

Final Technical Report

Capacity Building on WHO Package of Essential Non-communicable Diseases (PEN) Interventions for Primary Health Care Workers of Cox's Bazar District to Strengthen NCD Service Delivery

Submitted on: 23 December 2021



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1. INTRODUCTION

1.1 Background

Cox's Bazar district is home of nearly 3 million Bangladeshi population and the burden of NCD and risk factors is on the rise among the Bangladeshi population. In addition, approximately one million Rohingya, the forcibly displaced Myanmar nationals (FDMN), are living in the refugee camps of the Cox's Bazar district of Bangladesh. In 2019, Directorate General of Health Services (DGHS) of Bangladesh declared Cox's Bazar a model district for the prevention and control of NCD.

Given the burden of NCDs, the WHO and other partners also established a non-communicable disease (NCD) core group to foster responses to NCDs and highlighted the need for providing additional training on NCDs to health care providers. The World Health Organization (WHO) has also identified the need for proactive, long-term, patient-centered, community-based and sustainable NCD care delivered through primary health care (PHC) teams to achieve impact against NCD at the population scale. To facilitate this, the WHO has developed a package of essential NCD interventions (WHO PEN) for PHC teams in low-resource settings. The package includes a prioritized set of cost-effective lifestyle and pharmacological interventions that can be delivered to prevent and control NCD. The package includes sessions on reduction of tobacco and alcohol consumption, weight regulation, improved diet, increased physical activity, and pharmacological measures for prevention and control of NCD. The WHO also recommended a brief counseling model known as 5A's and 5R's approach to be used in the health care settings and in the community.

The PHC systems in Bangladesh typically include physicians, allied health professionals (e.g., nurses, midwives, pharmacists, laboratory technicians, medical assistants or Sub-Assistant Community Medical Officers (SACMO) at the Upazila level, and community health care provider, health assistant at the community level. Health Inspector, Assistant Health Inspectors supervise the HAs (see **Table 1.1** below).

Table 1.1: Health care providers by health facility

Level	Facility	Health care providers
Upazila	Upazila Health Complex	Physicians, Nurses, Midwives, Medical Assistants or Sub-Assistant Community Medical Officers (SACMO), Pharmacists, Laboratory Technicians
Community	Community Clinic	Community Health Care Providers (CHCPs)
	Community	Health Assistant (HAs) Multi-purpose Health Volunteers (MHVs)

In 2019, 407 primary health care workers (102 doctors, nurses, and paramedics and 305 community level health care workers and their supervisors) were trained in Cox’s Bazar district on the WHO PEN by the BRAC James P Grant School of Public Health (JPGSPH) in collaboration with the non-communicable disease control (NCDC) and WHO Bangladesh. In 2020, BRAC JPGSPH also trained a total of 280 doctors, nurses, paramedics, community health care providers, assistant health inspector, health inspectors, and community health workers’ supervisors working in the Rohingya camps and in the Ukhia and Teknaf Upazila (157 doctors, nurses and paramedics, 69 government community level health care workers and supervisors and 54 community level health care workers and their supervisors from the camps) on the PEN interventions.

Apart from training, provision of continuous support to the health workforce is a prerequisite for good quality NCD prevention and control services. Supports can be provided through supportive supervisory visits so that health service providers can identify and solve problems.

“Supportive supervision is a process of helping staff to improve their own work performance continuously. It is carried out in a respectful and non-authoritarian way with a focus on using supervisory visits as an opportunity to improve the knowledge and skills of health staff. Supportive supervision encourages open, two-way communication, and building team approaches that facilitate problem-solving. It focuses on monitoring performance towards goals, and using data for decision-making, and depends upon regular follow-up with staff to ensure that new tasks are being implemented correctly.”

Supportive supervision is helping to make things work, rather than checking to see what is wrong.

However, in many countries, the traditional approach of supervision involves an authoritarian, inspection, or control approach. These traditional approaches are based on the assumptions that health care providers are unmotivated and a strong outside control is needed to improve health service delivery. Evidence from cluster randomized trials suggest that supportive supervision can improve the performance and motivation of health care providers, and allow health care providers to directly participate in the improvement of interventions in the health facilities. Therefore, a supportive approach, where the health care providers and supervisors work together to identify and solve problems, can improve performance and improve quality of services.

Under the current Agreement for Performance, BRAC JPGSPH was contracted by the WHO to coordinate and facilitate the training on the package of essential non-communicable diseases (PEN) interventions to 150 doctors, nurses, and medical assistants/paramedics working in the Rohingya camps and in the Ukhia and Teknaf Upazila health complexes (UHC). The training objective was to enhance the knowledge, skills, and practices of primary health care workers in the early detection and appropriate management of hypertension and Type 2 Diabetes using a total comprehensive CVD risk-based approach. The four-day training package was developed by WHO Bangladesh. The manual was adapted from the “Package of Essential Noncommunicable (PEN) disease and healthy lifestyle interventions – Training modules for primary health care workers” developed by WHO Regional Office for South-East Asia for the member states. The training incorporated sessions on Bangladesh’s “National protocol for integrated management of hypertension and diabetes using a total cardiovascular risk approach in primary health care settings.” The training also incorporated sessions to simulate the NCD service delivery and OSPE for hands-on evaluation of the skills learnt during the training. Moreover, 2022, a supportive supervision component was added.

