, fever

Question 2: Match the following

Carditis		Manifest as shortness of breath, paroxysmal nocturnal dyspnea and palpitation
Arthritis		Involvement of joint of hands and feet
Sydenham's Chorea		Aimless involuntary movement of arms, legs, trunk, and facial muscles
Subcutaneous Nodules		Painless firm and freely movable nodules under the skin
Erythema Marginatum		Rash that blanches on pressure

Answer:

Question 3 : All are used in the primary prophylaxis of rheumatic fever except

a. Penicillin

b. Erythromycin

c. Sulfadiazine

d. Phenoxymethyl penicillin

Question 4: Indicate which statement is True for the given scenarios**:**

Hypertension is defined based on office BP as:

a. SBP of ≥ 140 mmHg or DBP of ≥ 90 mmHg measured on 1 occasion.
b. SBP of ≥ 140 mmHg and/or DBP of 90 mmHg measured on 2 to 3 visits on different days.
c. SBP of ≥ 130 mmHg or DBP of 5 mmHg measured on 2 to 3 visits on different days.
d. SBP of ≥ 130 mmHg and/or DBP of ≥ 85 mmHg measured on 1 occasion.

Question 5: How would you define the quality of ischaemic chest pain?
Answer: Retrosternal chest pain, heaviness, pressure type with radiation to neck, jaw, epigastrium, shoulder, and left arm. Patients are usually asymptomatic at rest and chest pain is precipitated by exercise, cold weather, or emotional stress with a duration of 2 to 10 minutes

Questions 6:

Regarding the Lifestyle intervention and DASH Diet for the management of hypertension which is incorrect**.**

a. Dietary Sodium restriction
b. Emphasizes vegetables, fruits, whole grains, and fat-free or low-fat dairy products Includes lean meats, poultry, fish, beans, eggs, and nuts and Limits saturated and *trans* fats, sodium, and added sugar
c. Regular Physical activity of 5 min/ day
d. Smoking Cessation
e. Weight reduction and Maintain body mass index (BMI) of 18.5 to 23 kg/m2

Question 7: Acute coronary syndrome includes all except

1. Unstable Angina
2. Non ST segment Elevation MI
3. ST elevation MI
4. Stable Angina

Question 8: All are true regarding hypercyanotic spell except

1) A spell may be triggered by any event that slightly decreases oxygen saturation (e.g., crying, defecating)
2) Characterized by paroxysms of hyperapnea (rapid and deep respirations), irritability, increasing cyanosis
3) Placing infants in a knee-chest position or older children usually squat helps in managing symptoms
4) Mid diastolic rumbling murmur best heard by bell of stethoscope

Question 9: Verify whether each statement below is true or false.

S.No	Statement	True/False
a	High-sensitivity cardiac troponin is more sensitive than creatinine kinase isoenzyme (CK-MB) in detecting myocardial infarctions	T
b	Echocardiography is routinely indicated as a first-line test for diagnosis of ACS	F
c	Thrombolytic Therapy is indicated in STEMI patients with Symptom onset less than 12 hrs and where PCI facility not available	T
d	Stable angina is manifested as retrosternal chest pain, precipitated by exercise, cold emotional stress	T
e	Prednisolone are prescribed to patient who have severe carditis not responding to aspirin	T
f	Duration of Benzathine penicillin prophylaxis in ARF is 3 year or until 12 year whichever is longer	F
g	Common acyanotic Heart defects include Tetralogy of Fallot, Total anomalous pulmonary venous connection, Transposition of Great arteries	F
h	Congenital heart disease may occur in children with genetic and chromosomal anomaly such as Down Syndrome, Turner Syndrome, Noonan Syndrome, Marfan Syndrome , etc.	T
i	Pan systolic murmur heard in left sternal border in an atrial septal defect patient	F

Case scenario:

1. 3 year old boy had episodes of turning blue and losing consciousness after crying. His-heart rate is 130/min, BP – 110/70 mm Hg. How do you approach this case?

History and Examination:

History of Blue since birth/ soon after birth, history of previous similar symptoms of hypercyanotic spells. Ask for other symptoms of congenital heart disease.

Clinical examination to measure SPO2 meaurement in upper and lower limbs, pulse in all limb and respiratory rate. Look for dysmorphic features chest deformity, precordial activity, right ventricular heave, raised JVP, Cyanosis , clubbing, Swelling of limb and abdomen, palpable liver , presence of extracardia congenital malformation. Auscultation for cardiac murmur and chest crackels

Use Nadas Criteria to suspect congenital Heart disease

Diagnostic tests:

ECG, Chest Xray, Echocardiography CBC, PCV

Initial management:

Management for Hypercyanotic spells

- Establishment in calm enviroment

- Knee chest position
- Supplemental o2
- IV fluids
- If spells persist then medical therapy with morphine, beta-blocker and phenylephrine.

2. 30-year-old male, a known case of RHD, presents to the emergency department with increased shortness of breath with dry cough for 1 week. He gives history of orthopnea and Paroxysmal Nocturnal dyspnea since the last 3 days. SPO2 <90 %.

How would you approach to this case?

Clinical examination:

General physical examination and systemic cardiac examination to look for signs of RHD.

Diagnostic tests:
- General – blood investigation : CBC , RFT
- ECG, Xray Chest , Echocardiography

Initial management:
- Propped up position, O2 therapy
- IV diuretics
- Heart failure medication

3. 50 years old male female with history Hypertension and type 2DM presents to emergency with severe retrosternal chest pain associated with sweating with chest pain radiation toward jaw and left forearm for 1 hours duration. ECG show > 2 mm ST elevation in lead II, III, aVF.

- What is the diagnosis?

  Acute Inferior wall ST elevation MI

- Outline the management for this patient.

  - Absoulte bed rest, Continuous Haemodynamic Monitoring
  - O2 if SPO2< 90%
  -Dual antiplatelet – Tab Ecosprin 300 mg po Stat, tab Clopidogrel 300 mg po stat
  - Statins – Atorvastation 40 to 80 mg or rosuvastatin 20 to 40 mg po stat
  - Pain Management – Inj Morphine 2 to 4 mg IV
  - S/l nitrate 0.5 mg can repeat upto 3 doses every 5 mins.
  - B blockers to start if no contraindication
  - Transfer to nearby cardiac center for primary PCI

4. 45-year-old male with past history of hypertension came with complaints of Headache. His BP at emergency is 190/ 120 mmHg, pulse is 90/min.
How do you approach this case?

Clinical Examination and Investigation:

To look for clinical features of stroke, aortic dissection, pulmonary edema, renal failure and retinal hemorrhage and send baseline investigation

Investigation: ECG, Renal function test, sodium, potassium, urine RME, RBS and Investigation needed as per symptoms and clinical findings.

Diagnosis:

If no target organ damage then diagnosed as Hypertensive Urgency

If target organ damage is seen the diagnosed as a Hypertensive emergencies.

Module 3: Endocrinology

Session plan for Virtual session

Preparation for virtual session • Review PEN Plus clinical protocol chapter 7 Endocrinology • Review all the exercises with the correct answer in the facilitators guide Module 3 Endocrinology • Review case scenarios with learners for discussion – identify the probing question for the case • Review session plan for the session • Prepare pen and notebook for the session to note			
Virtual session on Module 3 (Endocrinology) (Total virtual session duration: 75 mins)			
Session	**Methods and activities**	**Materials and Methods**	**Time**
Virtual	• Welcome all the learners • Introduce yourself and ask them to introduce themselves • Ask them to share the self-paced learning experience – ask them to share best part of self-paced learning and difficulties they encountered during the self-paced learning. (ask few of them, encourage all the learners to share their own if they had different from the stated) • Encourage all to participate. Ensure you are involving the quitter learners • Ask participants to share difficult contents to understand if any • Difficult or not solved question to solve • Note all difficulties and questions • Ask them to hold till last if all the issues are not addressed during discussion as they will be addressed in the last of the session		10 min
	• Then discuss the correct answers of the exercises one by one with brief rationale of each. • Involve all the learners in the discussion by asking them to share their right answer.		25 mins
	Now Discuss the case scenario-based questions that the learners had completed in the self-paced session using PPT slides While facilitating the discussion do not forget to use probing questions why they answered this Sometimes you can use hypothetical scenarios too what they will do in this condition.	PEN–Plus Protocol and Learners Guide: Module 3	25 mins
	Ensure the previously shared difficult questions and contents are discussed If any content or question yet to discuss cover it.	PEN–Plus Protocol and Learners Guide: Module 3	10 mins
	Ask them for their queries if any and respond accordingly. close the session by highlighting and summarizing the session with key points of the module. Thank them for their participation and ask for their feedbacks.		5 mins

Onsite Learning: Diabetes Mellitus

	Onsite session Plan on Diabetes Mellitus (Total onsite session duration: 310 mins)		
Session	**Topic**	**Materials & Methods**	**Time**
	Introduction to Onsite Learning • Welcome all participants, introduce yourself and ask them to introduce themselves. • Ask them to share the self-paced learning and virtual learning experience – ask them to share their good experience and their difficulties. (Ask few of them and encourage other learners to share their own if they had different experience from what is already stated.) • Encourage all to participate. Ensure you are involving the quieter learners as well. • Ask participants to share the contents that were difficult to understand, if any, and note all difficulties and questions • Ask them to wait till the end to see if the questions will be addressed during discussion, if not addressed then discuss on these questions or difficulties as well.		**10 mins**
	Final Knowledge Assessment		
	Session objectives At the end of the session, learners will be able to • Detect and treat hypoglycemia • Educate the patient on self-care of Diabetes Mellitus at home • Practice the steps of Insulin injection technique sequentially • Practice the steps of Glucometer use and interpret the results • Identify and diagnose the case of Gestational Diabetes Mellitus, manage and provide appropriate advice to the patient • Identify and diagnose case of Diabetic Ketoacidosis based on symptoms and physical signs • Outline the initial management and identify complications of Diabetic Ketoacidosis		
	Discuss the following using PowerPoint slides • Role Play (Scene 1, 2) • Group Discussion (Scene 3,4) • Case Discussion (Scene 5-12) • Skill station- Demonstration of Glucometer use and demonstration of insulin injection technique (Scene 13,14) Identify gaps of knowledge if any and review the information based on the need.	**PPT slides**	
1.	**Role Play**		

	Role Play – **Scene 1: Diabetes Self-Management Education**		
	➢ The facilitator to designate a trainee to act as a health care provider in the PEN Plus OPD of health care center, attending a patient with follow up for Diabetes Mellitus for last 10 years. ➢ The trainee will act to teach Diabetes self-care behaviors that are essential for improved health status and greater quality of life. ➢ The facilitator now asks the observer trainees about their comments on the act. ➢ The facilitator gives his/her feedback on the assessment techniques. ➢ The facilitator explains to the trainees on self- care behaviors <u>Role Play:</u> Role 1: Dr. A(Health care Provider) Role 2: Mr. Y(Patient with Diabetes Mellitus) Setting: PEN Plus OPD [The scene ends with Mr. Y feeling empowered and equipped with updated knowledge on diabetes self-management. The doctor assures him of ongoing support and encourages him to reach out with any further questions or concerns.]	**Training Methods on Diabetes Mellitus** 1. The facilitator explains to the trainees Self-care behaviors: Healthy eating- nutrient dense carbohydrate sources high in fibre and minimally processed; non starchy vegetables, fruits, whole grains as well as dairy products with minimal added sugars 2. Being active 3. Blood glucose monitoring 4. Taking medication 5. Problem solving 6. Healthy coping 7. Risk identification	30 mins
	Role play **Scene 2– Diabetic foot**		30 mins
	Mrs. CS is now 67 years old. She has Diabetes Mellitus type 2 for last 10 years under medication. However, since last 3 months she says that she has numbness and tingling sensation over her soles and feet/ fingers. <u>Role Play:</u> Mrs. CS- Patient Mr. B – Son of Mrs. CS Dr. Y – Health care provider <u>Instructions:</u> 1. Mrs. CS is 67 yrs old diabetic patient who presents with numbness and tingling sensation over her		

	soles and feet/ fingers. 2. Dr. Y is a health care provider who will take history from Mrs. CS, does comprehensive foot examination, gives advice for foot care and refers to the specialist for further treatment. 3. Mr. B is the son of patient, Mrs. CS, who accompanies her to the doctor. o What history will you take? Ans- • Duration of diabetes • Overall glycemic control • Previous micro/macro vascular complications • History of prior foot injuries, resulting in deformities/ prior ulcers, amputation, history of claudication • History of smoking o What examination will you do? **Ans- Comprehensive foot examination** **1. Inspection** **Dermatological:** skin status, dryness, color, thickness, sweating, infection (fungal), ulceration, calluses, bruises **Musculoskeletal:** Deformity, claw toes, charcot joint, muscle wasting		

	2. **Neurological assessment:** 10g monofilament test, vibration using 128 Hz tuning fork, pin prick sensation, ankle reflexes **3. Vascular assessment** Foot pulses o You found that she has decreased pin prick sensation on her soles and decreased vibration and position sense. What advice will you like to give her for her foot care? **Ans- Preventive foot care** • Avoid smoking • Avoid going barefoot even at home • Test water temperature before stepping into bath • Trim toe nails, remove sharp edges, do not cut cuticles • Wash foot with lukewarm water, dry thoroughly including between toes • Check feet daily • Shoes should not be tight • Socks should be changed daily o How will you approach to relieve her symptoms? Ans- 1. Reassure glycemic control- check blood sugar level 2. Risk factor modification Achieving normal body weight Exercise Stop smoking Stop alcohol 3. Rule out vitamin b12 deficiency and correct it 4. Pain management Duloxetine 20-30 mg Amitryptyline 10-25 mg Pregabalin 75 mg Gabapentin 100 mg tds o How do you decide if to refer her to a specialist? Ans- Motor weakness Rapidly progressive disease Peripheral vascular disease (absent pulse) Asymmetrical (usually diabetic neuropathy is symmetrical) History of ulcer/ amputation		
	o How do you decide her follow up? Ans- No loss of protective sensation: Annually by generalist Loss of protective sensation with deformity: Every 3-6 months by generalist Peripheral artery disease or history of ulcer or amputation: Refer to specialist		
2.	**Group Discussion**		

	Group Discussion- **Scene 3: Diabetes Advocacy for Prevention of Diabetes Mellitus and obesity in the society**		20 mins
	➢ The facilitator will divide the participants into groups. ➢ The facilitator will provide each group with a white newsprint. ➢ One group is designated to present on Diabetes Advocacy for prevention of DM and obesity in the society after discussion within the group and others will act as the community members. ➢ The facilitator's question should encourage participants to write meaningful thoughts and ideas on the white newsprint provided. ➢ Stress the importance of Exercise, healthy diet and stress management in the society. Increase physical exercise in school, ban junk food in and around school territory, incorporate NCD education in school setting. ➢ Enforce sugar tax similar to cigarette tax. ➢ Mass education on high fibre diet like green vegetables with least pesticides and chemicals and decrease junk food in the society. ➢ Give them 15 minutes to discuss and write their points on the white paper. ➢ The facilitator asks for feedback/ points to add from other groups. ➢ The facilitator gives his/her feedback on the group discussion.	Training Methods on Diabetes Mellitus • **Advocacy** Due to increasing diabetes pandemic in the society, all health-care workers are recommended to push for policy changes to prevent onset of diabetes and obesity, as following: 1. Applying sugar tax in sugary beverages 2. Restricting sugary drinks and factory food in school premises 3. Encouraging local farmers and fiber- food and vegetables 4. Discouraging factory made ultra-processed foods (noodles, breads, biscuits) especially in school premises.	
	Group Discussion- **Scene 4: Complications of Diabetes Mellitus**		20 mins
	➢ The facilitator will divide participants into groups. ➢ The facilitator will provide each group with a white newsprint.	**Training Methods on Diabetes Mellitus**	

	✓ The facilitator will ask the participants to jot down various complications referring back to the PEN Plus protocol. ✓ The facilitator's question should encourage participants to write meaningful thoughts and ideas on the white newsprint provided. ✓ Questions can be confusing to the participants. Many participants may not know the answers right away themselves, encouraging them to think during discussion. ✓ Give them 15 minutes to discuss and write their points on the white paper. ✓ Ask a volunteer in each group to present their thoughts on the Diabetes complications. ✓ The facilitator asks for feedback/ points to add from other groups. ✓ The facilitator gives his/her feedback on the group discussion. ✓ For example, "How can we divide complications of diabetes mellitus? Do you know about macro vascular complications and micro vascular complications? Do you know what systems may be affected by diabetes? What may be an acute complication? What may be a long term complication?" ✓ Give them 15 minutes to discuss and write their points on the white paper. ✓ Ask a volunteer in each group to present their thoughts on the diabetes complications. ✓ What are the complications of Diabetes?	• Complications of DM **Microvascular:** Retinopathy Nephropathy Peripheral neuropathy Autonomic neuropathy Gastro paresis Postural hypotension Foot disease: Ulceration Arthropathy **Macrovascular** • Myocardial ischaemia/ infar ction • Transient ischaemic attack • Stroke • Claudication • Ischaemia • Others: • Depression • Alzheimer's disease	
3.	**Case discussion**		
	Case scenario -Scene 5		
	A patient presented to your OPD for follow up. He is a known case of Diabetes Mellitus for last 1 year with excessive sweating, tiredness, feeling dizzy and weak and sudden feeling of excess hunger and a history of fall in the bathroom 1 month ago. • **Question 1:** Who are the vulnerable groups for hypoglycemia? Ans- **Expected Responses:** 1. Hypoglycemia vulnerable groups 2. Young children with type1 diabetes 3. Patients with impaired kidney function 4. Hypoglycemia unawareness 5. Cognitive impairment 6. Frail older adults 7. Physical disability 8. Alcohol use 9. Polypharmacy 10. Previous history of hypoglycemia	**Training Methods on Diabetes Mellitus** • The facilitator explains to the trainees : • Treatment: • 15 - 20 g of pure glucose or any form of carbohydrate that raises glucose for the conscious patient with blood glucose <70 mg/dl. • Repeat treatment if blood glucose	20 mins