BRAC James P Grant School of Public Health (JPGSPH) of BRAC University were selected as a contractual partner to provide the following services in collaboration with the Directorate General of Health Services (DGHS) and the World Health Organization (WHO).

Service 1: Training on WHO PEN intervention for PHC providers

- Train 150 doctors, nurses, and medical assistants/paramedics in 6 batches using the 4-day training package developed by the WHO-Bangladesh
- Arrange facilitators for the training from BRAC JPGSPH and other government and non-government agencies
- Arrange necessary logistics, supplies, and services required for the training including training venue, banner, multimedia (projector/screen), sound system/cordless, training equipment (flipchart/whiteboard), training materials including copies of relevant national protocols/agenda/participants' workbook, per-diem disbursement, accommodation, refreshment, travel allowances disbursement, relevant resource persons from the government and non-government agencies, essential precautions for COVID-19, implement a digital pre-test/post-test/OSPE.
- Final technical report of the training of the primary health care provider

Service 2: Supportive supervision on PEN implementation and establishment of referral linkages

- Form an NCD coordination committee in Cox's Bazar with Civil Surgeon of Cox's Bazar as the Chairperson
- Develop tools for supportive supervision/implementation and undertake frequent monitoring visits to provide supportive supervision to care, providers
- Make relevant travel arrangements for supportive supervision visits
- Provide supportive supervision visits to the primary health care facilities with already trained doctors, paramedics, and nurses
- Develop and provide a logbook for the primary health care facilities to track services and act on the agreed action points based on the supportive supervision visits
- Provide monthly reports of supportive supervision visits
- Recommend a framework for sustainable, supportive supervision for the implementation of PEN in the PHCs

1.2 Objectives

The objectives for the project were to

- i. Strengthen the capacity and skills of Primary Health Care (PHC) providers (doctors/nurses/paramedics) in Cox's Bazar district on implementation of the Package of Essential Noncommunicable Diseases (PEN) interventions using team-based approach; and
- ii. Undertake supportive supervision for the trained PHC providers and community health volunteers for implementing the PEN interventions.

2. PROGRAM DESCRIPTION

2.1 Training on WHO PEN intervention for PHC providers

As mentioned earlier, the main objective of the training was to enhance the capacity and skills of health care providers (doctors/nurses/paramedics) in Cox's Bazar district on the implementation of PEN intervention in low resource primary health care settings, using a team-based approach. After the completion of the training, participants were expected to acquire the following competencies.

- Detect, manage and appropriately refer patients with cardiovascular diseases and diabetes.
- Calculate and stratify cardiovascular risk using the WHO risk prediction chart.
- Employ the 5A and 5R techniques to motivate positive behavioral change among individuals using tobacco, consuming unhealthy diets, and whose physical activity levels are low.
- Demonstrate the use of basic diagnostics such as a handheld device to perform point of care

tests such as blood glucose, and to measure blood pressure.

After the training, all primary health centers (PHC) and UHCs that participated were required to develop a PEN implementation plan to deliver essential NCD services at their hospitals, apply the knowledge gained from the PEN training.

2.1.1 Arrangement of necessary logistics and supplies

WHO Bangladesh Office provided 200 copies of National Guidelines for the Management of Hypertension and Diabetes. All other necessary materials (participants' workbook, flip charts, WHO risk charts, selected handouts, pre-test and pre-test questionnaires, and evaluation forms were printed. Questionnaires and other supplies for OSPE were also arranged. Anthropometric equipment's (stadiometer and weighing scale), blood pressure measuring devices and glucometers with strips were also arranged with other relevant logistics. Hotel Sea Palace was contracted for venue, food, accommodation required for the training. They also provided multimedia projector with screen, sound system/cordless, and other training equipment (flipchart/whiteboard). Essential supplies were arranged for COVID-19 prevention. BRAC JPGSPH administration and finance department arrange transports and administrative and financial management of the project.

2.1.2 Training venue and duration

Considering the COVID-19 pandemic, social distancing, mask-wearing, and hand hygiene were promoted during the training. Participants were provided with surgical masks and alcohol-based hand rub at the training venue in addition to the handwashing facilities.

The training was conducted from 8th November to 15th December 2021. The duration of the training for each batch was four days. All the training sessions were held at the Hotel Sea Palace, Cox's Bazar, and most of the trainees resided in the same hotel during the period of the training.