	• **Question 2:** What are the different Preventive measures that can be adopted for Hypoglycemia? **Ans-** Reviewing awareness, occurrence, frequency, causes and timing of episodes of hypoglycaemia at initial visit, every follow up visit and annual visit Identifying vulnerable groups including young children with type I Diabetes, patients with impaired kidney function, hypoglycaemia unawareness, cognitive impairment, frail older adults, physical disability, alcohol use, polypharmacy, and previous history of hypoglycaemia. Understanding situations that increase risk of hypoglycaemia such as when fasting for lab tests/ procedures, when meals are delayed, during or after intake of alcohol, during and after intense exercise, after an episode of post-meal vomiting and during sleep. Encouraging individualized glucose targets, patient education, exercise management, medication adjustment, glucose monitoring and routine clinical surveillance.	monitoring shows continued hypoglycemia after 15 minutes.	
	Case scenario -Scene 6		
	A 34 years old female, presented to your health centre for routine obstetric care with no prior co-morbidities. She shared that she has growing concern for the amount of weight she is gaining. She also says she feels very hungry most of the time. She gives history of type II diabetes mellitus in her mother. A 75-g OGTT was performed which showed 1 hour value of 192 mg/ dl.	- PPT slide The facilitator will inform all the trainees about the correct diagnosis. • Now, the facilitator will	20 mins

	Q1. What is your diagnosis? Ans- Gestational diabetes mellitus Q2. What will be the choice of management? Ans- 1. Patient education is of utmost importance. 2. Medical Nutritional Therapy is the 1st line treatment. 3. Among the pharmacological treatment, Insulin is the preferred therapy. If only fasting is high, bedtime NPH is the preferred option. If PP is above goal, then use premix insulin: 2/3rd in the morning pre brunch and 1/3rd pre-dinner. And titrate accordingly following the self-monitoring of blood glucose (sugar chart) Q3. What will you advice the patient? Ans- Management of Diabetes with pregnancy and Gestational Diabetes Mellitus:	informthe trainee about Gestational diabetes. The facilitator will then inform the trainees about management in such patients. • The facilitator will then inform the trainees about conducting follow-up in such patients.	
	Patient education is of utmost importance. Medical Nutritional Therapy is the 1st line treatment. - Among the pharmacological treatment, Insulin is the preferred therapy. - Women with pre-existing type I or type II diabetes who are planning pregnancy or who have become pregnant should be counselled on the risk of development and/or progression of diabetic retinopathy. - all women of Type I /Type II DM of child bearing age should be counselled about the importance of tight glucose control even before conception to prevent congenital abnormalities. Identify gaps of knowledge if any and review the information based on the need	The facilitator will then inform the trainees about management in such patients. The facilitator now asks the observer trainees about their comments on the act. The facilitator gives his/her feedback on the assessment techniques.	
	Case scenario -Scene 7		
	Mr. Hari, 40 year old obese man came to PEN PLUS clinic with a history of Myocardial infarction in the past, with fasting blood sugar of 178 mg/dL and post prandial blood glucose level is 273 and HBA1C of 9. He is currently taking Metformin 1g bd. On examination, he had bilateral mild pitting pedal edema. His blood pressure was 130/80 mm Hg. Urine routine examination showed 2+ sugar, 3+ proteinuria. **Q1. What is your interpretation?** Ans- Patient has diabetes mellitus with concurrent heart disease and renal involvement in the form of proteinuria. **Q2. How will you manage the patient?** Ans- SGLT2 inhibitor may be of benefit in such cases.	- PPT slide	20 mins

	- Also highlight the importance of ACE I in the prevention of worsening of proteinuria.		
	Case scenario -Scene 8:		
	Mr. Ram, 47 years old obese man came to PEN PLUS clinic with ulceration on his right foot. His post prandial blood glucose level is 473 and HBA1C of 11. He is currently taking Metformin 1g bd, Sitagliptin 100 mg bd, and Empagliflozin 10 mg OD. He says he is very stressed due to family issues and working environment, and is missing taking his medications. **Q1. What is your interpretation?** Ans- Patient has uncontrolled diabetes mellitus with an HBA1C of 11. It is an indication for insulin therapy. **Q2. What are the factors contributing to uncontrolled blood sugar in the patient?** Ans- Obesity, Stressful working environment, Non-compliance to medications **Q3 How will you manage the patient?** Ans- Insulin therapy, exercise prescription, stress management and advice to increase compliance to drugs	- PPT slide	20 mins
	Add flat acting basal insulin like glargine. Start with 10U and titrate according to blood sugar levels **Q4. How do you do feet examination in diabetes?** Ans- Sensory examination of the feet and check for knee and ankle deep tendon reflexes, dorsalis pedis and posterior tibial artery pulses **Q5. What is the importance of proper feet care and feet examination in the prevention of Diabetes foot ulcer and amputation?** - Very important. Identify gaps of knowledge if any and review the information based on the need		
Review session	Summarizing the session		
	Case scenario -Scene 9		

	A 47-years old woman, who came for routine health check-up was found to have a random blood glucose level of 237 mg/dL. Several days later, a fasting blood glucose value was 157 mg/dL. She has no previous history of Diabetes. The patient has been treated for hypertension for 10 years, currently with amlodipine 10 mg. She does not eat breakfast, and consumes most of her calories in the evening. On examination, blood pressure is 140/85 mmHg supine and 140/90 mmHg upright with a regular heart rate of 76 beats/minute. She has a body mass index (BMI) of 30.9 kg/m2.Vibratory sensation is absent at the great toes. She has triglycerides 210 mg/dL, total cholesterol 222 mg/dL, high-density lipoprotein (HDL) cholesterol 73 mg/dL, and low-density lipoprotein (LDL) cholesterol 107 mg/dL; and glycated hemoglobin (A1C) 7.7 percent. The urine microalbumin/creatinine ratio is 14.3 mg/g. **Q1. What is your diagnosis?** Ans- Recently diagnosed type II Diabetes Mellitus with diabetic neuropathy **Q2. How important is blood pressure management/control in a patient with diabetes and why?** **Ans-** It is very important to address BP along with diabetes to prevent both microvascular and macrovascular complications of diabetes **Q3. How will you treat diabetes in the patient?** Ans- We will counsel the patient about changes in lifestyle and discuss medical nutrition therapy with the patient with the goal of appropriate weight reduction. We will advise her to eat three meals a day, to control the size	- PPT slide	20 mins
	of portions especially of carbohydrate and incorporate more protein, fibres and minerals in the diet. We will advise the patient to exercise and follow up with HBA1C at 3 months. Identify gaps of knowledge if any and review the information based on the need.		
	Case scenario -Scene 10:		

	80 years female arrived at the PEN-PLUS clinic on a stretcher. The caretaker accompanying her gives history that she has Alzheimer's dementia and Diabetes Mellitus for 20 years. The caretaker also gives a history of recurrent fall. The caretaker says she is taking metformin plus glimepiride twice daily. She is also on basal neutral regular insulin/ Protamine hagedorn (NPH) insulin (30/70) premix (a schedule of two-thirds in the morning/one-third in the afternoon). Her HBA1C was 6.9 and FBS was 100 mg/dL. **Q1. What is your interpretation?** Ans- Sulphonylurea should not be prescribed along with insulin. Patient seems to be at risk of hypoglycaemia in the background of recurrent fall and FBS of 100 mg/dL. In frail senior patients with long duration of diabetes target glucose control is higher, to reduce hypoglycaemia and mortality. HbA1c goal is below 8% **Q2. How will you manage the patient?** Ans- HbA1c of 8.0 is the target glycemic goal for her taking into consideration her cognition, mobility, age, and risk of hypoglycaemia. I will stop insulin and sulphonylurea, DPPIV inhibitor may be added to Metformin. Identify gaps of knowledge if any and review the information based on the need.	-PPT slide	20 mins
	Case scenario- scene 11		
	45 yrs old tailor presented to the health facility. On blood glucose monitoring, incidental finding of blood glucose 248 mg/dl, in a health camp was noted. He denies symptoms including polyuria, polydipsia, weight loss or fatigue including blurred vision. He smokes and doesn't exercise regularly. On examination- he has central obesity, bp 140/90. Rest of the examination are within normal limits. **Questions:** a. What will you do next? **-** Without symptoms, WHO recommends to repeat blood sugar. If >200 mg/dl, diagnose as DM. With symptoms, one reading of blood sugar >200 mg/dl is enough to diagnose DM.		20 mins

	b. What are the diagnostic criteria of DM? - Fasting plasma Glucose: >126 mg/dl - 2 hour plasma glucose: >200mg/dl - HbA1c >6.5% - Random plasma glucose: >200 mg/dl c. How will you counsel the patient? - 50% of people with DM, don't have symptoms thus if left unmanaged and uncontrolled this can lead to devastating complications such as blindness, kidney failure, amputation, heart attack and stroke. d. What are the important steps to prevent complications of DM? 1. Medical Nutrition Therapy 2. Smoking cessation 3. Stress management. 4. Regular exercise 5. Regular Medication (blood sugar lowering medication, antihypertensive, statin for prevention of CVD) 6. Regular monitoring(blood sugar ,bp, eye checkup, kidney, feet and dental care monitoring) 7. Hypoglycemia teaching e. How will you medically manage hyperglycemia? -Insulin Indications: DKA, very ill patient, other illness like pneumonia, Tuberculosis, GDM, Type I DM, long duration of Type II DM and uncontrolled even on multiple OHA's, patient on catabolic state with hyperglycemia, Type II with HbA1c >11% - Metformin: if creatinine within normal limits start with Metformin 500mg BD. Call within 1 month with FBS and PP, if uncontrolled (if fasting and PP both high increase to 1 g BD , if not underweight) - If only PP high, add Glimepiride 1 mg OD, 20 minutes before brunch in the morning. - If sugar >300 mg/dl and or HbA1c >9%, start upfront with two drug combination: Metformin 500mg BD plus Glimepiride 1mg OD		
	Case scenario- scene 12		
	A 28 years old girl, known case of T1DM on insulin since 8 years of age, has presented with nausea, vomiting, tiredness and heavy breathing. Q1. What additional history and physical signs will you assess to arrive at a diagnosis of Diabetic Ketoacidosis? Ans-Symptoms		

	• Abdominal pain • When was urine last passed? • Missing doses of Insulin • Previous episodes of DKA • Any other systemic illness at present • Signs Vital signs Assessment of dehydration and shock – CRT, skin turgor, surface temperature of limbs, sunken eyes etc, hypotension (NB. Signs of dehydration may not be reliable due to hyperosmolarity) Kussmaul breathing, fruity odor of breath Glasgow coma scale Focus of infection Facilitator will inform trainees about symptoms and physical signs of DKA if not verbalized by assessor. Q2. What investigations will you perform and what findings in the report will confirm your diagnosis? - Random blood sugar - Blood ketones - Serum electrolytes - Venous blood gas for pH and Bicarbonate Q3.How can diagnosis be confirmed in the absence of facilities to confirm presence of Ketonemia? What will you do if diagnosis of Metabolic acidosis cannot be confirmed if facilities for Arterial blood gas analysis are not available? Ans-Assess urinary ketones -Provide initial fluid resuscitation and refer to nearest health facility where DKA can be diagnosed and treated -May consider to consult 'mentor'/pediatrician /intensivist for guidance if referral is not feasible Q4. Outline the management of DKA with emphasis on treatment with - Fluid - Insulin What parameters and how frequently will you monitor? Ans- Facilitator to stress on calculation of fluid deficit, type and duration of fluid therapy including initial resuscitation and dosage and administration of insulin type and route according to severity. Q5. Enumerate the complications that one may face while managing a child with DKA. How will you monitor for these complications and what steps can you take to try and prevent them? Ans- Facilitator and learners to refer to trainee manual during this discussion.		

	Identify gaps of knowledge if any and review the information based on the need.		

4.	**Skill session: Demonstration**		
	Skill session- **Scene 13 : Demonstration of Glucometer use**		30 mins
	✚ The facilitator will play the audiovisual demonstration video on Glucometer use for all the participants to follow its use. ✚ Then the participants are divided into groups and asked to test blood glucose level using glucometer on one another. ✚ The facilitator is expected to assist the participants and solve their queries that they come across during demonstration of glucometer use.	- PPT slide with video demonstrating Glucometer use - Glucometer device - Glucometer strips - Needle - Cotton - Spirit swab/alcohol wipes - Sharp disposal container	
	Session objectives At the end of the session, the learners will be able to ● Describe the steps of the Glucometer use ● Practice using Glucometer ● Interpreting Glucometer result		
	Skill station **Scene 14: Insulin injection technique**		30 mins
	✚ The facilitator will play the audiovisual demonstration video on insulin injection technique for all the participants to follow its use. ✚ Then the participants are divided into groups and asked to perform insulin injection on a dummy. ✚ The facilitator is expected to assist the participants and solve their queries that they come across during demonstration of insulin injection.	- PPT slide with video demonstrating insulin injection - Insulin vial - Insulin syringe - Cotton - Spirit swab/alcohol wipes - Sharp disposal container	
	Session objectives At the end of the session, the learners will be able to ● Describe the steps of the insulin injection ● Practice using insulin injection	-	

Checklist for Insulin Injection Technique

Tick S for Satisfactory and U for Unsatisfactory

S. No.	Prerequisites for Insulin Injection Technique	Cases			
1)	The participant ensures that he/she washes hands before proceeding.				
2)	The participant ensures that the cloudy insulin vial is gently rolled at least 10 times and checked to ensure that it has consistently milky white appearance.				
3)	The Participant ensures that the insulin is administered in the subcutaneous tissue, or the fatty layer under the skin and not at intramuscular sites.				
4)	The participant ensures the new needle is used with each injection.				
5)	The participant makes sure that he/she knows well the common areas for insulin injection which includes the back of the arm, abdomen, upper buttocks, and outer part of the thighs.				
6)	The participant makes sure that he is aware that it is important to choose a different site each time while injecting insulin.				
	Steps for Insulin Injection				
1)	The participant makes sure that he always washes hands and picks a clean injection site.				
2)	The participant makes sure that the cloudy insulin is properly mixed as per instructions above.				
3)	The participant makes sure that the Insulin injection site is rotated.				
4)	Site rotation is important to prevent lipohypertrophy.				
5)	The participant makes sure that the injections are given at 90 degree angle and held for 10 seconds.				
6)	The participant makes sure that he uses his thumb to move the pen down slowly, needle is withdrawn, pen needle removed and disposed off properly.				
7)	The participant makes sure that he/she can well identify the presence of lipohypertrophy or injection site infection. (Lipohypertrophy appears as soft, smooth raised areas several centimeters in breadth. Re-use of needles or continued injection in the same location can lead to skin infection)				

Checklist for Glucometer use

Tick S for Satisfactory and U for Unsatisfactory

S. No.	Prerequisites for Glucometer use	Cases			
1)	The participant ensures that he performs hand hygiene.				
2)	The participant ensures that he reviews the patient's medical history and current medications because if the patient is receiving anticoagulant therapy, it may result in prolonged bleeding at the puncture site requiring pressure to the site.				
3)	The participant ensures that he assesses the patient thoroughly for signs and symptoms of hyperglycemia or hypoglycemia to correlate data to pursue acute action due to an onset of symptoms.				
4)	The participant ensures that he gathers supplies: nonsterile gloves, alcohol swab, lancet, 2″ x 2″ gauze or cotton ball, reagent strips, and blood glucose meter				
	Steps for Blood glucose monitoring using glucometer				
1)	The participant ensures that the patient washes his hands with soap and warm water and dries (or wipe with alcohol swab and lets it dry)				
2)	The participant ensures that the patient is positioned comfortably in a semi-upright position in a bed or upright in a chair.				
3)	The participant ensures that he encourages the patient to keep his hands warm.				
4)	The participant ensures that the test strip is taken out, placed in glucometer and wait for blood drop to show.				
5)	The participant ensures that the finger is pricked. Use the side, not the Centre.				
6)	The participant ensures that the fingers are rotated and drop of blood is squeezed, wiped away with cotton, then hold second drop of blood to the side of the test strip.				
7)	The participant waits for glucometer to finish reading and display the results.				
8)	The participant ensures that he reads the results on the unit display.				
9)	The participant ensures that he turns off the meter and dispose of the test strip, 2″ x 2″ gauze, and lancet.				
10)	The participant ensures that he uses caution with the lancet to prevent an unintentional sharps injury.				
11)	The participant ensures that he removes gloves.				
12)	The participant ensures that he performs hand hygiene.				
13)	The participant ensures that the patient is assisted to a comfortable position and the test results are reviewed with the patient.				
14)	The participant ensures that he asks if the patient has any questions, and thank them for their time.				

Module 3: Exercise Answer Keys

(Answers in bold type)

MCQ's

Question 1

Diabetes Mellitus that develops as a result of autoimmunity against beta cells that produce insulin resulting in a complete or near-total insulin deficiency state is known as:

a) Type I DM
b) Type II DM
c) Both a and b
d) None

Question 2

Which of the following falls under clinical presentation in a patient with DM: (Multiple answers possible)

a) Triad of polyuria, polyphagia and polydipsia
b) non-healing foot ulcer
c) Infections eg. in the genital area (vulvovaginitis, balanitis)
d) detected during a routine checkup in asymptomatic adults

Question 3

All of the following risk factors should be considered in an adult with overweight or obesity except:

a) First-degree relative with diabetes
b) History of accidents in remote past
c) Women with polycystic ovary syndrome
d) Good Physical activity

Question 4

Following are the features suggestive of Type I Diabetes Mellitus. (Multiple answers possible)

a) Younger age at diagnosis (<30 years)
b) Lower BMI (<25 kg/m2)
c) Unintentional weight loss
d) Ketoacidosis

Question 5

Following are the atypical forms of DM except?

a) Maturity Onset Diabetes of Young (MODY)
b) Latent Autoimmune Diabetes Of Adulthood (LADA)
c) Type I and II DM
d) Ketosis Prone Type II Diabetes

Question 6
Which of the following group of drugs causes weight gain in a patient with DM?
a) Biguanides
b) SGLT2 inhibitors
c) DPP4 inhibitors
d) Sulphonylureas

Question 7
The duration of action of human regular insulin is:
a) 10-12 hrs
b) 5-8 hrs
c) 30 mins
d) 1-2 hrs

Question 8
Smoking cessation and abstinence from tobacco products fall under which of the following category?
a) Medical therapy
b) Nutrition therapy
c) Physical activity
d) Behavior therapy

Question 9
Before applying the WHO/ISH Risk Prediction chart to estimate the 10-year cardiovascular risk of an individual, the following information is necessary:
a) Presence or absence of diabetes
b) Gender, Age, Total blood cholesterol
c) Smoker or non-smoker and Systolic blood pressure (SBP)
d) All of the above

Question 10
Screening of the following complications is expected to be done at least annually.
(Multiple answers possible)
a) Diabetic retinopathy
b) Diabetic neuropathy
c) Diabetic foot
d) Diabetic kidney disease

Question 11

First-line treatment in the management of Diabetes with pregnancy and Gestational Diabetic Mellitus is

a) Patient Education
b) Metformin
c) Medical nutritional therapy
d) Counseling

State whether True or False:

Question 12

Diabetic Ketoacidosis (DKA) can be the first presentation of DM in older adults.

a) True
b) False

Question 13

Patients with a previous history of hypoglycemia are not considered as vulnerable groups.

a) True
b) False

Question 14

Sulfonylureas can be prescribed in patients with a risk of hypoglycemia.

a) True
b) False

Fill in the blanks.

Question 15

HbA1c test in diabetes gives a piece of good information regarding the blood sugar control of patients of prior_____months.

Ans- 3 months

Question 16

Assessment of glycemic targets in patients who are meeting treatment goals and who have stable glycemic control should be done every _____month.

Ans- 6 months

Question 17

In patients with Hyperglycemic hyperosmolar state, patients present with extreme hyperglycemic state i. e blood glucose more than _____mg/dl

Ans- 600 mg/dl

Match the following

Question 18

1. Vital signs		i. Acanthosis nigricans
2. Foot examination		ii. Visualization of the retina with the optic disc, macula, and vessels
3. Skin examination		iii. Hypertension
4. Fundoscopy		iv. Deep tendon reflexes

Ans- 1.iii, 2.iv, 3.i, 4.ii

Question19:Hypoglycemia		
1. symptoms		a. 15-20g pure glucose
2. Blood glucose level		b. altered consciousness and confusion
3. Oral glucose administration		c. less than 54 mg/dl
4. intravenous glucose administration		d. 25% dextrose 100ml

Ans- 1b, 2c,3a,4d

Question 20

Match the following about Exercise prescriptions for different groups of people.

a) Children and adolescents		1) 60 minutes per day or more of moderate or vigorous-intensity aerobic activity, with vigorous muscle-strengthening activities at least 3 days/ week
b) Older adults		2) 150 minutes or more of moderate to vigorous-intensity aerobic activity per week
c) Adults		3) Flexibility and balance training 2-3 times per week

Ans- a1, b3 ,c2

Case Question

Question 21

A 45-year-old obese female is asymptomatic. She came to your health care center for regular screening for diabetes. She comes to you with a blood glucose report of FBS: 115 mg/dl and PPBS: 182 mg/dl.

a. What is your diagnosis?

Ans: Pre-diabetes

b. How will you treat the patient?

Ans: Medical nutrition therapy will be advised. Diabetes can be prevented with proper life style, with the goal of appropriate weight reduction. We will advise her to eat three meals a day (including breakfast), to control the size of portions, to reduce the evening snacks, and to limit her intake of fat. We will advise the patient to exercise and follow up.

• **Make sure that the learners can easily recognize pre diabetes, as diabetes can be prevented with proper life style.**

Criteria defining Pre-diabetes	Threshold
Impaired Fasting Glucose*	100 mg/dL to 125 mg/dL
Impaired Glucose Tolerance	140 mg/dL to 199 mg/dL
HbA1c	5.7% to 6.4%

Question 22

A child, with a known case of diabetes, has presented to your hospital with clinical features suggesting DKA. His random blood sugar is 400mg/dL and urinary ketones are significantly raised.

a. What are the features favoring the diagnosis of DKA?

Ans-

- dehydration
- tachypnea: deep, sighing kussmaul respiration
- nausea, vomiting and abdominal pain that may mimic an acute abdominal condition confusion, drowsiness

b. What are the other findings that you will look to decide whether he needs to be treated in the intensive care unit?

Ans- Hyperglycemia : blood glucose >11 mmol/L (200 mg/dl)
- Venous pH <7.3 or serum bicarbonate <18 mmol/l (or meq/l)
- ketonemia or ketonuria.

Module 4: Oncology

Session plan for Virtual session

Time: 75 minutes

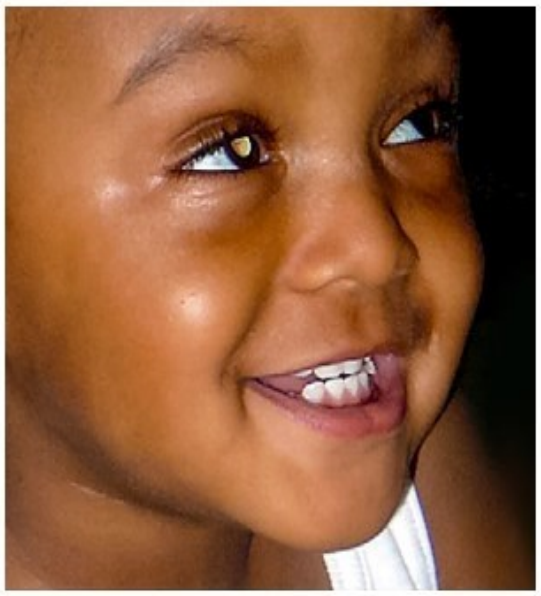
Preparation for virtual session			
●Review PEN Plus clinical protocol chapter 4 Oncology ●Review all the exercises with the correct answer in facilitators guide Module 4 Oncology ●Review case scenarios with learners for discussion – identify the probing question for the case ●Review session plan for the session ●Prepare pen and notebook for the session to note			
Virtual session on Module 4: Oncology			
Session	**Methods and activities**	**Materials and Methods**	**Time**
Virtual	●Welcome all the learners ●Introduce yourself and ask them to introduce themselves ●Ask them to share the self-paced learning experience – ask them to share best part of self-paced learning and the difficulties they encountered during the self-paced learning. (ask few of them, and encourage all the learners to share their own if they had different from the stated) ●Encourage all to participate. Ensure you are involving the quieter learners ●Ask participants to share difficult contents to understand if any ●Difficult or not solved question to solve ●Note all difficulties and questions ●Ask them to hold till last if all the issues are not addressed during discussion as they will be addressed in the last of the session		10 minutes
	●Then discuss the answers of the exercises one by one with brief rationale of each. ●Involve all the learners in the discussion by asking them to share their right answer.		25 minutes
	Now Discuss the case scenario-based questions that the learners had completed in the self-paced session using PPT slides. While facilitating the discussion do not forget to use probing questions about why they answered this.	PEN–Plus Protocol and Learners Guide: Module 4	25 minutes
	Ensure the previously shared difficult questions and contents are discussed If any content or questions yet to discuss cover it.	PEN–Plus Protocol and Learners Guide: Module 4	10 mins
	Ask them for their queries if any and respond accordingly. Thank them for their participation and ask for their feedback.		5 mins

Onsite Learning

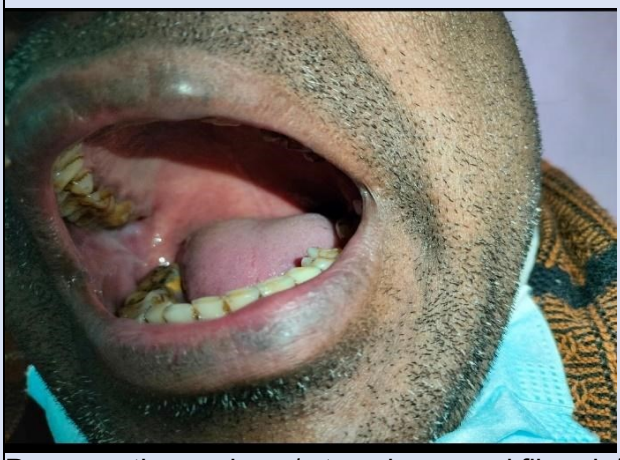
Session	Topic	Methods & Materials	Time
			215 minutes
	Introduction to Onsite Learning ● Welcome all participants, introduce yourself and ask them to introduce themselves ● Ask them to share the self-paced learning and virtual learning experience –ask them to share their good experience and their difficulties. (Ask few of them and encourage other learners to share their own if they had different experience from what is already stated.) ● Encourage all to participate. Ensure you are involving the quieter learners as well. ● Ask participants to share the contents that were difficult to understand, if any, and note all difficulties and questions ● Ask them to wait till the end to see if the questions will be addressed during discussion, if not addressed then discuss on these questions or difficulties as well. **Session objectives:** **At the end of session, learners will be able to** 1. Describe the importance of early diagnosis in case of cancers 2. Counsel the parents of the children who are newly diagnosed / Counsel the parents of the children prior to referral who are newly diagnosed or receiving cancer care. 3. Enlist the steps of self-breast examination 4. Demonstrate the steps of clinical breast examination 5. Carry out cervical cancer screening using standard technique 6. Interpret the results of VIA 7. Outline the management of pain with 3 ladder patterns of pain		**5 minutes**
1	**Introduction of the cancer and risk factors associated with common cancers.**		
		Discussions on the site	**10 minutes**
	Initiate the discussion with the following question: ● Why early diagnosis is important, especially in the case of childhood cancer? **(Probe the participants, and expect the answers to address the following points)**		

	- Early detection of cancer greatly increases the chances of successful treatment. - Pediatric malignancies differ greatly from adult malignancies in both prognosis and distribution by histology and tumor site. - Limited preventable measures and the high curability of childhood cancers, make early detection the key to the cure of childhood cancers.		
2	**Introduction to childhood cancers and danger signals warranting early referral to tertiary centers.**		
	Case 1: 8-year-old boy presents to the emergency department with a chief complaint of fever and increasing tiredness. He was well until 2 weeks ago when he had an upper respiratory illness (URI). He has been tired with decreased activity since the URI and has missed school for 2 days. He has a decreased appetite and has lost 2 kilograms over the last 2 weeks. He has some shortness of breath when he climbs stairs, but his parents deny cough, fever, nausea, emesis, bruising, headache, or visual problems. **Ask participants what they will ask further. (Make a note if they include the following history and add if necessary)** - Past medical history, including birth history, immunizations, and other medical history. - He lives with his two parents and 6-year-old brother, all of whom are healthy. The sibling and parents had similar URI symptoms 2 weeks ago, but everyone else is back to normal activity levels. There is no family history of relevant medical problems. **Ask the participants what will they do next. Then give them the following clue :** - *On Examination:* - He is alert, tired and slightly pale appearing, but in no apparent distress. - Temp: 38.5 degrees C, Pulse: 120, Respiratory rate: 32, BP 110/56. - Eye examination: Reveals pale conjunctiva Oral cavity examination: Dry and pale mucosa. - Palpable LN in B/L cervical, axillary and inguinal regions. Maximum size of 2cm. - Liver edges are palpable near the right costal margin and the spleen is palpable 4cm below the left costal margin.		**30 minutes**

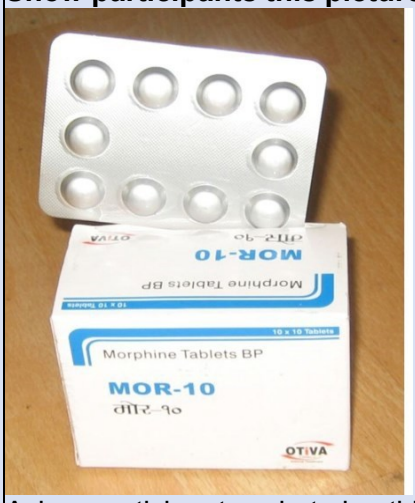
	Ask participants what tests will they order and possible findings, and involve everyone in the discussion. - Laboratory: - CBC Hb 7, Hct 24, MCV 100, WBC 56,000, Differential 14% lymphoblast, 80% lymphocytes, 6% atypical lymphocytes. - Platelets 23,000. - Chest x-ray shows clear lung fields but a wide mediastinum. **What is the possible diagnosis?** - Acute lymphoblastic leukemia **What would be your referral plan? (Probe participants to include these points)** 1. To stabilize the child before referring, blood transfusion and pain management. 2. Counseling to the parents. 3. Referral summary of the child to the hospital being referred. **After completing the above case, proceed for role play to counsel the parents of the children who are suspected to have malignancy prior to referral.** **Role play 1 :** - Choose three participants for the role play. One act as a doctor, one as the father and one as the mother of the patient - Explain to them the case situation (breaking bad news to parents whose child was suspected to have acute lymphoblastic leukemia at your center) - The doctor should counsel the parents regarding o the likely diagnosis, o need for referral to a higher center for confirmation of diagnosis and treatment, o emphasize that most of the childhood cancers are treatable in our country and o financial assistance available (from the government organization) **Case scenario 2:** Display the PPT and discuss the scenario A mother of 2 children comes over to meet with you in the outpatient clinic. She looks worried and shows up a photograph taken from her mobile phone of her elder daughter 4 years old. She is concerned that her right eye shows unusually white flashes but her left eye don't.		**30 minutes** **15 minutes**

	 **1. What could be the possible diagnosis?** - Retinoblastoma **2. What signs and symptoms occur at late stages of retinoblastoma?** - Proptosis - Bleeding in the eye - Loss of appetite and weight loss - Headache - Vomiting - Lumps under the skin in the neck **3. What test would you suggest immediately?** - Fundoscopy examination **Encourage participants for the questions and queries and answer it accordingly** End the session by highlighting the key points of the session.		
3	**Introduction of the breast cancers and risk factors associated with breast cancer**		
	Revise the session with following case: Case : 3 A 40-year-old woman presents to her physician with concern about a left breast nodule she recently discovered on self-examination. The patient states that the nodule is approximately 2 cm in size, close to her left axilla, and feels firm. **What pertinent questions should be asked as part of the detailed history prior to physical examination?** ● Time duration of the nodule (if recent can follow up for some time before evaluation)		**30 minutes**

	● Painful or not (malignant mass tends to be painless) ● Associated nipple discharge (malignant mass usually presents with nipple discharge) ● Family history (can positive family history especially mother and sisters in case of malignancy) She is concerned because her mother, age 62, was recently diagnosed with breast cancer. • On Examination There are single nodule in the left breast present at 2 'o' clock position with size of about 2 cm. The nodule is well-demarcated, easily movable and firm**. What would be your diagnosis?** ● Fibro adenoma **Ask the participants when the same lump would be diagnosed as malignant?** - Firm to hard in consistency, may associated with axillary mass, Maybe fixed to underlying chest wall or overlying skin, overlying skin may appear edematous with orange peel appearance (Peau-D-orange), associated nipple discharge. **What investigation would they further offer her?** ● USG Breast and Mammogram **Is there any malignant potential of fibro adenomas?** ● Malignant transformation of fibro adenoma is very rare. **Skill Based Demonstration:** 1. Show the steps of self - breast examination via audiovisual medium 2. Enlist the steps of self- breast examination based on the video. 3. Demonstration on clinical breast examination, facilitator will demonstrate the examination then instruct participants to practice it and provide feedback accordingly. (Refer the checklist present in page number:… and evaluate as indicated) End the session by answering the participant's queries.	**Video demonstration (Projector, Laptop)** **Breast Model / Maniquin**	**10 minutes** **30 minutes**
4	**Introduction of oral cancer, its risk factors and identification of pre-cancerous and cancerous lesions.**		
	Start the session by showing the following picture in the PPT.		**10 minutes**

	What is your spot diagnosis?  Poor mouth opening s/o to submucosal fibrosis/ leukoplakia lesion **Ask the participants if they want to conduct any other examinations?** Need bimanual examination to rule out any indurated/ulcerative lesion to rule out associated malignancy and biopsy of the lesion to rule out the same. **Reinforce the preventive measures for oral cancer (ask participants for answers)** 1. Quit smoking or the use of any form of tobacco. 2. Discourage children and young adults from experimenting with harmful life styles and habit initiation. 3. Quit betel quid/areca/gutkha/chewing tobacco use. 4. Eat plenty of fresh fruits and green-yellow vegetables. 5. Keep within recommended guidelines for alcohol consumption. **End the session by answering the participant's queries.**		
5.	**Introduction of cervical cancer, its risk factors, signs/symptoms and screening with VIA.**		
	Case 4 A 40 yrs lady (G3P2) reports in your outpatient clinic with complaints of lower abdominal pain and offensive vaginal discharge for last 1 month. She gives no history of any other sexual partner apart from her husband. She however gives history of post coital vaginal bleeding during her past 6 months of sexual intercourse 1. What could be the most possible diagnosis?		20 minutes

	● Cervical cancer 2. What are the symptoms and signs of cervical cancer? ● Post coital bleeding, bleeding after menopause, bleeding and spotting between periods, or having (menstrual) periods that are longer or heavier. ● An unusual discharge from the vagina – the discharge may contain some blood and may occur between your periods or after menopause. ● Pain during sexual intercourse ● Pain in the pelvic region <u>Signs and symptoms seen with more advanced disease can include:</u> ● Swelling of the legs ● Problems urinating or having a bowel movement ● Blood in the urine 3. What can be the Per speculum findings in a patient with cervical cancer? ● Growth in the cervix which may be ulcerative or proliferative. ● They may be associated discharge seen or bleeding from the mass. **Skill Based Demonstration:** Demonstration by audiovisual /mannequin/patient for VIA screening or discussion on procedure of cervical cancer screening for eligible candidates by VIA (Please refer to the VIA Checklist for reference) **End the session by answering the participant's queries.**		20 minutes
6.	**Introduction to Palliative care, pain and management of pain.**		
	a) **Ask the participants about different principles of pain and discuss in detail.** - By the clock (in the regularly scheduled basis) - By the mouth (Oral route is the preferred route, when oral not feasible – Sub lingual or sub – cutaneous, intra-muscular should never be used. - By the ladder (in following order) a) Non – opioids (eg acetaminophen) b) mild opioids as necessary (eg codeine) c) then strong opioids until the patient is pain free (eg morphine or hydromorphone)		5 minutes