2.1.3 Trainers

WHO Bangladesh has provided five-day long Training of Trainers (ToT) on the WHO PEN intervention in February 2020 and helped in developing a pool of skilled PEN trainers. The ToT was conducted by technical experts from WHO and academia to enhance the knowledge and capacity of the PEN trainers. The developed training pool comprised of experienced trainers from the BRAC JPGSPH, BRAC, BIRDEM, JICA, MOHFW Coordination Cell and the WHO Emergency Sub-Office, Cox's Bazar. A team of trainers from BRAC JPGSPH and WHO Emergency Sub-Office, Cox's Bazar was selected based on availability and expertise for delivering the training sessions for this training programme. Some of the trainers also received online training on patient centered care organized by SEARO. During the training, the facilitators adapted the contents based on the participants' response and the trainers

supported each other during the sessions to engage the participants appropriately. In addition to delivering the training, the trainers fulfilled the following responsibilities for this training:

- Contributed to the development of the facilitators’ manual.
- Contributed to the development of other training materials.
- Shared feedback and recommendations on the session/training after the training.
- Contributed to improvement/finalization of the facilitators’ module and training materials.

2.1.4 Participants

Nomination and communication with the expected participants were coordinated by Health Operations and Technical Expertise Unit, WHO Emergency Sub-Office, Cox’s Bazar. The goal was to nominate and train a team of physician, nurse, and paramedics from the targeted UHCs/PHCs so that they can implement a team-based approach for implementing the PEN interventions at the Primary Health care settings. However, as similar trainings were imparted in 2019 and 2020, some facilities sent less trainees as they already had trainees graduated in 2019 and 2020. A total of **150 participants** from the PHCs in the Rohingya refugee camps and the Upazila Health Complexes of the Cox’s Bazar district attended the training. Of them, **57 were doctors, 52 were nurses**, including midwives, and **41 were paramedics/SACMO**. Total 84 participants were government health workers and the rest 66 were from different NGOs. The list of the organizations or facilities the participants came from are provided in Table 2.1. Distribution of the training participants from different Upazila and from different NGOs are given in Table 2.2 and table 2.3

Table 2.1: List of participating organizations or health facilities

<ol style="list-style-type: none"> 1. All Upazila Health Complexes in Cox’s Bazar Chakaria, Kutubdia, Moheshkhali, Pekua, Ukhiya, Ramu, Teknaf, Sadar 2. Cox’s Bazar Sadar Hospital 3. Union Sub-Center 4. AWARD 5. Community Initiative Society (CIS) 6. Dhaka Community Hospital (DCHT) 7. Field Hospital (FH/MTI) 8. Gono Shastho Kendro (GK) 9. Health And Education For All (HAEFA) 10. HOPE Foundation 11. International Organization of Migration (IOM) 12. MEDIGLOBAL 13. Medicine San Frontiers (MSF) 14. Partners in Health and Development (PHD) 15. Relief International (RI) 16. Research, Training, and Management International (RTMI) 17. Safe the Children International (SCI) 18. Terre Des Homes (TDH) 19. Response Plan
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Table 2.2: Summary of the government training participants by type and Upazila

S. No	Upazila	Doctors	Nurses/ Midwife	Paramedics/ SACMO	Total
1	Chakaria	5	9	0	14
2	Kutubdia	1	2	0	3
3	Moheshkhali	5	6	5	16
4	Pekua	3	5	2	10
5	Ramu	5	8	3	16
6	Teknaf	5	2	3	10
7	Ukhiya	3	5	3	11
8	Sadar	2	0	2	4
	Total	29	37	18	84

Table 2.3: Summary of the non-government training participants by type and Organization

S. No	Organization	Doctors	Nurses/ Midwife	Paramedics/SACMO	Total
1	AWARD	2	1	1	4
2	CIS	1	1	1	3
3	DCHT	1	1	0	2
4	FH/MTI	2	2	2	6
5	GK	2	2	2	6
6	HAEFA	2	0	0	2
7	HOPE Foundation	1	0	0	1
8	MEDIGLOBAL	1	0	0	1
9	MSF	1	2	2	5
10	IOM	5	3	5	13
11	PHD	2	0	1	3
12	RI	1	0	2	3
13	RTMI	4	1	5	10
14	SCI	2	1	1	4
15	TDH	1	0	1	2
16	Response Plan	0	1	0	1
	Total	28	15	23	66

*Please, see the acronyms in Table 2.1

2.1.5 Training sessions

The training sessions were developed based on the WHO 5X5 approaches (5 diseases and 5 risk factors), WHO PEN training modules and considering the local context of Cox’s Bazar district. Alcohol consumption was covered briefly within the unhealthy diet session. Moreover, out of the five major NCDs and metabolic risk factors, only overweight and obesity, Hypertension and Diabetes were discussed. The four-day “WHO Bangladesh PEN interventions for primary health care providers” training package consists of PowerPoint presentations for twelve modules, facilitator guides, and participant workbooks. This four-day training package covered both technical and practical aspects of

the PEN and incorporate interactive teaching methodology (power-point presentations, reflections of personal experience, individual and group discussions, case studies, role plays, videos, brainstorming, practical demonstrations). The titles of the sessions and respective modules are listed in Table 2.4. Moreover, the schedule of the training sessions has been provided in the annex.