	Show participants this picture in PPT:  Ask participants what is this? Formulations available in Nepal. Tab morphine (immediate release) Other formulations: -Tab Morphine PR(sustained release) -Syp morphine -Injection morphine(can be used IV/IM/SC) **End the session by answering the participant's queries.**		

PARTICIPANT_____ Date Observed

CHECKLIST FOR BREAST EXAMINATION					
STEP/TASK	**CASES**				
Tick "S" for satisfactory and "U" for unsatisfactory					
1. Greet the woman respectfully and with kindness.					
2. Tell the woman you are going to examine her breasts.					
3. Ask the woman to undress from her waist up. Have her sit on the examining table with her arms at her sides.					
4. Wash hands thoroughly and dry them. If necessary, put on new examination surgical gloves on both hands. --- 5. Examine and compare both sides. 6. Start examination of the normal side. 7. History Taking(ask about hormone replace therapy, family history of breast cancer)					
BREAST EXAMINATION					
1. <u>Inspection</u> Look at the breasts and note any differences in: ● Shape (symmetry and contour) ● size ● nipple and areola: position, size, shape, surface and any discharge ● Skin changes: dimpling, puckering ,engorged veins ,thickening and nodularity, discolorations, ulceration, cancer en cuirasse ,peau d`orange and scares of previous operation Make sure that you expose the undersurface of the breast and note any abnormalities hidden. ● Swelling(mass or lump) ● The arms: Edema, distended veins and muscle wasting or weakness.					
2. look for asymmetry of the nipple ,areola or the breast in all the following positions: a) the patients hands should rest on her thighs b) the hands are firmly pressed onto the hips c) the arms are raised up and both the palms are placed behind the head					

d) the patient leans forwards e) finally make the patient lie down on a couch with a pillow below her chest					
3. <u>Palpation:</u> - Start with normal side first to have a standard for comparison. - Palpate first by the palmer surface of fingers (the flat of the hand) then by tip of fingers - Palpate each quadrant ,the axillary tail and the axilla					
4. Palpate in all five positions from (a) to (e)					
5. Any mass is verified for : ● Site (position: which quadrant?) ● Tenderness ● Temperature ● Size ● Shape ● Surface ● Edge ● Consistency ● Mobility and Relation to the surrounding: (a) Relation the breast tissue: hold the breast with one hand and try to move the mass with other hand. (b) Relation to the nipple: hold the nipple with one hand and try to move the mass with the other hand. (c) Relation to the muscle: ask the patient to rest her hand on her hip with the arm relaxed. Hold the lump and estimate its mobility in two perpendicular directions. Now ask the patient to press her hand against her hip to contract the pectoral muscles, and re-estimate the degree of mobility of the lump. (d) Relation to the chest wall: fixity to the chest wall results in loss of all mobility irrespective of muscular contraction. (e) Relation to the skin: try to pinch the skin off, is it attached to the lump? Then move the lump and observe the breast for tethering or fixity.					
6. Express the areola for any discharge from the nipple					
7. Examine the axilla for nodes: ● The arm is elevated and the hand insinuated in its extreme apex then the arm is lowered to relax the axillary fascia and the nodes are palpated against the chest wall for their consistency, mobility, matting, distribution and number. ● The groups are: the pectoral(or anterior)group the central group the posterior (or subscapular) group the lateral (brachial or humeral) group the apical (infraclavicular) group ● The patient is examined both from front (for palpation of the central, pectoral, apical and lateral groups) and from the back (for palpation of the subscapular nodes). ● The right axilla is examined by the left hand, and vice versa.					
8. Palpate the supraclavicular fossae:					

Can be done from front each at a time or from behind simultaneously examined and compared.					
9. After completing the examination, have 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					
10. Examination of male breast is carried out in the same way as in the female.					

PARTICIPANT_____ **Date Observed** _

VIA Clinical Skills Checklist				
Steps	Cases			
Client Assessment (**Tick "S" for satisfactory and "U" for unsatisfactory)**	1	2	3	4
1. Greet the woman respectfully and introduce yourself				
2. Explain why the VIA test is recommended and describe the procedure				
3. Tell her what findings might be and what follow-up or treatment might be necessary				
Getting Ready				
4. Check that instruments and supplies are available				
5. Ensure that the light source is available and ready to use				
6. Check that the woman has emptied her bladder				
7. Ask her to undress from the waist down				
8. Help her onto the examining table and drape her				
9. Wash hands thoroughly with soap and water and dry with clean, dry, cloth or air dry. Palpate the abdomen				

10. Put one pair of clean, single use gloves Visual Inspection with Acetic Acid				

11. Inspect external genitalia				
12. Explain the importance of cervical cancer screening				
13. Insert speculum and adjust it so that the entire cervix can be seen				
14. Fix the speculum blades in the open position so that the speculum will remain in place with the cervix in view				
15. Move the light source so that you can see the cervix clearly				
16. Examine the cervix for cervicitis, ectropion , polyp/ growth, Nabothian cysts or ulcers				
17. Use a cotton swab to remove any discharge, blood or mucus from the cervix. Dispose swan in a leak-proof container or plastic bag				
18. Identify the cervical os, squamocolumnar junction (SCJ) and transformation zone				
19. Soak a clean swab in 5% acetic acid and apply it to the cervix. Dispose swab in a leak-proof container or plastic bag				
20. Wait at least 1 minute, and observe the cervix for acetowhite changes				
21. Inspect he SCJ carefully				
· Check whether cervix bleeds easily				
· Look for any raised and thickened white plaques or acetowhite Epithelium				
22. As needed, reapply acetic acid on swab on the cervix with a clean swab to remove mucus, blood or debris. Dispose swab in a leak-proof container of plastic bag				
23. When visual inspection has been completed, use a fresh swab to remove any remaining acetic acid from the cervix and vagina Dispose swab in a leak-proof container of plastic bag				
24. Remove the speculum If VIA test was negative or positive, place in 0.5% chlorine solution for 10 minutes for decontamination				
Post-VIA Tasks				

25. Wipe light source with 0.5% chlorine solution or alcohol				
26. Immerse both gloved hands in 0.5% chlorine solution. Remove gloves by turning inside out.				
· If disposing of gloves, place them in leak proof container or plastic bag				
· If reusing surgical gloves, submerge in 0.5% chlorine solution for 10 minutes for decontamination				
27. Wash hands thoroughly with soap and water and dry with clean, dry cloth or air dry				
28. If VIA test is negative, ask woman to sit up, get down from the examining table and get dressed.				
29. Record the VIA test results and other findings in woman's record. · If acetowhite change is present, draw a map of cervix and the diseased area on the record				
30. Discuss the results of the 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 is suspected, discuss recommended next steps. · After counselling, provide treatment or refer.				

Module 4 Exercises

Question 1:

Below are the risk factors for cancer. Differentiate and enlist in the concerned column.
Age, medications, sex, safer sex, race and ethnicity, alcohol use, tobacco use, family history, and genetics (e.g., changes in DNA), Obesity, physical inactivity, poor dietary habits.

Modifiable Risk factors	Non modifiable Risk factors

(Answers: Modifiable risk factors: medications, safer sex, alcohol use, tobacco use, obesity, physical inactivity, poor dietary habits)

Question 2:

Following are the sign and symptoms of the possible enlisted cancers. Match the following

Signs and symptoms		Cancers
PV discharge/ bleeding		Stomach or pancreatic cancer
Palpable breast lump		Prostate cancer
Painful neck nodes		Cervical Cancer
Oral sores/ ulcerations		Breast cancer
Chronic cough/ Haemoptysis		Colon or rectal cancer
Difficulty urinating (weak stream)		Head and neck cancers/Lymphoma
Persistent vomiting, nausea, early satiety		Lung cancers
Difficulty defecating or blood in stool		Brain tumor
Whitish hue to the pupils, squint, pain, bulging eyes		Stomach or Pancreatic cancer
Persistent headache, change in mental function, focal weakness		Retinoblastoma

Answers:
PV discharge/bleeding: cervical cancer Palpable breast lump: Breast cancer
Neck nodes: Head and neck cancers /Lymphomas

Oral sores/ulcerations: Oral cancers Chronic cough/Haemoptysis: Lung cancers

Difficulty urinating (weak stream): Prostate cancer

Persistent vomiting, nausea, early satiety: Stomach or pancreatic cancer Difficulty defecating or blood in stool: Colon or rectal cancer

Persistent headache, change in mental function, focal weakness: Brain tumor Whitish hue to the pupils, squint, pain, bulging eyes: Retinoblastoma

Question 3:
Fill in the blanks
a. ..... focuses on detecting symptomatic patients as early as possible.
b…….. ..... consists of testing healthy individuals to identify those having cancers before any symptoms appear.

c…….. ..... requires ensuring rapid patient presentation, diagnosis and treatment as soon as first symptoms appear.

d..... is relevant to all types of cancer

e..... is relevant to a subset of cancer types only – namely cervical, colorectal and breast cancers.

Answers:
a) Early diagnosis
b) Screening
c) Early Diagnosis
d) Early diagnosis
e) Screening

Question 4:
True or false

a. Cancer is always fatal.
b. Cancer is contagious.
c. All lumps are cancer.
d. Chemotherapy and radiotherapy will kill you.

Answers: a. False
b. False
c. False
d. False

Question 5:
Choose the top five childhood cancers from the given list and write down below.
Haematological (Leukaemia/lymphomas)

Sarcomas(Bony/soft Tissue) Cervical Cancers
Lung cancers Retinoblastomas Breast Cancers
Gall Bladder Cancers Ovarian Cancers
Central Nervous system Tumors Stomach Cancers
Colorectal Cancers Oral Cavity Cancers
Renal Tumours(Wilm's Tumor)

Answers:
1. Haematological (leukaemia/lymphoma)
2. Sarcomas (Bony/soft tissue)
3. Central Nervous System Tumours
4. Retinoblastomas
5. Renal Tumours (Wilm's Tumor) Question

6: Write the diagnosis:

……Retinoblastoma……

Question 7:

From the following risk factors of breast cancer . Differentiate and enlist in the concerned column.

Gender, nulliparous, age, Oral contraceptives, genetic risk factors, alcohol intake, obesity, Physical inactivity, race and ethnicity, not breastfeeding, benign breast conditions

Modifiable risk factors	Non modifiable risk factors

Answers:
Non modifiable risk factors: Gender, Age, Genetic risk factors, Race and ethnicity

……..

Question 8:

Differentiate the following features of breast cancer and enlist in the concerned column.

Hard Consistency, No nipple retraction, Smooth and rubbery, Can have nipple retraction, Painless (pain in 1/1000), May have yellow/green nipple discharge, May have unilateral,bloody nipple discharge, Often painful, Well-defined,can cause dimpling of the skin, Irregular edge, Fixation to skin or chest wall, Easily moves under the skin, Skin dimpling unlikely

Benign	Malignant

Answers:
Benign Breast cancer :
- Smooth and rubbery
- Often painful
- Well-defined
- Easily moves under the skin
- Skin dimpling unlikely
- May have yellow/green nipple discharge
- No nipple retraction

Question 9:

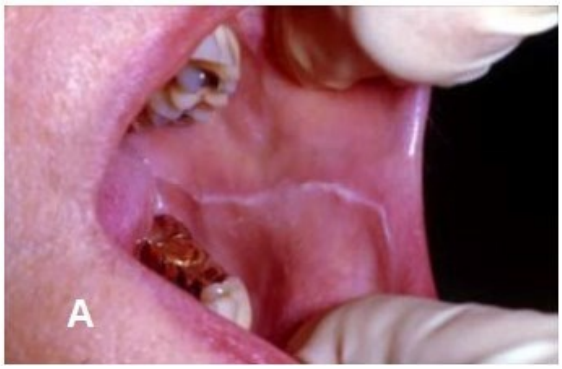
True or false about the risk factors of oral cancer

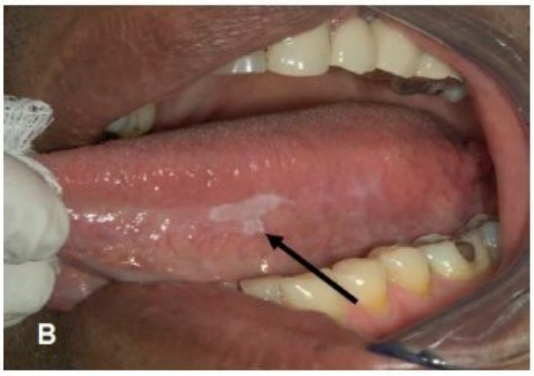
1. Betel quit/ gutkha / chewing tobacco (khaini) doesn't cause oral cancer.
2. Chronic mouth ulcer especially in those with major risk factors could also be the risk factor/symptom of oral cancer.
3. High alcohol consumption (synergistic with tobacco) can cause oral cancer.

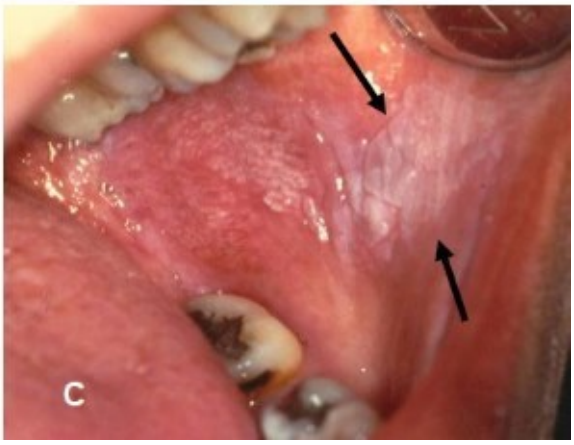
Answers: 1. False 2. True 3. True

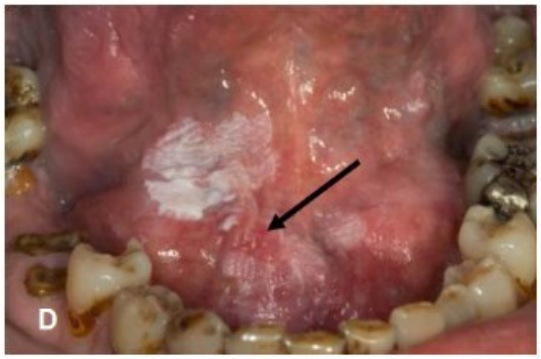
Question 10:

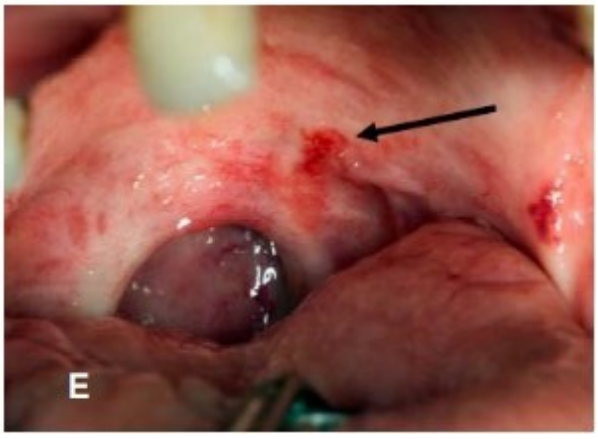
Below are the pictures of the various kinds of oral lesion. Identify and name it.











Answers:
A. Linea Alba
B. Leukoplakia
C. Leukoplakia
D. Erythroleukoplakia
E. Erythroplakia

Question 11

True or false.

a. The most important risk factor for cervical cancer is infection by the human papilloma virus (HPV).
b. Having early sexual activity /early marriage and having multiple sexual partners is not a risk factor of cervical cancer.
c. High risk sexual behavior is important risk factor for cervical cancer.
d. Immunodeficiency virus (HIV), the virus that causes AIDS, damages the immune system and puts women at higher risk for HPV infections .
e. Smoking, unhealthy diet, having family history of cervical cancer can cause cervical cancer.

Answers:

a. True
b. False
c. True
d. True
e. True

Question 12:

Fill in the blanks.

1. Most important primary prevention for cervical cancer is ……
2. WHO's current guidelines recommend that young adolescent girls between 9 and 14 years receive …… doses of vaccine at the interval of months to be fully protected.
3. Other primary preventive strategy includes

a……..
b. ……..
c……..
d……..
e …….

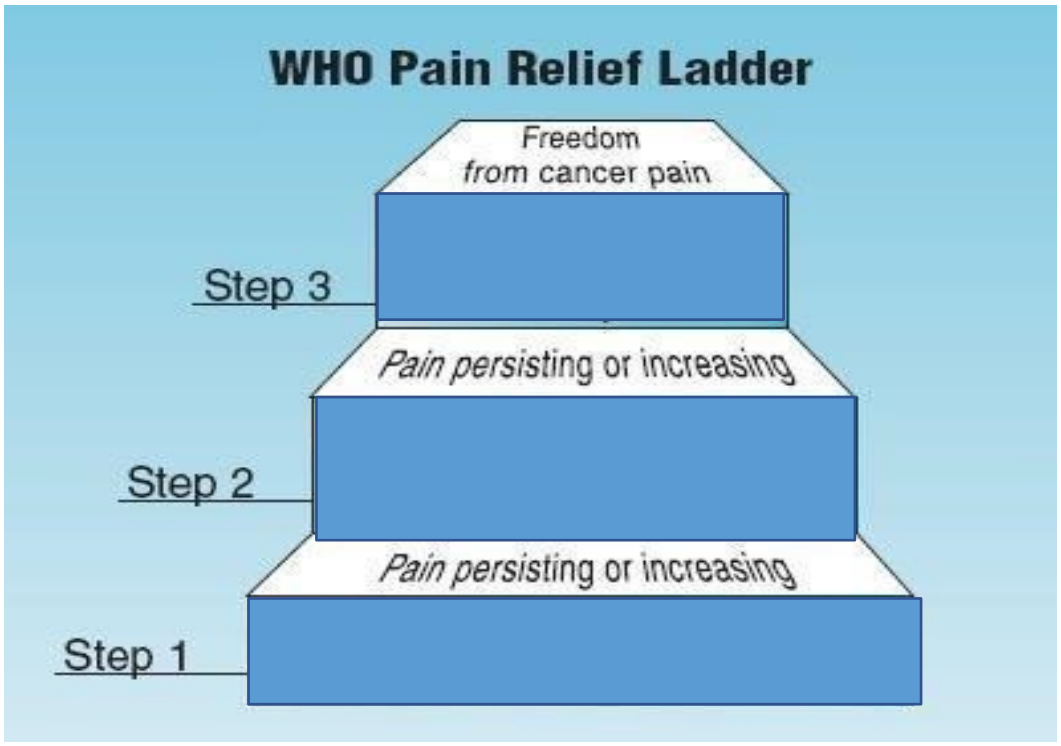
4. Secondary prevention means in terms of cervical cancer.
5. The screening strategy for cervical cancer includes

a…… b…….. c……..

Answers:

1. HPV vaccination
2. Two, 6 months
3. Age-appropriate information on sexual and reproductive health.
   - Safer sexual practices – such as delaying sexual debut.
   - Decreasing the number of sexual partners.
   - Condom use.
   - Cessation of tobacco use.
4. Screening and Treatment of Pre-invasive disease
5. a)Pap's Smear/cytology based screening
   b) Visual Inspection with Acetic Acid(VIA)
   c) High Risk Human Papilloma Virus Testing(hrHPV)

Question 13
Below is the 3 ladder pattern for pain management. Fill the box with appropriate medications.



Step 1 - ……

Step 2- ……

Step 3- ……..

Answers:
1. Paracetamol/ Non steroidal anti inflammatory
2. Mild opioid, NSAID
3. Strong opioids

Case Scenarios:
Question 1:

Mrs XXX is 40 years now and was married about 5 years back. She has recently lost her mother after 3 years long fight with breast cancer which was diagnosed at an advanced stage. Her mother's sister was also diagnosed with breast cancer at the age of 43 years and with ovarian cancer at the age of 45 years. She is worried that she might as well be a victim of breast cancer and comes to you for further suggestions.
- How would you suggest her to proceed forwards to allay her fears**?**

Answers:

- Explain her the significance of family history of cancer
- Mammogram to be done for early detection of breast cancer. Needs to be done yearly for her.
- Emphasize that she undergoes self-breast examination on regular basis and to immediately report if any new lumps in breast is noticed.
- Genetic testing could be done for her to rule out any predisposition to hereditary cancer syndromes. Especially BRCA1 and 2.

Question 2:

XXX is a 10 years old child. He reports to you with swelling around the neck, axilla, and inguinal region progressing in size for the last 8 months. 8 months back he had visited a Primary health care Center locally with complaints of night fever,some weight loss and mild neck swelling. Given his family history of Tuberculosis and an inconclusive FNAC from the neck Lymph node, he was started with Antitubercular medications. Following this, initially his symptoms were stable, but however for the last 4 months his swelling in the neck has been increasing and there has been newly appearing swelling in the axilla and inguinal region. He has lost considerable weight. Of lately, his mother also notices abdominal swelling. CT evaluation reveals enlarged bilateral neck nodes, right axillary nodes, enlarged liver and spleen and bilaterally enlarged inguinal nodes. A biopsy from the neck node reveals Non-hodgkin's lymphoma. Bone marrow aspiration and biopsy was suggestive of infiltration of marrow by the cancerous cell.

Can you enumerate the reason for the delays in his diagnosis?

- Clinical presentation similar to Tuberculosis and start of empirical ATT
- Lack of diagnostic facility. (FNAC/BIOPSY ON FIRST VISIT)
- Lack of awareness on when to report if symptoms not subsiding
- Others: Possibly Socioeconomic conditions

Question 3:

30 yrs single female, presents with complaints of a smelly, yellow vaginal discharge with slight dysuria for 1 week.

She denies vulvar itching, any pelvic pain or fever. She says she had 2 sex partners over the last 6 months and did not use condoms .She however used contraceptives for birth control.
On

Examination:
Vitals were stable
Per speculum Examination: Reveals moderate amount of frothy, yellowish, maladorus discharge without any visible cervical mass or easily induced cervical bleeding.
Bimanual Examination was normal without uterine or adenexal tenderness.

Q) What do you think is the cause?

Answer: Trichomoniasis

You perform a KOH wet mount and a saline wet mounts of cervical secretions. What could be the findings?

- Saline wet mount reveals numerous motile trichomonads.
- KOH mount was negative for budding yeasts and pseudohyphae. How do you treat her?

- Metronidazole or trinidazole 2gm orally once. Treat partners as well. Advise sexual abstinence unitll treatment completed. Retest after 28 days post treatment. And use of barrier sexual protection

Would you offer her cervical cancer screening? If yes, when?

- Yes. After retesting negative for Trichomonas vaginitis, she can go with cervical cancer screening as per the national guideline.

Question 4:

- You are called to the ER to evaluate a 10 year old boy who has been tired for 2 weeks and his parents noticed that he becomes short of breath when he walks upstairs to go to his bedroom. At first glance, you notice that he has some shortness of breath when he is placed in the supine position and feels slightly better on propped up position.

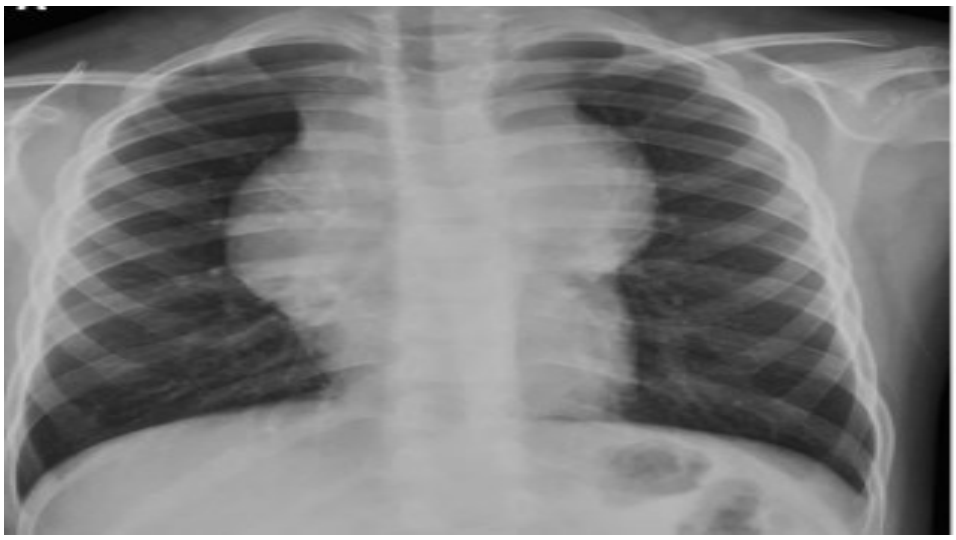
On Examination:

Temp: 38.7C, Pulse: 100b/min, BP: 110 /70, Spo2: 88% at RA Eye: No pallor, No icterus

Tongue: Moderate dehydration present

Neck: Multiple Bilateral cervical palpable. Maximum size 4cm feels rubbery. No palpable LN elsewhere. In addition there is engorged neck veins bilaterally.

Lab Tests: Hb 10, TLC: 10,000 Differentials Neutrophils: 80%, Lymphocytes 20%, ESR 20, urea/Creatinine: 50/1.3, Na/K:135/4.5, LDH: 2000.



• What is your possible diagnosis?

• What would be your initial management?

- Possible diagnosis would be Non Hodgkins lymphoma
- Initial management : Efforts should be made to stabilize the patient haemodynamically and prevent tumor lysis syndrome as well as prompt referral for biopsy and further management.

*Remember: Do not start steroids as this may hinder the diagnosis and staging.

1) Initiate hydration
2) Supplemental oxygen. Keep the child in a propped up position.
3) Start Allopurinol as tumor lysis may lead to hyperuricemia.
4) Monitor CBC, Kidney Function test and calcium daily.
5) Once hemodynamically stable refer the patient in nearby tertiary center.
6) proper counselling of the parents regarding the referral and the importance of establishing diagnosis and treatment.

Handouts for Cervical cancer

Diagnosis screening methods

Following are the standard screening methods

1. Visual Inspection with Acetic Acid (VIA)
2. Pap's Smear/cytology-based screening
3. High-risk Human Papilloma Virus DNA testing (HrHPV)

Pre-requisite for the screening test

1. Avoid sexual contact two days before the planned test.
2. Avoid vaginal douching or any medication application before test.
3. The test cannot be done during the active period/bleeding.
4. Lady should not be having any antibiotic during the test.

Pap's Smear/Cytology based screening

Pap smear is recommended where technical and laboratory facilities are available for taking the cervical smear, study under the microscope by the pathologist and providing the results. Although Pap smear is the standard screening method for cervical cancer screening it is not an appropriate tool for large-scale national screening programs due to its technical difficulty. It can be done and advised where available. The Pap test is around 80% sensitive and can detect pre-cancer lesion 10-12 years before the development of invasive cancer.

When and who to do the Pap test:

1. This is recommended for all the ladies after 2years of initiation of the sexual activity and all 30-60years of eligible ladies as per national cervical cancer screening and prevention guideline.
2. This test is done every year for three consecutive year and if all tests negative then schedule screening every 5 year till women reaches 60 years of age.
   If positive follow treat guideline for pre-cancer lesion.
3. Patient with HIV and on immunosuppression should do this test frequently as per the physician advice. (6 months to 1 year)

Method:

The lady will be kept in lithotomy position. Sim's speculum to be inserted and have a clear view of the cervical os. Look for any discharge or abnormality. If signs of infection or bleeding is noted stop the procedure and provide the treatment for the condition the lady is having. If no any abnormality then take the cervical smear using Ayer's spatula and brush from both ecto- cervix and endo-cervix. Make smear on the glass slide fix this with formalin and air dry and transfer to the lab for the cytology study and reporting. This is very simple and reproducible test and done in OPD basis.
If the test comes negative, lady will be in follow up. If positive, she needs to be seen by oncologist or Gynecologist for colposcopy examination and the confirmation of the finding followed by appropriate treatment. Sometimes lady need to undergo biopsy from the suspicious area/lesion.

Visual Inspection with Acetic Acid (VIA):

The National Guideline for Cervical Cancer Prevention and Screening in Nepal-2010 mandates that VIA will be used at all levels from the primary health care center (PHCC) to the tertiary level. The test can be performed by the trained health workers and the nursing staff in the

primary care setting. The results are immediately available and further management can be decided.

Visual inspection of the cervix using acetic acid means looking at the cervix with a naked unaided eye to detect abnormalities after the application of dilute (3–5%) acetic acid or vinegar over the cervical os. The abnormal area turns aceto white, which means there is HPV infection. 98% of this kind of aceto-white lesions resolves on its own as any other sexually transmitted infection (STIs). In few cases who may have persistent infection may give rise to precancerous lesion and then invasive cancer over 10-12 years from the initial infection. So counselling remains important tool here and advice lady not to be panic and be on regular follow up of 6 months to one year to see the progress. This again is very simple and easy test that can be conducted in mass screening camps and on routine basis on hospital and PHCs.

High-risk Human Papilloma Virus DNA Testing (HrHPV):

More than 98% of Cervical cancer is caused by HPV infection. Two high-risk HPV strains (16 and 18) cause more than 70% of cervical cancers but can be treated if detected early enough. Revised NCCP guideline also recommends the use of HPV DNA test where available and applicable. HPV_ DNA is the gold standard method and screening tool. NCCP also advocate the use of HPV-DNA self-sampling kit for the easy and inclusive test for all the eligible women.

Module 5: Hemoglobinopathies

Thalassemia

Session plan for Virtual session

Preparation for virtual session

- Review PEN Plus clinical protocol chapter 5 Hemoglobinopathies :Thalassemia
- Review all the exercises with the correct answer in facilitators guide Module 5 Hemoglobinopathies: Thalassemia
- Review case scenarios with learners for discussion – identify the probing question for the case
- Review session plan for the session
- Prepare pen and note book for the session to note

Virtual session on Module 5: Hemoglobinopathies- Thalassemia (Total virtual session duration: 75 mins)

Session	Methods and activities	Materials and Methods	Time
Virtual	• Welcome all the learners • Introduce yourself and ask them to introduce themselves • Ask them to share the self-paced learning experience – ask them to share best part of self-paced learning and difficulties they encountered during the self-paced learning. (ask few of them, encourage all the learners to share their own if they had different from the stated) • Encourage all to participate. Ensure you are involving the quitter learners • Ask participants to share difficult contents to understand if any • Difficult or not solved question to solve • Note all difficulties and questions • Ask them to hold till last if all the issues are not addressed during discussion as they will be addressed in the last of the session		10 min
	• Then discuss the correct answers of the exercises one by one with brief rationale of each. • Involve all the learners in the discussion by asking them to share their right answer.		25 mins
	Now Discuss the case scenario based questions that the learners had completed in the self-paced session using PPT slides While facilitating the discussion do not forget to use probing question why they answered this	PEN–Plus Protocol and Learners Guide: Module 5	25 mins

	Sometimes you can use hypothetical scenario too what they will do in this condition.		
	Ensure the previously shared difficult questions and contents are discussed If any content or questions yet to discuss cover it.	PEN–Plus Protocol and Learners Guide: Module 5	10 mins
	Ask them for their queries if any and respond accordingly. Close the session by highlighting and summarizing the session with key points of the module. Thank them for their participation and ask for their feedbacks.		5 mins

Onsite Learning: Thalassemia

checkbox	Topic Total onsite Learning Duration: 55 mins	Materials and Methods	Time
	Introduction to Onsite Learning • Welcome all participants, introduce yourself and ask them to introduce themselves • Ask them to share the self-paced learning and virtual learning experience – ask them to share their good experience and their difficulties. (Ask few of them and encourage other learners to share their own if they had different experience from what is already stated.) • Encourage all to participate. Ensure you are involving the quieter learners as well. • Ask participants to share the contents that were difficult to understand, if any, and note all difficulties and questions Ask them to wait till the end to see if the questions will be addressed during discussion, if not addressed then discuss on these questions or difficulties as well.		**10 mins**
	Final Knowledge Assessment		
	Session objectives At the end of the session, learners will be able to • Outline and approach to a child with Thalassemia • Diagnose different types of Thalassemia based on clinical features and HPLC reports • Decide when to start iron chelation • Counsel for neonatal screening		

	Discuss the following using power point slides: Case scenario 1 Case scenario 2 Role Play Identify gaps of knowledge if any and review the information based on the need.		
	Case scenario 1 • Mr. Ramesh Tharu 2 yrs boy from Dang presented with H/O multiple blood Transfusion since age of 6 months, jaundice and lump on the left side of abdomen. Clinically, he is pale,icteric,with hepatosplenomegaly, prominent maxilla and frontal bossing. On laboratory investigations, Hb 5gm%, Serum bilirubin 5 mg%, Microcytic hypochromic pictures on PBS. Hb HPLC shows Hb F 80%, Hb A2 3%, Hb A 10%. **Q1. What is your diagnosis?** Ans- Transfusion-dependent Beta-Thalassemia **Q2. How do you treat?** Ans- Regular blood transfusion to maintain Hb% more than 9 gm%, Iron overload estimation by serum ferritin, Iron chelation, Referral for bone marrow transplantation, Family screening, Premarital counseling **Q3. When will you start chelation?** Ans-In general, iron chelation is started at age 2-4 years after 20-25 RBC units have been transfused, in patients with a serum ferritin level of greater than 1000 microgram/dL **Q4. What other supportive medications will you prescribe?** Ans-Tab Folic acid 1 mg/day **Q5. What can be the curable treatment?** Ans- Bone marrow transplantation (Scene ends with Mrs. Tharu feeling reassured, knowing that her son's condition has been diagnosed and that he will receive appropriate medical care.)	-PPT slide -Group Discussion	10 minutes
	Case scenario 2 • Ms. Sarita Chaudhary, 20 yrs unmarried lady from kailali presented in Medical OPD with H/O easy fatigability, lump on left side of the abdomen. On examination, there is pallor, icterus, and splenomegaly. CBC shows, Hb 7%, microcytic hypochromic pictures with normal Hb HPLC. Her iron profile is normal. **Q1. What may be the diagnosis?** Ans- Alpha Thalassemia **Q2. How do you confirm?** Ans- Genetic testing	-PPT slide -Group Discussion	10 minutes

	Q3. What are the other tests? Ans-Capillary electrophoresis can show separate peak for HbH (tetramer of beta), Supravital staining can be done to demonstrate Golf ball appearance of inclusions and RBCs. **Q4. How do you manage?** Ans-Tab Folic acid, Occasional blood transfusion, Serum ferritin estimation yearly. Premarital counseling and family screening.		
	Role play :On Counselling 28 yrs Mr. XX Basnet and 26 years Mrs YY Thapa, who are both thalassemia trait, want to conceive a child for the first time. How do you counsel them? <u>Role Play :</u> • Role 1: Mr. XX Basnet (Patient) • Role 2: Mrs. YY Thapa (Patient) • Role 3: Genetic Counselor (GC) • Role 4: Medical Doctor <u>Instructions:</u> • Mr. XX Basnet will play the role of a thalassemia trait patient who wants to conceive a child with his partner. • Mrs. YY Thapa will play the role of a thalassemia trait patient who wants to conceive a child with her partner. • The Genetic Counselor will play the role of a healthcare professional specialized in genetic counseling. • The Medical Doctor will play the role of a healthcare professional providing medical advice and information. **Q. How do you counsel them?** Ans: -Focus on preconception folic acid for mother -Focus on planned conception -Focus on preconception consultation on center with facility for antenatal screening	- PPT slide - Role play on Preconception al counselling forparents both of whom are thalassemia trait	20min
	Summarizing the session	Presentation	5 minutes

Exercises on Thalassemia

(Module 5: Hemoglobinopathies)

Answers in bold type

MCQ's

Exercise 1: Thalassemia is mainly divided into? (Multiple answers possible)

a) Alpha
b) Delta
c) Gamma
d) Beta

Exercise 2: Pallor and splenomegaly in Thalassemia Intermedia becomes evident

a) After 6 months
b) After 1 year
c) After 2 yrs
d) Late adulthood

Exercise 3: All of the following applies for the diagnosis of B Thalassemia except:

a) History of repeated anemia
b) Failure to thrive
c) Repeated infections
d) Single episode of jaundice