Table 2.4: List of training modules and sessions

Modules	Sessions
A	An overview of the NCD burden and PEN as a primary health care approach
B	Overview of NCDs: Cardiovascular diseases (CVD) and Diabetes Mellitus
C1	Risk factors for non-communicable diseases: Tobacco use
C2	Risk factors for non-communicable diseases: Unhealthy diet
C3	Risk factors for non-communicable diseases: Physical inactivity
C4	Risk factors for non-communicable diseases: Overweight and obesity
D1	Total cardiovascular risk-based approach
E	Assessment and Management of Hypertension
F	Assessment and Management of Type 2 Diabetes
G1	Healthy lifestyle: Basics of counseling
G2	Brief interventions for non-communicable disease risk factors: Tobacco cessation, healthy diet, physical activity, and treatment adherence
H1	Develop and present a team-based approach to implementing PEN intervention in the existing health facilities
	Additional Session
NA	Simulation of service delivery at PHC
NA	Objective Structured Practical Examination (OSPE)

PowerPoint presentations, and participant workbooks, were provided to the participants in hardcopies or as files in pen-drives for each health facility. Animated and pictorial PowerPoint presentation, group works, video demonstration, recap quiz, games, and open discussions were used to facilitate lively and spontaneous engagement of the participants in each session.

2.2 Supportive Supervision on PEN Implementation and Referral Linkage

An NCD coordination committee, named NCD prevention and control committee (NCDPCC) has been formed. The committee is chaired by the Civil Surgeon of Cox’s Bazar District. Two supportive supervision tools were pre-tested and finalized. One of the tools is for the upazilla health complexes, and primary health care facilities and health posts in the Rohingya camps. The other tool is for the community clinics, and union-level facilities.

The arrangements for the supportive supervision visits (transport support, logistic support, human resources deployment have been done. Three rounds of supportive supervision visits have been carried

out to all the upazilla health complexes as instructed by the WHO. A logbook for the supportive supervision was drafted and shared with the Upazilla Health and Family Planning Officers on the 23rd December 2021 during the NCD prevention and control coordination committee meeting.

Data from the all rounds of supportive supervision visits entered, and analyzed. Preliminary data were presented during the first meeting of the NCD prevention and control coordination committee held on 24th November 2021. A framework for supportive supervision drafted and shared with the WHO. The framework was also presented by the Civil Surgeon Office during the first meeting of the NCD prevention and control coordination committee held on 24 November 2021.

3. PROGRAM OUTCOME

3.1 Training on WHO PEN intervention for PHC providers

3.1.1 Result of pre/post-test

At the beginning and the end of the training of each batch, participants were offered a test to assess their knowledge on NCDs and PEN interventions. The same set of 22 questions was used for both the assessments. We also conducted an objective structured practical examination (OSPE) at the end of the training to assess the skills and techniques learned throughout the training. See the pre and post-test questionnaire in the annex. Figure 3.1 and 3.2a, 3.2b, 3.3c below illustrate a comparison of the average score and absolute score of different types of participants before and after the training. Improvement has been noticed in all groups of participants at the post-test. Out of the highest possible score of 30, the mean (\pm SD) score of the doctors was 15.47 (\pm 2.72) in the pre-test and 28.05 (\pm 1.10) in the post-test. The nurses and the midwives scored 13.63 (\pm 1.78) in the pre-test and 26.33 (\pm 2.60) in the post-test, and the paramedics scored 14.88 (\pm 3.47) in pre-test and 26.55 (\pm 2.22) in the post-test. Overall, the mean score for all participants 14.67 in pre-test and 27.05 at the post-test. The difference between the mean score in post-test and the pre-test was 12.38.