Exercise 4: Identify the false lab diagnosis in case of Thalassemia from the list provided below:

a) Hb <9 g/dl
b) MCV – low<78 fl and MCH- low<27pg
c) MCHC- low or normal
d) WBC & Platelets massively diminished

Exercise 5: True regarding Peripheral Blood Smear (PBS) of Thalassemia is:

a) Gross anisopoikilocytosis
b) tear drop cells and target cells
c) basophilic stippling
d) All of the above

Exercise 6: How often can we depend on Hb Electrophoretic results for the diagnosis of Thalassemia?

a) Always
b) Sometimes
c) usually
d) May be

Exercise 7: Final diagnosis of alpha Thalassemia is:

a) Clinical
b) Based on suspicions
c) Genetic
d) Based on history

Exercise 8: Current, most common and evidence-based management strategies for Thalassemia will be:

a) Chronic transfusion therapy
b) Iron chelation
c) Transplant
d) Gene therapy

Exercise 9: Identify the true statements regarding blood transfusion in Thalassemia from the list provided below: (Multiple answers possible)

a) An early and appropriate transfusion program is a pillar of care for children with beta-thalassemia major and in some children with beta-thalassemia intermedia.
b) Transfusion is beneficial because it alleviates symptomatic anemia
c) Shortens life
d) Transfusion suppresses ineffective erythropoiesis

Exercise 10: All of the following are criteria for initiating transfusion therapy in Thalassemia except:

a) Confirmed diagnosis of Thalassemia
b) Haemoglobin level (Hb) <70 g/l on single occasions
c) Haemoglobin >70 g/l with significant symptoms of anaemia
d) Haemoglobin >70 g/l with poor growth/ failure to thrive

Exercise 11: Patients with transfusion-dependent Thalassemia ideally should receive leuco reduced _____

a) White blood cells
b) Red blood cells
c) Plasma
d) Platelets

Exercise 12: Key for safety of blood transfusion are:

a) Material and colour of the bag
b) Location of blood bank
c) Haemovigilance and adverse events reporting
d) Patients choice and privacy

Exercise 13: Following are the complications of Thalassemia

a) Transfusion-transmitted infections and transfusional iron overload
b) Toxicities of iron chelation therapy and Bacterial infections
c) Cardiac, liver and bone complications
d) All of the above

Exercise 14: Main cause of iron overload in Thalassemia major is:

a) GI absorption
b) Blood transfusion therapy
c) Oral iron intake
d) Intravenous iron

Exercise 15: The diagnosis and monitoring of iron overload are based on the complementary use of the following parameters.

a) Serum ferritin
b) Liver Iron concentration(LIC)
c) Myocardial iron
d) All of the above

Exercise 16: All of the following are examples of iron chelators except:

a) Deferoxamine
b) Deferasirox
c) Dolutegravir
d) Deferiprone

Exercise 17: Vaccination visit that can be used for hemoglobinopathy screening is:

a) JE vaccination
b) PCV vaccination
c) BCG vaccination
d) MR vaccination

Match the following
Exercise 18:

1. Beta-Thalassemia major		a. Enlarged
2. Facial change		b. mild persistent anemia
3. Spleen and liver changes		c. frontal bossing
4. Beta Thalassemia minor		d. manifest after 6 months

18. 1d, 2c, 3a, 4b

Exercise 19: Match the following with regards to Thalassemia:

1) Acute complications		a) Hemochromatosis
2) Common cause of death		b) Sepsis secondary to increased susceptibility to infection
3)Cause of death in post splenectomized patient		c)Congestive heart failure
4) Multi-organ failure due to		d) severe anemia with CCF

19. 1d, 2c, 3b, 4a

State whether True or False

Exercise 20: Alpha Thalassemia is usually caused by deletions of one or more of the 4 alpha globin genes (2 on each chromosome)

a) True
b) False
c) May be
d) Rarely

Exercise 21: Uncontrolled transfusional iron overload increases the risks of heart failure, endocrine damage, liver cirrhosis and hepatocellular carcinoma.

a) True
b) False
c) Partially correct
d) None

Fill in the blanks:

Exercise 22: Genetic diagnosis of B Thalassemia is needed for _____diagnosis

Ans- **Prenatal**

Exercise 23:

Q. Transfuse every 2-5 weeks, maintaining pre-transfusion hemoglobin above _____g/l or up to _____g/l for patients with cardiac complications

(**15. 95-105 g/ l, 110-120 g/l)**

Case scenario

Exercise 24:

A 19 yrs Yadav boy, who is asymptomatic found to have Hb HPLC report of Beta thalassemia trait. His parents are worried about his thalassemia status.

Q1. How to counsel?

• Need of family screening, and pre-marital screening of potential spouse by Hb HPLC in future. Better not to marry with beta thalassemia trait or disease, Hb E trait/disease or sickle cell trait or disease.

Q2. How to treat?

• No treatment needed but person may have mild anemia, microcytic hypochromic picture which may be confused with iron deficiency and health workers may prescribe iron unnecessarily.

Sickle cell Disease (SCD)

Session plan for Virtual session

Preparation for virtual session

- Review PEN Plus clinical protocol Chapter 5 Hemoglobinopathies : SCD
- Review all the exercises with the correct answer in facilitators guide Module 5 Hemoglobinopathies: SCD
- Review case scenarios with learners for discussion – identify the probing question for the case
- Review session plan for the session
- Prepare pen and note book for the session to note

Virtual session on Module 5- Hemoglobinopathies:SCD
(Total virtual session duration: 75 mins)

Session	Methods and activities	Materials and Methods	Time
Virtual	• Welcome all the learners • Introduce yourself and ask them to introduce themselves • Ask them to share the self-paced learning experience – ask them to share best part of self-paced learning and difficulties they encountered during the self-paced learning. (ask few of them, encourage all the learners to share their own if they had different from the stated) • Encourage all to participate. Ensure you are involving the quitter learners • Ask participants to share difficult contents to understand if any • Difficult or not solved question to solve • Note all difficulties and questions • Ask them to hold till last if all the issues are not addressed during discussion as they will be addressed in the last of the session		10 min
	• Then discuss the correct answers of the exercises one by one with brief rationale of each. • Involve all the learners in the discussion by asking them to share their right answer.		25 mins
	Now Discuss the case scenario-based questions that the learners had completed in the self-paced session using PPT slides	PEN–Plus Protocol and Learners	25 mins
	While facilitating the discussion do not forget to use probing question why they answered this Sometimes you can use hypothetical scenario too what they will do in this condition.	Guide: Module 5	

	Ensure the previously shared difficult questions and contents are discussed If any content or question yet to discuss cover it.	PEN–Plus Protocol and Learners Guide: Module 5	10 mins
	Ask them for their queries if any and respond accordingly. Close the session by highlighting and summarizing the session with key points of the module. Thank them for their participation and ask for their feedback.		5 mins

Onsite Learning: Sickle Cell Disease (SCD)

Checkbox	Topic Total Onsite Learning Duration: 130 mins	Material & resource	Time
	Introduction to Onsite Learning • Welcome all participants, introduce yourself and ask them to introduce themselves • Ask them to share the self-paced learning and virtual learning experience – ask them to share their good experience and their difficulties. (Ask few of them and encourage other learners to share their own if they had different experience from what is already stated.) • Encourage all to participate. Ensure you are involving the quieter learners as well. • Ask participants to share the contents that were difficult to understand, if any, and note all difficulties and questions Ask them to wait till the end to see if the questions will be addressed during discussion, if not addressed then discuss on these questions or difficulties as well.		10 mins

	Final Knowledge Assessment		
	Session objectives At the end of the session, learners will be able to • Interpret different Hb HPLC reports • Diagnose Sickle cell trait, beta Thalassemia trait, beta thalassemia major, Hb E disease and trait, other haemoglobinopathies and Probability of Alpha thalassemia(HbH disease) from Hb HPLC reports • Demonstrate Hb HPLC reporting technique • Demonstrate different Hb HPLC reports and uses • Demonstrate genetic counseling regarding risk of SCD/ Haemoglobinopathy		
	Discuss the following using powerpoint slides: Interpreting the Lab Reports 1-6 Role Play 1 Role play 2 Case study Identify gaps of knowledge if any and review the information based on the need.		
	• Demonstrate normal and abnormal Hb HPLC reports • Lab reports for interpretation (Report 1 to 6)	PPT slides (Interpret the lab report)	30 mins
	Role Play 1 15 yrs Ms. Adhikari presented with repeated history of jaundice and bone pain. There is repeated history of blood transfusion also. On laboratory investigation, Hb 7gm%. Hb HPLC shows sickle cell disease. <u>Role Play:</u> • Role 1: Dr. Sharma (Hematologist) • Role 2: Ms. Adhikari (15-year-old girl) • Role 3: Mr. Adhikari (Ms. Adhikari's father)	-PPT Slides -Discussion	20 mins

	Instructions: • Dr. Sharma will play the role of the Hematologist who will treat Ms. Adhikari and counsel Mr. Adhikari(ms. Adhikari's father) who presents to his clinic • Ms. Adhikari will play the role of the patient with the given symptoms/signs and laboratory values. • Mr. Adhikari will play the role of the father of the patient (Ms. Adhikari) **Q1. How do you counsel?** Ans- Genetic nature of disease. Family screening, pre-marital counseling. Need of lifelong comprehensive treatment of disease as per chronic disease module. **Q2. How do you treat?** Ans-Tab. Folic Acid 5mg OD, Cap. Hydroxyurea as per protocol. Vaccination as per protocol. Pain relief for acute and chronic pain as per protocol and supportive measures. [Scene ends with Ms. Adhikari and her father feeling reassured, knowing that they have a comprehensive understanding of sickle cell disease and the treatment options available to them. Dr. Sharma emphasizes the importance of ongoing support and care.]		
	Role play 2 • A 25 years Rajib Rajbanshi from Morang was found to have Hb E trait on Hb electrophoresis. Role Play: • Role 1: Rajib Rajbanshi (Patient) • Role 2: Dr. X (Genetic Counselor) Instructions: • Rajib Ranbanshi will play the role of the patient. • Dr. X will play the role of the Genetic counselor who will advise the patient on what to do further and counsel him on the report obtained on Hb electrophoresis. **Q1. How to counsel?**		20 mins
	Ans- It is benign condition. It does not need any treatment. Needs family screening and pre- marital screening by capillary electrophoresis, Hb E has separate peak in capillary electrophoresis. **Q2. How do you treat?** Ans-No need of treatment but he should not marry with Beta Thalassemia trait or sickle cell trait.		

	Case study A 25 yrs Mr. Ramesh Tharu from Bardiya presented with repeated history or bodyache, joint pain, Jaundice and anemia since childhood. He visited multiple health facilities and traditional healer (GURUWA). His father spent Rs. 10,00,000 after selling land. Now they have only one kattha land. Recently on his Hb HPLC report, he was diagnosed to have SCD. **Q1. How do you counsel?** Ans- Genetic nature of disease. Family screening pre-marital counseling. Need of lifelong comprehensive treatment of disease as per chronic disease module. **Q2. How do you treat?** Ans- Tab. Folic acid 5mg OD, Cap. Hydroxyurea as per protocol. Vaccination as per protocol. Pain relief for acute and chronic pain as per protocol and supportive measures. **Q3. How could the sufferings of Mr. Ramesh be prevented?** Ans- Ideally, his sickle cell disease was preventable if his parents had tested for hemoglobinopathy prior to marriage and followed sickle/Thalassemia kundali for marriage. - Even though they had married it could be diagnosed at newborn period if country had a universal or targeted Newborn screening for haemoglobinopathy (sickle cell /Beta Thalassemia). - Even if clinicians were aware of hemolytic anemia in his childhood and sent blood for Hb HPLC, It could have been diagnosed early.		10 mins
	Q4. What is the solution for future to prevent similar sufferings in family? Ans- Routine newborn screening for haemoglobinopathy * screening. - Use of sickle-thalassemia kundali for marriage decision.		
	Genetic counselling using Thalassemia/ SCD Kundali	-PPT Slides - Discussion	15 mins
	Exercise of probability using Punnet square **• Fill in the boxes and interpret the results**	-PPT Slides - Discussion	20 mins
Review session	Summarizing the session		5 min

Exercises on SCD

(Answers in bold type)

MCQ's

Exercise 1:
What kind of inheritance does SCD follow?

a. Autosomal dominant inheritance
b. X- linked recessive inheritance
c. X- linked dominant inheritance
d. Autosomal recessive inheritance

Exercise 2:
Q. What is the life span of RBC in SCD patient?

a. 100-120 days
b. 150-200 days
c. 50-60 days
d. 10-20 days

Exercise 3:
Q. Choose the most important screening method in SCD?

a. Family and premarital screening
b. Prospective screening
c. Retrospective screening
d. Mass screening

Exercise 4:
Q. Choose the correct options from below with regard to Sickle Cell Trait.
(Multiple answers possible)

a. Person carrying only one allele of sickle cell mutation
b. Sickle cell trait is not a disease
c. Generally asymptomatic and does not need any treatment
d. Family screening and premarital screening is needed

Exercise 5:
Q. Following may be regarded as the Differential Diagnosis of SCD. (Choose the 3 correct options from the list given below)

a. Thalassemia
b. RTA
c. Malaria
d. Berger's disease
e. Autoimmune Hemolytic anemia
f. Cancer

Exercise 6:
Q. What are the indications for starting Hydroxyurea in adult patients with SCD?
(Multiple answers possible)

a. Three or more hospitalizations for a vaso-occlusive crisis in the past 12 months
b. Severe or recurrent acute chest syndrome
c. Sickle cell-associated pain that affects daily activities and quality of life
d. Mild chest symptoms

Exercise 7:
Q. what is the minimum duration of treatment with Hydroxyurea?
a. 3 months
b. 6 months
c. 12 months
d. As and when needed

Exercise 8:
Q. All the statements below are true regarding management of SCD in pregnancy except.
a. Stop Hydroxyurea before planning of pregnancy
b. Continue Tab Folic acid 5 mg, 1 Tab OD throughout pregnancy
c. Tab Aspirin 75 mg, 1 Tab OD from second trimester till delivery
d. Monitoring is not mandatory

Exercise 9:
Q. What are the danger signs to be aware of in SCD?
a. severe pain and fever
b. dyspnea and severe lethargic condition
c. altered sensorium, severe pain abdomen
d. All of the above

State whether True or False
Exercise10:
Q. Mark "T" against the options that are true with regard to SCD.
a. Never asymptomatic ( )
b. recurrent bone and joint pain (T)
c. anemia , jaundice, fever, gallstone (T)
d. stroke in childhood are rare in Nepal (T)

Exercise 11:
Q. Is Hydroxyurea effective immediately after administration?
a. True as the effect is visible instantaneously
b. False as it takes several weeks to be fully effective

Fill in the blanks:

Exercise12:
_____community is the most affected community in SCD in Nepal.
Ans- Tharu

Exercise 13:
Q. Starting dose of Hydroxyurea in t/t of SCD is _____

Ans- 15 mg/kg/day

Match the following:

Exercise 14

a. Drug-reducing vaso occlusive event in SCD		1. Aplastic crisis
b. Chronic complication of SCD		2. Hydroxyurea
c. Acute complication of SCD		3. Avascular necrosis of femur
d. Important test to diagnose SCD		4. Hb HPLC

(Ans- a-2,b-3,c-1,d-4)

Case scenario

Exercise 15:

Q. 18 yrs Mr. Tharu, unmarried whose Hb electrophoresis shows sickle cell trait and he is worried about sickle cell status.

Q1. How do you counsel?

• Need of family screening and pre-marital screening of potential spouse by Hb HPLC. Not to marry with sickle cell or Beta Thalassemia trait or disease.

Q2. How do you treat?

• No treatment needed for sickle cell trait only. Many patients are worried by name of sickle cell. Sickle cell trait and sickle cell disease are different entity. Sickle cell trait does not need treatment. Need of adequate hydration and rest in between exercise.

Module 6: Essentials of Care and Practice And Neurodevelopmental Disorders

Session plan for Virtual session

Time: 1 hour 25 minutes.

Preparation for Virtual Session

- Review Pen plus Clinical Protocol Module 6 Neurodevelopmental disorders
- Review all the exercises with the correct answer in the facilitators guide module 6 neurodevelopmental disorders
- Review case scenarios with participants for discussion – Identify the probing question for the case
- Review session plan for the session
- Prepare pen and note book for the session to note

Virtual session on Module 6 Neurodevelopmental Disorders

Session	Methods and activities	Materials and Methods	Time
Virtual	• Welcome all participants, introduce yourself and ask them to introduce themselves • Ask them to share the self-paced learning experience – ask them to share best part of self- paced learning and difficulties they encountered during the self-paced learning. (Ask few of them and encourage other learners to share their own if they had different experience from what is already stated.) • Encourage all to participate. Ensure you are involving the quieter learners • Ask participants to share the contents that were difficult to understand, if any, and note all difficulties and questions • Ask them to wait till the end to see if the questions will be addressed during discussion, if not addressed then discuss on these questions or difficulties as well.		10 min
	• Then discuss the answers of the exercise one by one with brief rationale of each. Involve all the learners in the discussion by asking them to share their answer. • Ensure that all the previously shared difficult questions and contents are discussed.	PEN –Plus Protocol and Learners Guide: Module 6	30 mins
	• Ask the learners about any cases related to neurodevelopmental disorders in children and	PEN –Plus Protocol	40 mins

	adolescents that have come to mind, during their self-paced learning. They may have encountered these cases during their clinical practice. • Ask them to share about the case(s) and discuss among participants the possible diagnosis and clinical features supporting the diagnosis. What is their management approach and how has the approach differed after the PEN PLUS training? *(Note: If no cases are shared by the participants, a case scenario can be presented by the facilitator to initiate the discussion by using the case vignette on Autism Spectrum Disorder from the facilitators guide)*	and Learners Guide: Module 6	
	• Ask them for their queries, if any, and respond accordingly. • Thank all the participants for their active engagement in the session and ask for their feedbacks (might be structured questionnaire- google sheet)		5 mins

Onsite learning: Essentials of Care and Practice

Session	Topic	Materials and Resources	Methods and Activities	Time
1.	**Introduction to Onsite Learning** • Welcome all participants, introduce yourself and ask them to introduce themselves • Ask them to share the self-paced learning and virtual learning experience – ask them to share their good experience and their difficulties. (Ask few of them and encourage other learners to share their own if they had a different experience from what is already stated.) • Encourage all to participate. Ensure you are involving the quieter learners as well. • Ask participants to share the contents that were difficult to understand, if any, and note all difficulties and questions. Ask them to wait till the end to see if the questions will be addressed during the discussion, if not addressed then discuss on these questions or difficulties as well.			**5 minutes**
2.	**Essentials of Care and Practice** **At the end of the session, the learners will be able to**			**60 mins**

	• Identify barriers of communication • Apply effective communication skills • Provide First Level Response • Provide psychoeducation			
	Activity 1: Barriers of Communication **Instructions:** ***Activity*** • Divide the participants into two groups. Place them separately for instructions. • Instruct one group of participants to think about how their day has been since morning, and to describe it to their paired learning partner. • Instruct the other group that no matter what their paired learning partner says to them, they are not to pay attention, on the contrary, they can act distracted in other activities- like writing, looking somewhere else, using the phone, talking about their own issues, etc. • Ask all the participants to join back together; sitting alternatively, such that they form pairs with one from each group. Then ask them to follow their instructions. • Allow all of them to engage in their respective pairs for 3 minutes. ***Experience Sharing*** • Then ask for feedback from the participants who were asked to share their experience of the day- how did they feel in the interaction, what were the barriers of communication? ***Reflection and Summary*** • Ask all the participants to make a list or say out loud, the different barriers of communication that they have noticed. • Emphasize that such barriers of communication exist every day in our clinical interaction with patients and also child and adolescents and we need to be aware of these as service providers.	PEN-Plus Protocol	Activity	**15 mins** • 2 min • 1 min • 1 min • 1 min • 3 min • 2 min • 3 min • 2 min
	Activity 2- Modeling Effective Communication Skill **Instructions:** • In this interaction, the facilitator will play the role of health-care provider and the co-facilitator will play an adolescent			**10 mins**

	seeking help for headaches, breathing difficulties and fearfulness. ***Demonstration/ Role Play*** • The facilitator will start the interaction by ➢ **introducing themselves** and **their role** in the clinic, ➢ ensuring the adolescent is **safe**, ➢ asks the adolescent the reason for visit, and using **active listening** to understand what is happening to the adolescent, ➢ Using **positive body language** to ensure that s/he is comfortable. ***Observation findings*** • After watching the demonstration, ask participants to list out the good communication skills noted in the interaction. • Use the checklist provided below in the facilitators guide. ***Reflection and Summary*** • After this activity, highlight the important verbal and non-verbal communication skills.	PEN PLUS Protocol	Roleplay Demonstration	• 5 mins • 3 mins • 2 mins
	Activity 3: First Level Response Instructions: • Ask the participants to write one specific problem on a piece of paper, which a child and adolescents may express to them. Fold the paper multiple times into a small size. • Collect the piece of papers, then randomly distribute or ask participants to pick one each from the collection. • The facilitator can demonstrate a **first-level response (**reinforce where the components acknowledge, validate, universalize, and empathize have been used in the response) to a hypothetical problem statement from the co-facilitator. • Ask the participant to take turn to open the piece of paper, tell out loud what the stated problem is and provide a first level response to the problem statement, keeping in mind the different components- acknowledge, validate, universalize, and empathize. • Ask others to observe if all the components of first level response were included in the response.	PEN PLUS Protocol Paper, pens, Small cardboard box	Demonstration and Roleplay	**20 mins** • 3 mins • 2 mins • 2 mins • 10 mins • 3 mins
	• Provide feedback on the First- level response provided.			

	<u>Activity 4. Psychoeducation Instruction:</u> Divide into 4 groups, and within the groups practice in pairs the skill of psychoeducation on various disorders under PEN PLUS using the following key components as guidelines: • What the condition is and its expected course and outcome • Available treatments for the condition and their expected benefits- possible intervention and need of medications. • Importance of adhering to treatment, including what the child and adolescents can do (e.g. taking medication or other relevant measures), and what carers can do to help the child and adolescents adhere to treatment. • Potential involvement of social workers, community health workers or other trusted members in the community/ family. • Potential side-effects (short and long term) of any prescribed medication that the child and adolescents (and their caregivers) need to monitor • Any specific information relevant to the health condition (Refer to relevant sections of the manual for specific information on management of the various health conditions).	PEN PLUS Protocol	Demonstration and Roleplay	**<u>10 mins</u>**
	Summarize the session		Group Interaction	**<u>5 mins</u>**

Onsite Learning: Neurodevelopmental Disorders

Session	Topic	Materials and Resources	Methods and Activities	Time
3.	**Neurodevelopmental Disorders- Video Session** **At the end of the session, learners will be able to** • Identify the various neurodevelopmental disorders • Provide First Level Response and Psychoeducation for Neurodevelopmental Disorders	Projector, Video Files, Audio System, Laptop, PEN PLUS Protocol	Video Demonstration and discussion, Roleplay	**75 mins**
	Give a brief introduction to the outline of the sessions. Ask participants to divide into 4 groups, each group will focus on one of the videos of neurodevelopment disorders for the role-play of first-level response and psychoeducation. All 4 videos will be shown to all the participants.			• 5 mins
	<u>Activity 1: Identifying Intellectual Disability</u> • Show a short video on Intellectual Disability. • Ask the participants to list down clinical features suggesting that the child has an intellectual disability. • How do you address the worries of the parents regarding the child and adolescent's diagnosis of Intellectual Disability? **<u>Provide First Level response</u> <u>(roleplay)</u>** ✓ Choose two participants ✓ One as parent and other as a service provider . ✓ The parent will express their concern about their child being unable to stand, poor socialization and have poor communication at 2 years of age. ✓ The facilitator will provide first-level response (Use the checklist to ensure all components – acknowledge, validate, universalize and empathize are covered in the response) ✓ Ask participants what further information they will provide the parents?	Projector, Video Files, Audio System, Laptop, PEN PLUS Protocol	Video Demonstration and discussion, Roleplay	• 15 mins

	Psychoeducate (Ensure if the following points are covered) • What the condition is and its expected course and outcome • Available treatments for the condition and their expected benefits- possible intervention and need of medications. • Importance of adhering to treatment, including what the child and adolescents can do (e.g. taking medication or other relevant measures), and what carers can do to help the child and adolescents adhere to treatment. • Potential involvement of social workers, community health workers or other trusted members in the community/ family. • Potential side-effects (short and long term) of any prescribed medication that the child and adolescents (and their caregivers) need to monitor • Any specific information relevant to the health condition (Refer to relevant sections of the protocol for information on the management of intellectual disability. • **Discuss with the group on things done well and areas to be improved.**			
	Activity 2: Identifying Autism Spectrum Disorder • Show a short video on Autism Spectrum Disorder. • Ask the participants to list down clinical features suggesting that the child has Autism Spectrum Disorder. • How do you address the worries of the parents regarding the child and adolescents' diagnosis of Autism Spectrum Disorder? **Provide First Level response (roleplay)** ✓ Choose other two participants ✓ One as parent and other as a service provider. ✓ The parent will express their concern about their child being not able to speak well	Projector, Video Files, Audio System, Laptop, PEN PLUS Protocol	Video Demonstration and discussion, Roleplay	• 15 mins

	(only few words when she wants something), doesn't show interest towards other people, doesn't make eye contact and doesn't play with other children and prefers to line up everything and play by herself at 4 years of age. ✓ The facilitator will provide first-level response (Use the checklist to ensure all components – acknowledge, validate, universalize and empathize are covered in the response) • Ask participants to demonstrate what further information they will provide the parents. **-Psychoeducate** **(Refer to checklist provided in Activity 1)** • **Discuss with the group on things done well and areas to be improved.**			
	Activity 3: Identifying Attention Deficit Hyperactivity Disorder • Show a short video on Attention Deficit Hyperactivity Disorder. • Ask the participants to list down clinical features suggesting that the child has Attention Deficit Hyperactivity Disorder. • How do you address the worries of the parents regarding the child and adolescent's diagnosis of Attention Deficit Hyperactivity Disorder? - **Provide First Level response. Provide First Level response (roleplay)** ✓ Choose other two participants who aren't yet involved. ✓ One as parent and other as a service provider. ✓ The parent will express their concern about their 8-year-old child being extremely restless, always disorganized, 'always on the go"/ "chuk – chuke". At his primary school, teachers were concerned about his behavior. He had difficulty waiting his turn and was extremely restless. In the playground, he was often in trouble. He was not	Projector, Video Files, Audio System, Laptop, PEN PLUS Protocol	Video Demonstration and discussion, Roleplay	• 15 mins

	perceived to be the one who started conflict situations, but he was recognized by some of his peers as a boy whom it was easy to wind up or trigger. He was of average ability, but his progress at school was poor and his attainments were a few years behind his chronological age. ✓ The facilitator will provide first level response (ensure all components – acknowledg e, validate, universalize and empathize are covered in the response) ✓ Ask participants to demonstrate what further information they will provide the parents? **-Psychoeducation** **(Refer to checklist provided in Activity 1)** ✓ **Discuss with the group on things done well and areas to be improved.**			
	Activity 4: Epilepsy • Show a short video on Epilepsy. • Ask the participants to list down clinical features suggesting that the child has Epilepsy. • How do you address the worries of the parents regarding the child and adolescent's diagnosis of Epilepsy? **Provide First Level response.** ✓ Choose other two participants who aren't yet involved. ✓ One as parent and other as service provider. ✓ The parent will express their concern about their 10 years old girl child who is recently diagnosed as epileptic ✓ The facilitator will provide first level response (Use checklist to ensure all components – acknowledge, validate, universalize and	Projector, Video Files, Audio System, Laptop, PEN-Plus Protocol	Video Demonstration and discussion, Roleplay Roleplay	• 20 mins

	empathize are covered in the response) • Ask participants to demonstrate what further information they will provide the parents. -Psychoeducation (use the checklist provided in Activity 1) **• Discuss with the group on things done well and areas to be improved.**			
	Summarize the session		Group Interaction	**5 mins**

Onsite Learning: Neurodevelopmental Disorders

Session	Topic	Materials and Resources	Methods and Activities	Time
4	**Neurodevelopmental Disorders- Case Scenarios At the end of the session, learners will be able to** • Identify the various neurodevelopmental disorders (ASD, ID, Epilepsy and ADHD) • Describe the management of neurodevelopment disorders	Printed Case Vignette, PEN PLUS Protocol	Case Vignette based discussion	**120 minutes**
	Give a brief introduction to the outline of the sessions. Ask participants to divide into 4 groups, each group will focus on one of the case vignettes of neuro- development disorders. Distribute one case vignette to each group(also present on facilitators and learners guide) All Groups will get simultaneous 15 minutes for preparation, followed by 10 minutes for each group for presentation of the case vignette to others.			• 5 mins
	Activity 1: Identifying Intellectual Disability • Ask the participants to provide a provisional diagnosis and list down clinical features to support the provisional diagnosis. • How will you manage this case at the healthcare facility? Psychosocial and Pharmacological (if applicable) intervention.	Printed Case Vignette, PEN PLUS Protocol	Case Vignette based discussion	• (15 mins)+ 10 mins

	Activity 2: Identifying Autism Spectrum Disorder • Ask the participants to provide a provisional diagnosis and list down clinical features to support the provisional diagnosis. • How will you manage this case at the healthcare facility? Psychosocial and Pharmacological (if applicable) intervention.	Printed Case Vignette, PEN PLUS Protocol	Case Vignette based discussion	• (15 mins)+ 10 mins
	Activity 3: Identifying Attention Deficit Hyperactivity Disorder • Ask the participants to provide a provisional diagnosis and list down clinical features to support the provisional diagnosis. • How will you manage this case at the healthcare facility? Psychosocial and pharmacological (if applicable) intervention.	Printed Case Vignette, PEN PLUS Protocol	Case Vignette based discussion	• (15 mins)+ 10 mins
	Activity 4: Epilepsy • Ask the participants to provide a provisional diagnosis and list down clinical features to support the provisional diagnosis. • How will you manage this case at the healthcare facility? Psychosocial and pharmacological (if applicable) intervention. • **Clinical Simulation**- Management of Status Epilepticus ➢ 1 participant- adolescent with status epilepticus ➢ 2-3 participants- health care personnel doctor + paramedics, nurses)	Printed Case Vignette, PEN PLUS Protocol PEN PLUS Protocol for Status Epilepticus protocol	Case Vignette based discussion Clinical Simulation	• (15 mins)+ 10 mins 15 mins
	Summarize the session		Group Interaction	**5 mins**

Case scenarios: Management of the Status Epilepticus

SCENARIO (Information provided and questions asked by the learner acting as facilitator)	KEY REACTIONS/ RESPONSES (Expected from the learner acting as provider)
1.C&A presents with convulsions or is unresponsive and stiff – What do you do?	• Checks for signs of head or neck injury, if present, keep the head and neck stable. • Checks Airway, Breathing and Circulation. • Monitors blood pressure, temperature and respiration. • Starts timing the duration of seizures (if possible). • Ensures C&A is in a safe space, if possible, puts C&A in left lateral position.
2.You opened an i.v. line	• Places intravenous line (if possible) for medication and fluid administration. • Starts normal saline administration (30 drops/ min) • Gives Glucose i.v. (adolescent 25-50ml of 50% Dextrose, child 2- 5ml/kg of 10% dextrose). • Gives emergency medication: Inj. Diazepam 10 mg iv (child 1mg/ year of age i.v.) or inj Lorazepam 4 mg i.v. (child 0.1mg/kg i.v.)
3. I.V. access could not be established. *– What will you do?*	• If i.v. not established, gives Diazepam rectally (Adolescent 10mg. child 1mg/ year of age)
*4.*Emergency medication has been given. - *What do you do?*	• Observes for 10 minutes for seizures, if seizure recurs or continues, administers another dose of emergency medication. • Does not leave the C&A alone. • Does not put anything in the mouth, except medical devices to ensure airway.
*5.*C&A has another seizure or seizure has continued despite of the emergency medication.	• Suspects status epilepticus. If not possible to manage at the healthcare facility, refers to higher center. • If possible, tries to manage status epilepticus at the healthcare facility.
6.Status epilepticus suspected, and management possible at healthcare facility. - What do you do?	<u>Gives one of the following medications intravenously:</u> • **Valproic acid:** ➢ 20 mg/kg i.v. once up to a maximum dose of 1 g, over 30 min • **Phenobarbital:** ➢ 15-20 mg/kg i.v. up to a maximum dose of 1g, over 100 mg/min ➢ **If no i.v. access, can use same dose of i.m. Phenobarbital.** • **Phenytoin:** ➢ 15-20 mg/kg i.v. up to a max dose of 1 g, over 60 min ➢ **use second i.v. line** (DIFFERENT FROM DIAZEPAM) ➢ ***Phenytoin causes significant damage if extravasates must have good i.v. Line!***
7.You have given the anti-epileptic medications? - What do you do?	Check if the seizure has subsided. • If Seizures subside, assess for epilepsy. • If seizures don't subside, refer to a higher centre.

Effective communication skill checklist

Steps /Performance	Performance level			
1. Receives patient warmly • Introduce yourself • Greeting voice • Is empathetic • Rapport building				
2. Appropriate sitting position (L- shaped position /90 degree) is used				
3. Provider demonstrates openness • Arms open • Open posture				
4. Providers is leaning forward				
5. Eye contact is maintained appropriately				
6. Provider is relaxed				
7. Provider is using effective questioning				
8. Provider is paraphrasing the communication periodically				
9. Provider is repeating key words				
10.Provider is reflecting his/her feeling				
11.Provider summarizes the communication				
12. Provides appropriate support as appropriate - • Medical care • Psychological care • Information • Appropriate referral (need-based)				

Case Vignettes for Neurodevelopmental Disorders:

1. **Intellectual Disability:** Suman, a 6-year-old child from Nuwakot was going to school for 2 years in a government school. When he was in school, his teachers recognized that he was unable to learn as other kids of his class. As per his mother, Suman started to walk at around 2 years and started speaking first word around 20 months. Currently, he can move freely as other kids of his age, but he has poor fine motor skills. He cannot hold a pencil properly and cannot remove shoes, clothes etc. Speech and language skills are inadequate for his age; currently, he can speak short sentences using 2-3 words. He has difficulties in comprehending instructions. He is unable to express his needs and difficulties, so he becomes easily irritable. At times he has been bullied by peers for his disorganized behaviors. These days he has been more stubborn and impulsive at times especially when his demands are not met. Parents are worried about Suman being more dependent on them which is increasing their workload. Suman needs assistance in activities of daily living like eating, dressing, grooming, bathing and taking care at the toilet. He is unable to do age-appropriate behaviors.

2. **Autism Spectrum Disorder:** Sujita, a 4-year-old girl from a city, lives with her parents. The parents are concerned that she has not spoken well even at this age, and only speaks occasionally when she wants something, and even then only in few words. She does not show interest towards other people, doesn't make eye contact, doesn't play with other children. She prefers to play alone by herself, and her play is also peculiar. She likes to arrange spoons, forks and other utensils in straight lines, she also aligns her dolls, crayons, pencils, etc. If it is attempted to join her, she gets irritable and goes away. She mostly doesn't respond to her name being called, and parents even wondered if she had hearing problems. But she dislikes sounds like those from the vacuum cleaner or pressure cooker, and runs away closing her ears with her hands when that happens. She also spends a lot of time watching cartoons on TV or similar videos on mobile phones. When she is excited, she flaps her hands, and makes fists, and screams. She was recently placed in a playgroup, but she has not adjusted well, and the school says it is difficult to manage her.

3. **Attention-Deficit Hyperactivity Disorder:** Jagat, a 9-year-old boy and the eldest of three children, was stubborn and argumentative at home. He was reported by his parents to be 'always on the go '/ 'chuk-chuke' and had exhibited difficult behavior even as a baby. At his primary school, teachers were concerned about his behavior. He had difficulty waiting his turn, was always disorganized and was extremely restless. In the playground, Jagat was often in trouble. He was not perceived to be the one who started conflict situations, but he was recognized by some of his peers as a boy whom it was easy to wind up or trigger. He was of average ability, but his progress at school was poor and his attainments were a few years behind his chronological age.