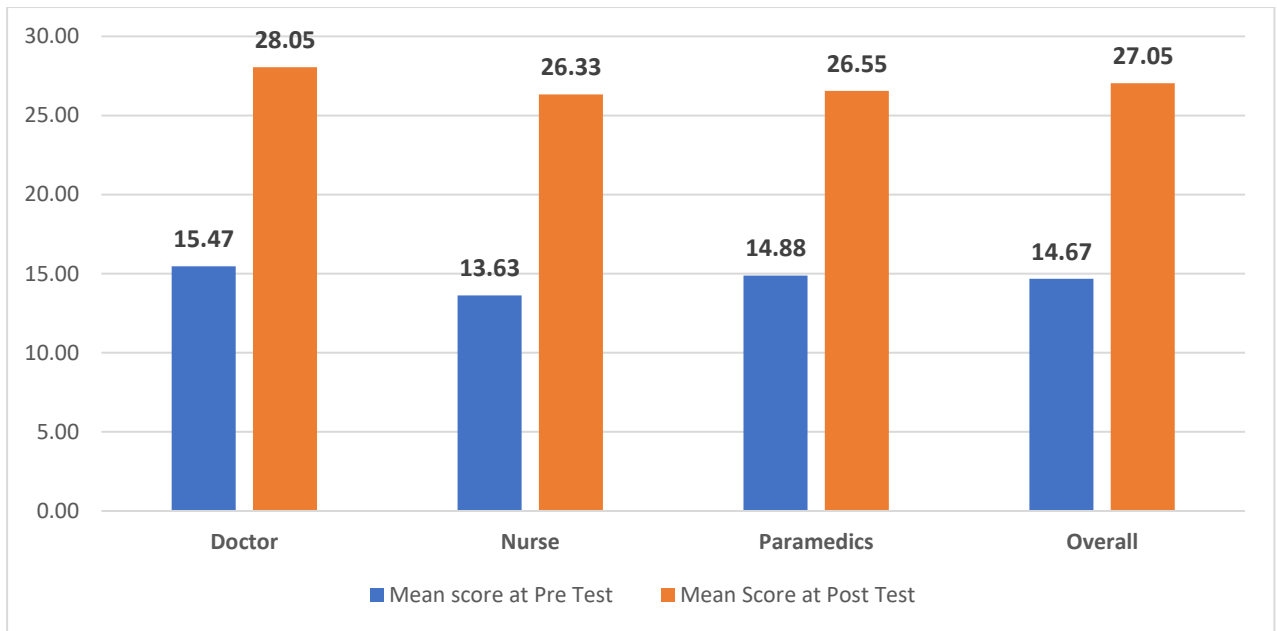


Figure 3.1: Mean score at pre- and post-test by type of trainee

Figures 3.2a, 3.2b, and 3.2c below show that all the individual participant in all the groups improved their knowledge through the training as all of them did better in the post-test compared to the pre-test.

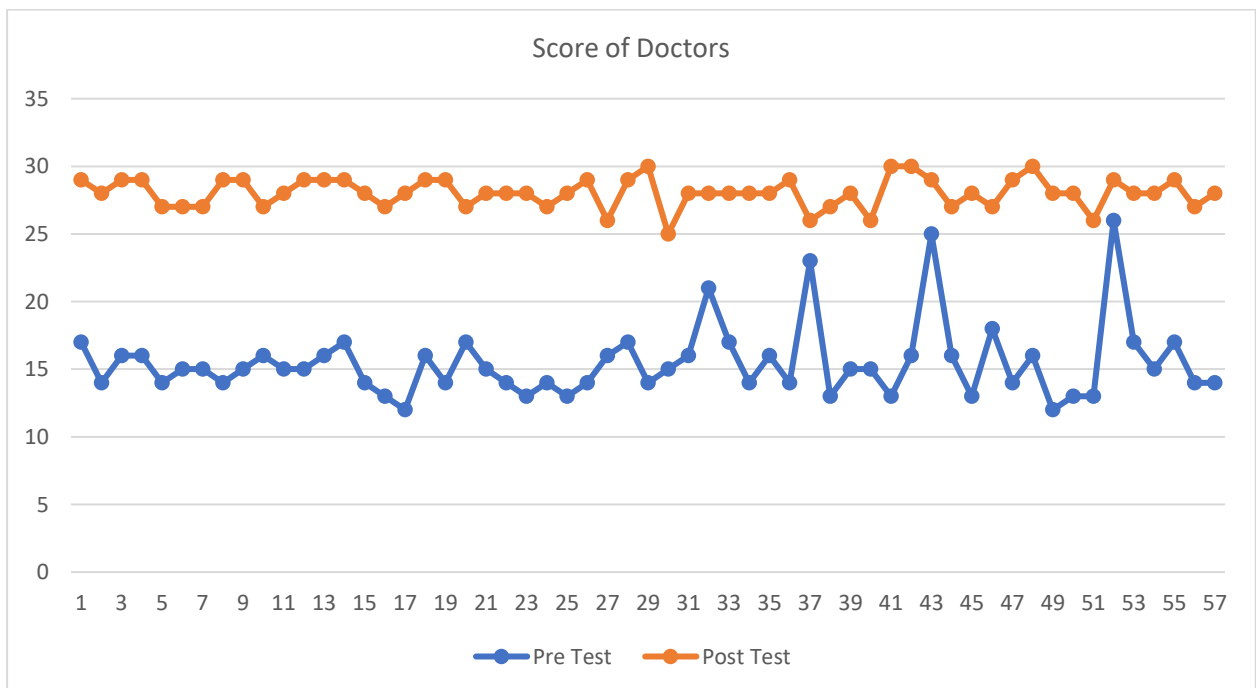


Figure – 3.2a: Change of score of the doctors between pre- and post-test

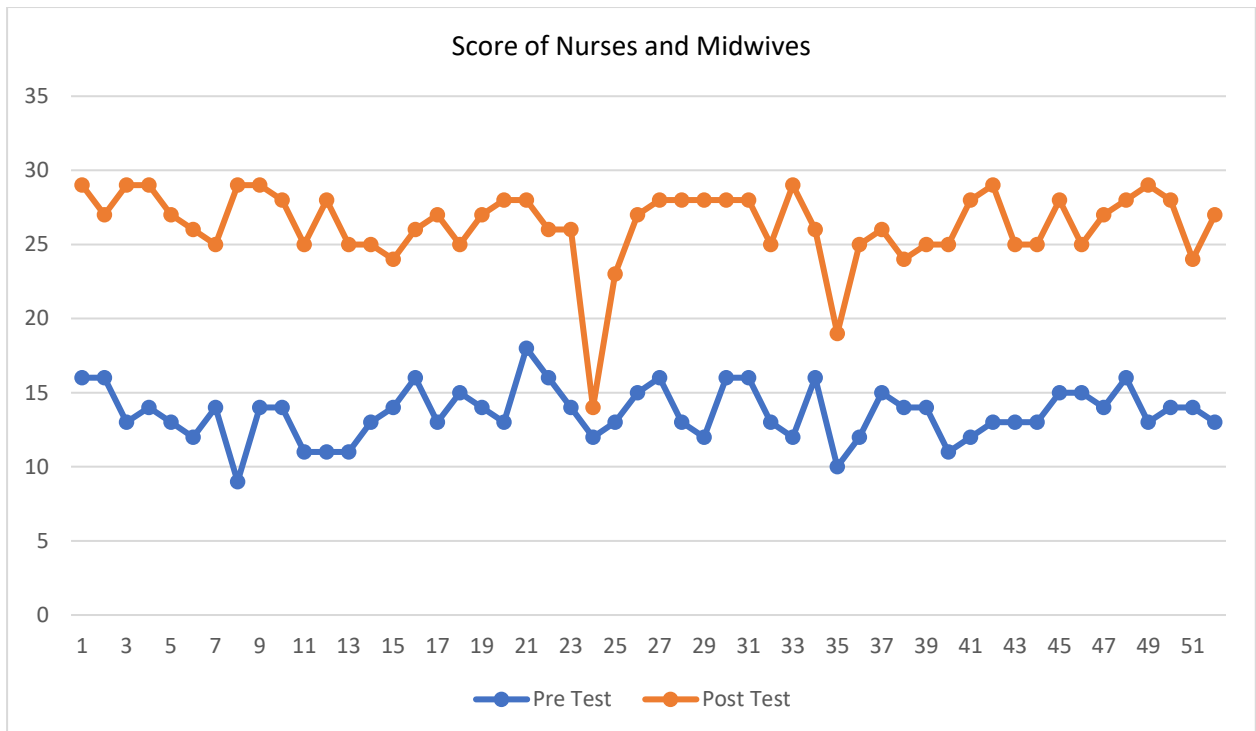


Figure – 3.2b: Change of score of the nurses between pre- and post-test.

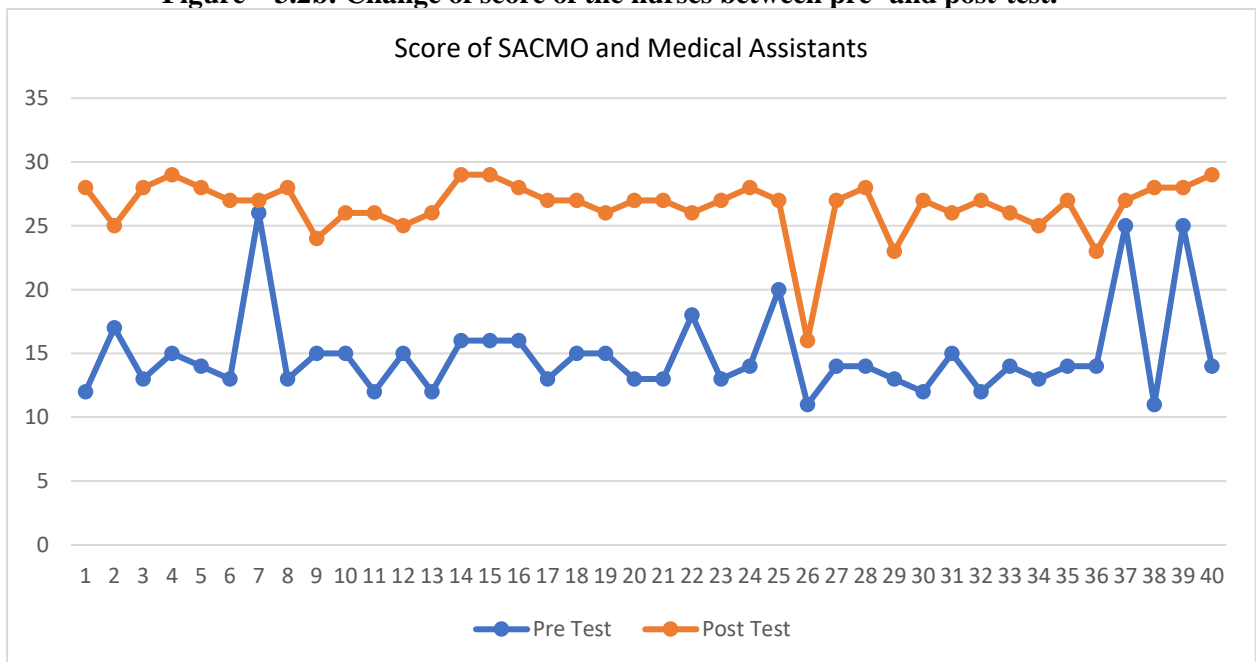


Figure 3.2c: Score changes of the paramedics (Medical Assistants/SACMO) between pre- and post-test

On the last day of the training, we conducted an objective structured practical examination (OSPE) with five stations to evaluate the participants' acquired techniques and skills. We prepared four stations for each group of participants. The stations were – a) the measurement of height and weight, and calculation of BMI, b) Use of WHO CVD risk chart, and risk score estimation for patient management, c)

measurement of BP, d) Treatment of hypertension and treatment of diabetes based on two case scenarios. Each participant was given 3 minutes to conduct the activities of a station. There was an examiner to rate their performance in each of the stations. The following Figure (Figure 3.1) outlines the stations.