4. **Epilepsy:** 14-year-old female child, from a rural background, studying in grade 8, parents are farmers, has episodes of loss of consciousness with up rolling of eyes, stiffening of the body, jerky movement of limbs, tongue bite, with occasional passing of urine during those episodes. These can happen anytime, anywhere, even happened during sleep. Occasionally, if she hadn't eaten well or slept well, the episodes would occur again. The child had these episodes for 2 years, with a frequency of 3-4 episodes per year. Following the onset of the symptoms, the child was taken to various faith healers, and various 'puja's were done believing it was the result of past sins, and that an evil spirit had possessed her. The child was not sent to school anymore, because everyone in school would tease her and even teachers didn't want her to come to school, fearing other children would also catch the problem. The child would stay in the house, and work in the fields.

Module 6 Exercises (with answers)

Effective communication and Practices

Question 1- Effective communication skills include:

a. Getting all information from the caregiver
b. Getting all information from the C&A
c. Active listening
d. Instructing the C&A and carer strictly so that they follow the treatment advised.

Answer: c

Question 2 - The following is true regarding the promotion of respect and dignity of C&A

a. All information shared by C&A should be shared with the carer.
b. All the decisions regarding treatment should be made by the health care professional and the carer, on behalf of C&A
c. The use of technical language is important to explain the health condition to the C&A and carer.
d. C&A should have access to supported decision-making options, and their assent should be taken during assessment and treatment.

Answer: d

Question 3: Which of the following is a helpful way to start an assessment for the health condition?

a. Be welcoming, and introduce yourself in a culturally appropriate manner.
b. Explain that confidentiality is limited and may need to be broken.
c. Ask several closed-ended questions to efficiently elicit the main reason for the presentation.
d. Spend time assessing C&A, to help identify the condition.

Answer: a

Question 4: Which of the following might you include when taking a psychosocial history?

a. Perform a physical examination and basic laboratory tests
b. For a young child and adolescent girl, have another female staff member present
c. For an adolescent, have the caregiver present
d. Ask about current stressors, coping methods and social support

Answer: d

Question 5: Which of the following situations with a child or adolescent would require urgent action?

a. A child discloses to you that they are being sexually abused.

b. A parent discloses to you that their child was born with HIV and is currently receiving treatment.
c. A child has considerable difficulty with daily functioning.
d. A child shows disobedient or defiant behavior

Answer: a

Question 6: Which of the following is good advice for any C&A with CAMH disorder?

a. The caregiver can use threats or physical punishment if a child has problematic behavior.
b. The caregiver should remove the child from mainstream school as soon as possible.
c. The caregiver can use other aids such as television or computer games instead of spending time with the child.
d. The caregiver should give loving attention to the child every day and look for opportunities to spend time with them.

Answer: d

Question 7: Which of the following should be given as advice to an adolescent with a mental or behavioral disorder?

a. They should avoid community and other social activities as much as possible.
b. They should avoid the use of drugs, alcohol and nicotine.
c. They should avoid school if it makes them anxious.
d. They should avoid being physically active for more than 30 minutes each day

Answer: b

Neurodevelopmental Disorder:

Question 1: Match the following Developmental Milestones with the respective chronological age:

Chronological Age		Developmental Milestones
3 months		Sits without support, Monosyllables, Smiles at mirror image
6 months		Neck holding, Turns towards sound, babbling, Recognizes mother, social smile
9 months		Stands without support, walks with support, picks up things with finger and thumb, speaks words,
12 months		Walks without support, may walk up stairs, scribbling, several words speech, simple pretend play like feeding a doll.
18 months		Stands with support, moves things smoothly from one hand to other, begins picking up things with finger and thumb, bisyllable speech, afraid of strangers
2 years		Rides tricycle, walks up and down steps with one foot on each step, copies circle, builds tower of more than 6
		blocks, uses 2-3 sentences at a time, takes turns in playing games with others.
3 years		Hops, may skip, swings, climbs, copies triangle and other geometric shapes, tells simple stories with full sentences, sings, dances, acts, recognizes gender, differentiates between real and make-believe.
4 years		Kicks ball, walks up and down stairs with two feet on each step, copies straight lines, builds tower of more than 4 blocks, uses 2-4 word short sentences, plays besides other children
5 years		Hops, stands on one foot for 2 seconds, copies some capital letters, tells stories, sings songs from memory, make believe play, prefers to play with other children than alone, can't tell between real and make believe.

Answer:

3 months: Neck holding, Turns towards sound, babbling, Recognizes mother, social smile

6 months: Sits without support, Monosyllables, Smiles at mirror image

9 months: Stands with support, moves things smoothly from one hand to other, begins picking up things with finger and thumb, bisyllable speech, afraid of strangers

12 months: Stands without support, walks with support, picks up things with finger and thumb, speaks words

18 months: Walks without support, may walk up stairs, scribbling, several words speech, simple pretend play like feeding a doll.

2 years: Kicks ball, walks up and down stairs with two feet on each step, copies straight lines, builds a tower of more than 4 blocks, uses 2-4 word short sentences, plays besides other children

3 years: Rides tricycle, walks up and down steps with one foot on each step, copies circle, builds tower of more than 6 blocks, uses 2-3 sentences at a time, and takes turns in playing games with others.

4 years: Hops, stands on one foot for 2 seconds, copies some capital letters, tells stories, sings songs from memory, make-believe play, prefers to play with other children than alone, can't tell between real and make-believe.

5 years: Hops, may skip, swings, climbs, copies triangles and other geometric shapes, tells simple stories with full sentences, sings, dances, acts, recognizes gender, and differentiates between real and make-believe.

Question 2: Which one of the following is not a preventable/ treatable cause of Intellectual disability?

a. Hypothyroidism
b. Iodine deficiency
c. Fetal Alcohol Syndrome
d. Retts Syndrome

Answer: d

Question 3: Which of the following criteria can be used to define Intellectual disabilities?

a. Significantly below average intellectual functioning (IQ less than 70)
b. Impairments in adaptive functioning generally
c. These deficits should be manifest before the age of 18 years
d. All of the above

Answer: d

Question 4: Match the following intellectual disability level with the respective IQ score:

Intellectual Disability Level		IQ Score
Mild ID		Less than 20
Moderate ID		20-35
Severe ID		35-50
Profound		50-70

Answer:
Mild ID: 50-70
Moderate ID: 35-50
Severe ID: 20-35
Profound ID: Less than 20

Question 5: Early manifestation of symptoms such as severe impairment in social interaction and in communication can be diagnosed as which of the following?

a. Autism Spectrum Disorder
b. Infantile amnesia
c. Cerebral palsy
d. Intellectual Disability

Answer: A

Question 6: The core features of autism spectrum disorders are all except:
a. Difficulties in social interaction
b. Difficulties in social communication
c. Presence of restricted, repetitive behaviors
d. Difficulty in Feeding

Answer: d

Question 7: The ratio of Autism in boys to girls is:
a. 4:1
b. 3:1
c. 2:1
d. 1:1

Answer: a

Question 8: Which of the following regarding intellectual disability (ID)/ autism spectrum disorder (ASD) is TRUE?
a. Medications can cure ID/ ASD.
b. The child will eventually attain normal milestones after some years.
c. C&A with ID/ASD need training and support from different service providers.
d. C&A with ID/ ASD should be institutionalized instead of managing in the community.

Answer: c

Question 9: What is the general management protocol for Intellectual Disability/ Autism Spectrum Disorder?

…….
…….

Answer :

Provide guidance on child/ adolescent well-being.

- Provide psychoeducation to person and carers and parenting advice. Provide guidance on developmental disorders.
- Provide carer support.
- Liaise with teachers and other school staff
- Link with other available resources in the community such as Community-Based Rehabilitation.
- Offer Parent Skills Training, when available
- Refer children with developmental delay to healthcare facility for further assessment, advice on management plan and family planning.
- Refer for Speech Therapy, Occupational Therapy
- Home based training for carers on socialization and communication.
- Extensive engagement and stimulation
- Ensure appropriate follow-up.

Question 10. **What are the important considerations during follow-up visits?**

Answer:

- For children under 5 years, monitor child development.
- Assess for the presence of any new problem or symptom related to mood, behaviour or development/ learning. For adolescents, assess for the presence of worsening mood (irritable, easily annoyed or frustrated, down or sad) or suicidal thoughts.
- Assess for other neurodevelopmental conditions or other CAMH problems, refer to appropriate module for assessment. Explore and address psychosocial stressors in the home, school or work environment, including exposure to violence or other forms of maltreatment.
- Assess opportunities for the C&A to participate in family and social life.
- Assess carer's needs and support available to the family.
- Monitor attendance at school.
- Review management plan and monitor adherence to psychosocial interventions.

Attention Deficit Hyperactivity Disorder (ADHD)

Answers:

Question 1: Choose the best answer:

A. ADHD has to begin before the age of
a. 7 years
b. 12 years
c. 15 years
d. 18 years

Answer: b

B. Which of the following is not a core symptom of ADHD?
a. Inattention
b. Hyperactivity
c. Impulsivity
d. Aggression

Answer: d

C. The prevalence of ADHD in C&A is
a. 2.5%
b. 5%
c. 7.5%
d. 10%

Answer: b

Question 2: Please write down the following answer:

The different sub-types of ADHD are:

Answer:

1. Inattentive type
2. Impulsive/ hyperactive type
3. Mixed type

Question 3: Write down the general protocol for the management of ADHD in C&A:

Answer:

- Provide guidance on child/ adolescent well-being.
- Provide psychoeducation to person and carers and parenting advice.
- Provide guidance on improving behaviour.
- Assess for and manage stressors, reduce stress and strengthen social support.
- Liaise with teachers and other school staff.
- Link with other available resources in the community
- Offer follow-up

Question 4: Treatment of ADHD can be done with

ii. Fluoxetine
iii. Levetiracetam
iv. Atomoxetine
v. Risperidone

Answer: c

Question 5: What are the considerations for follow-up in C&A with ADHD?

Answer:

Follow up:

- If the C&A is improving, continue the same management plan. Offer regular follow- up.
- If no improvement, provide psychoeducation, advice on parenting as appropriate and advice regular follow-up to a healthcare facility for further assessment and management

At every visit:

- For children under 5 years, monitor child development.
  - Assess for the presence of any new problem or symptom related to mood, behaviour or development/learning. For adolescents, assess for the presence of worsening mood (irritable, easily annoyed or frustrated, down or sad) or suicidal thoughts.
  - Assess for other neurodevelopmental disorders, refer to appropriate module for assessment.
  - Explore and address psychosocial stressors in the home, school or work environment, including exposure to violence or other forms of maltreatment.
  - Assess opportunities for the C&A to participate in family and social life.
  - Assess carers' needs and support available to the family.
  - Monitor attendance at school.
  - Review management plan and monitor adherence to psychosocial interventions.

Epilepsy

Exercise: with answers:

Question 1: The prevalence of Epilepsy in the general population is
a. 1%
b. 3%
c. 5%
d. 10%

Answer: a

Question 2: Epilepsy is characterized by
a. Recurrent unprovoked seizures
b. Seizures during infections and fevers
c. Seizures due to metabolic disorders
d. Seizures due to parasitic infestations of the brain

Answer: a

Question 3: Which of the following differentiates a seizure and from a pseudoseizure?
Unlike pseudoseizures, seizures have …
a. Different presentations during different episodes
b. Episodes lasting many minutes to hours.

c. Trauma/ injury, incontinences of urine/ stool during episodes.

d. Abnormal body and limb movement, abnormal talk

Answer: d

Question 4: Are all seizures due to Epilepsy?
a. Yes.
b. No
Answer: b

Question 5: What is your understanding of the terms seizure and epilepsy?

Answer:

- Epilepsy is a chronic non-communicable disorder of the brain, characterized by recurrent unprovoked seizures.

- Seizure: Sudden, uncontrolled body movements and changes in behavior that occur because of abnormal electrical activity in the brain. Symptoms include loss of awareness, changes in emotion, loss of muscle control and shaking.

Question 6: Seizure in a pregnant adolescent girl should arouse the suspicion of?

a. Electrolyte dysregulation due to vomiting
b. Diabetes mellitus in pregnancy

c. Pseudoseizure due to stress during pregnancy
d. Eclampsia during pregnancy

Answer: d

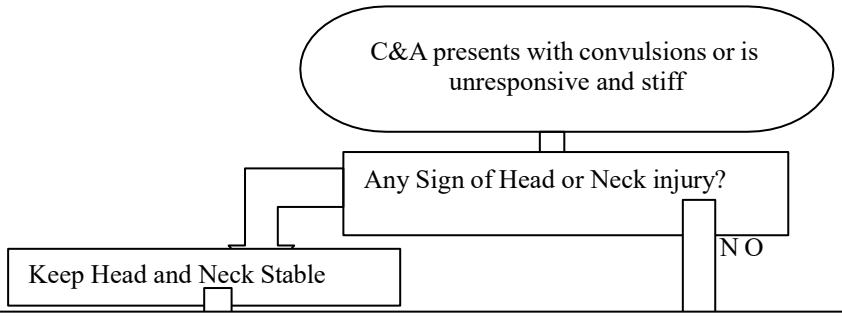
Question 7: What is the loading dose of Phenytoin for status epilepticus?
a. 5-10 mg/kg
b. 10-15 mg/ kg
c. 15-20 mg/kg
d. 20-25mg/kg

Answer: c

Question 8: What is the emergency management protocol for an episode of seizure?

Answer

Emergency Presentation of Acute Seizure



- **Check AIRWAY, BREATHING, CIRCULATION (ABCs)**
  Ensure the C&A has nothing in their airway, is breathing well and has a stable pulse.
- **Check BLOOD PRESSURE, TEMPERATURE and RESPIRATORY RATE Start timing the duration of the convulsions, if possible.**
- **Make sure the C&A is in a safe place and if possible, put them down on their left lateral side to help breathing;** loosen any neckties or clothing around the neck, take off eye glasses, and place something soft under the head (if available)
- **If possible, place an intravenous (i.v.) line for medication/ fluid administration.**
  - Start normal **saline** administration slowly (30 drops/minute)
  - Give **glucose** i.v. (adolescent 25-50 ml of 50%; child 2-5 ml/kg of 10%)
  - Give emergency medication:Inj. **diazepam** 10 mg i.v. (child 1mg/year of age i.v.) OR– **lorazepam** 4 mg i.v (child 0.1 mg/kg i.v.
- If I.V. not established, **Give: diazepam** rectally (adolescent 10 mg, child 1 mg/year of age)
  - **Observe for 10 minutes, if seizure recurs or continues, administer another dose of emergency medication. DO NOT ADMINISTER MORE than dosage of emergency medication.**
- **DO NOT LEAVE THE C&A ALONE**
- **DO NOT PUT ANYTHING IN THE MOUTH, except medical devices to ensure airway.**
- **If seizure doesn't subside, suspect possible status epilepticus, REFER to Higher Center for further evaluation and management.**

If Status Epilepticus is suspected, if possible:
- Give one of the following medications intravenously:

If Status Epilepticus is suspected, if possible:

- Give one of the following medications intravenously
- **Valproic acid:**
  - 20 mg/kg i.v. once up to maximum dose of 1 g, over 30 min
- **Phenobarbital:**
  - 15-20 mg/kg i.v. up to maximum dose of 1 g, over 100 mg/min
  - **If no i.v. access, can use same dose of i.m. Phenobarbital.**
- **Phenytoin:**
  - 15-20 mg/kg i.v. up to max dose of 1 g, over 60 min
  - use second i.v. line (DIFFERENT FROM DIAZEPAM)
  - ***Phenytoin causes significant damage if extravasates must have good i.v. Line!***
- If Seizures subside, assess for epilepsy. If seizures don't subside, refer to a higher centre.

Note: If seizure occurs in a pregnant adolescent girl, suspect eclampsia and refer to higher centre immediately.

Question 9: Anti-epileptics…
a. Need to be taken life-long.
b. Need to be increased in dose periodically due to tolerance
c. Can be stopped by the patient within a month after being seizure-free.
d. Can be stopped under consultation after the patient is seizure-free for at least 2 years.
Answer: d

Question 10 : What are the considerations during follow-up for a C&A with epilepsy?

Answer:

If the C&A is not improving on the current dose of medication

- Review adherence to medications.
- Consider increase in medication dose as needed to the maximal dose if no adverse side effects.
- If the response is still poor,
  - Consider switching medication. The new medication should be at optimum dose before slowly discontinuing the first.
- If response is still poor, review the diagnosis, refer to a specialist.
- Follow-up more frequently.

Recommended on Frequency of Contact

- Follow up should occur every 3-6 months.

If the C&A is showing improvement At every contact,

- Evaluate side-effects of medication including adverse effects and idiosyncratic reactions (clinically and with appropriate laboratory tests when available).
- Provide psychoeducation and review psychosocial interventions.
- **Is the patient an adolescent girl who is pregnant?** If so, consult a specialist.
- **Does the patient have any new symptoms of concern?** Review for any new symptoms of depression and anxiety given high risk of co-morbidity with epilepsy.
- **Is the patient on any new medications that may have interactions?** (Many anti-convulsants have interactions with other medications). If so, consult a specialist.

Consider medication discontinuation when appropriate

If the C&A has been convulsion-free for several years (>2 years at least),

- **Discuss risk of seizure occurrence with C&A/ carer** (if epilepsy is due to head injury, or neuroinfection, there is a higher risk of seizure recurrence off medication), and risks and benefits of discontinuing medications.

If in agreement, gradually take the C&A off medication by reducing the doses over 2 months and monitoring closely for seizure recurrence

Question 11: Which of the following is true**?**

a. C&A with epilepsy should not play competitive sports
b. C&A with epilepsy should not be sent to school until there are no seizure episodes.
c. C&A with epilepsy should not marry in future, as this causes their children to have seizures.
d. C&A with epilepsy can go to school regularly while still under treatment.

Answer: d

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