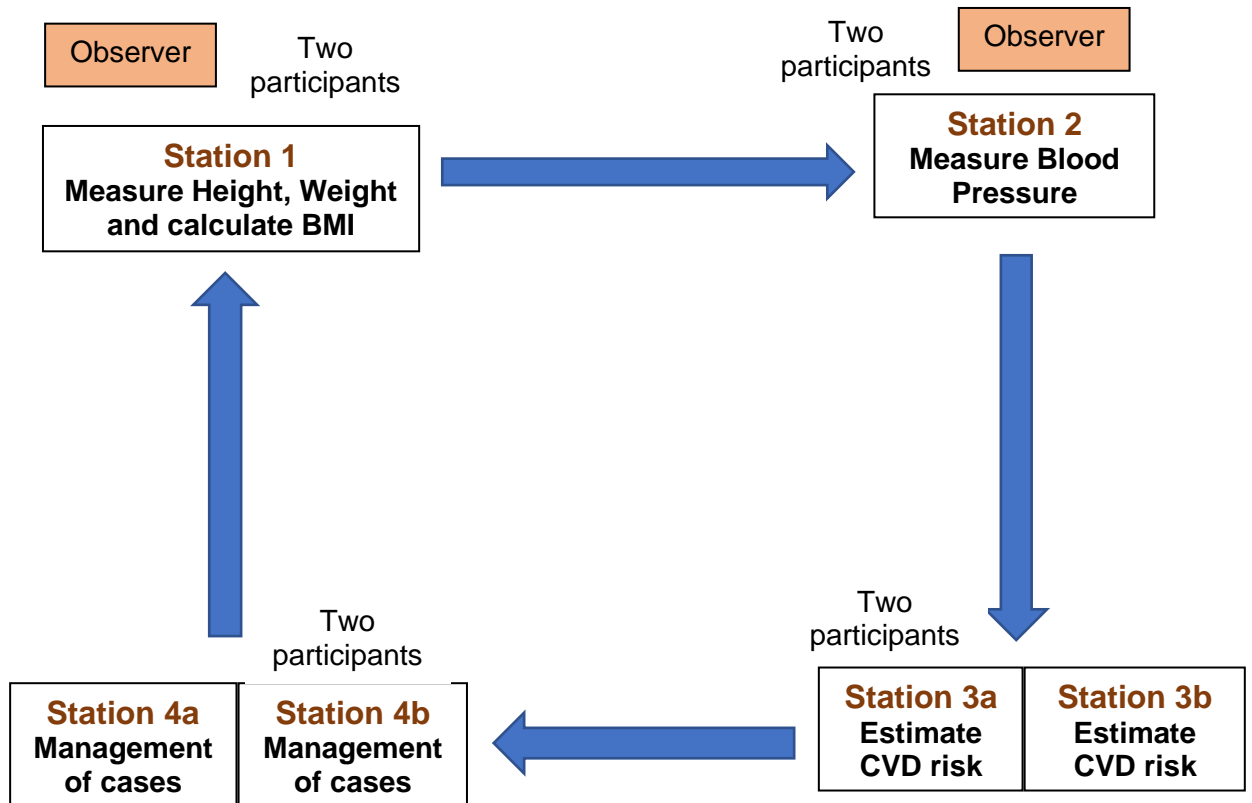


Figure 1: OSPE station set-up plan

Table 3.1 below compares the performance of each group of participants in the OSPE examination (mean score).

Table 3.1: Performance of the participants in the OSPE test

Occupation	Height Measurement (Total Score 10)	Weight Measurement (Total Score 10)	BMI Calculation (Total Score 5)	BP Measurement (Total Score 10)	CVD Risk Assessment A (Total Score 5)	CVD Risk Assessment B (Total Score 5)	Management Plan A (Total Score 10)	Management Plan B (Total Score 10)	Total Score (65)
Doctor	9.12	9.11	4.84	9.32	9.12	4.64	8.09	7.41	57.42
Nurse	8.54	8.63	4.60	8.23	4.13	4.33	3.85	3.50	45.81
Paramedics	8.83	8.45	4.60	8.38	4.63	4.50	5.60	4.48	50.98
Overall	8.83	8.76	4.69	8.68	8.83	4.49	5.93	5.24	51.60

*2 training participants could not take the OSPE test

3.1.2 Training evaluation by the participants

At the end of each session during and on the last day of each batch, participants were requested to complete the prescribed evaluation form. Training evaluation forms are attached to this report as annex below are some glimpses from the evaluation of the training by the participants (**Table 3.2**).

Table 3.2: Overall Evaluation of Training by the Participants (% of the participants)

Total evaluation (n= 150)				
Question	Very confident	Confident	Somewhat Confident	A little confident
Confidence to apply 5A and 5R method to counsel patients	24.0%	65.3%	6.0%	1.3%
Confidence to use WHO risk prediction chart	68.7%	27.3%	2.0%	0.0%
Confidence to manage hypertensive patients using national guidelines	42.0%	52.7%	2.7%	0.0%
Confidence to manage diabetic patients using national guidelines	35.3%	56.0%	5.3%	0.0%

In the overall training evaluation, which was taken at the end of the training, 45.3% of participants responded that the training was beyond their expectations, and 50.7% of them said that the training met their expectations. Only 1.3% said that the training had somewhat met their expectations. The participants (Table 3.3) were also requested to comment on the overall quality of the training's logistical aspects (Table 3.3). Among those who responded to these questions, 85% of said that the accommodation was either excellent or good, and 75% said that the provided foods were excellent or good. On the other hand, 94% and 93% said that communication and training materials were either excellent or good, respectively.

Table 3.3: Evaluation of Foods and Logistics (% of the responses)

Evaluation area	Excellent	Good	Average	Bad	Very Bad
Accommodation	35.5%	49.6%	14.9%	0.0%	0.0%
Foods	12.2%	62.6%	23.0%	0.7%	1.4%
Communication	45.7%	48.6%	5.1%	0.0%	0.7%
Training Materials	54.7%	38.7%	5.8%	0.0%	0.7%

3.1.3 Qualitative feedback from the trainee (DOCTORS, NURSES AND SACMO/PARAMEDICS)

As per the participants' comments at the end of the sessions, most of the training sessions were excellent and helpful for the participants. Below are some specific issues expressed by the fellow participants:

Table 4.1: General comments

Time management

- Some participants suggested a 5 to 6 day-long training and shortening the training day. They suggested that training can be from 9 to 4 pm.
- The time for some sessions should be shortened or can be divided into two more sessions.

Venue, Food and Accommodation

- Most participants were fine with the venue.
- There was some feedback on the accommodation, especially on food arrangement for those participants who came with their family members, either spouse or child. The issues were addressed through discussion with the hotel management.
- Some participants were not happy with the food.

Contents

- Most participants found the content relatable, highly effective, useful, and of high standard. Participants expressed their interest to use their learnings for improving the health of themselves, their family members, and their patients.
- Most of the participants said that engagement, clarity, and coverage of the topics were superior and unique.
- Some participant suggested more time should be allocated for counselling sessions.
- Training was very interactive and practical. Some participants expressed that more time should be allocated for practical sessions, such as measurements.
- All modules including the videos should be given to the participants in a pen drive.
- Need refresher training and regular follow-up.
- Other NCDs, such as chronic respiratory diseases and cancer should also be covered.
- More participants from different level should be trained on the package so that health care providers and volunteers from all level can play their role in NCD prevention and control.

3.2 Supportive Supervision on PEN Implementation and Referral linkage

The supportive supervision visits started on 13/11/2021 and ended on 20/12/2021, During this period, we completed three rounds of supportive supervision visit of all the UHCs and one round of visit of one community clinic from all eight upazillas of Cox's Bazar. Table 3.4 gives details of the data of supportive supervision visits by facility.

Table 3.4: Visit rounds and dates of visit by health facility

Facility	Round 1 (Visit date)	Round 2 (Visit date)	Round 3 (Visit date)
Chakaria UHC	18/11/2021	4/12/2021	14/12/2021
1 CC in Chakaria (Dakshin Fashiali)	14/12/2021	Not applicable	Not applicable
Kutubdia UHC	20/11/2021	11/12/2021	18/12/2021
1 CC in Kutubdia (Nazar Ali Matbar Para)	18/12/2021	Not applicable	Not applicable
Maheshkhali UHC	22/11/2021	4/12/2021	20/12/2021
1 CC in Maheshkhali (Lambaghona)	20/12/2021	Not applicable	Not applicable
Pekua UHC	18/11/2021	2/12/2021	18/12/2021
1 CC in Pekua (Teliakata)	18/12/2021	Not applicable	Not applicable
Ramu UHC	13/11/2021	2/12/2021	14/12/2021
1 CC in Ramu (Uttar fatehkhari Kul)	14/12/2021	Not applicable	Not applicable
1 CC in Sadar (Gazirdali)	13/12/2021	Not applicable	Not applicable
Teknaf	20/11/2021	6/12/2021	19/12/2021
1 CC in Teknaf (Leda)	19/12/2021	Not applicable	Not applicable
Ukhia	20/11/2021	13/12/2021	19/12/2021
1 CC in Ukhia (Court Bazar)	13/12/2021	Not applicable	Not applicable

Table 3.5 below displays human resource data from the round 3 supportive supervision visit to the UHCs. The table also shows that >25% of the doctors, 64% of SACMO/MA, and 20% of the available nurses/midwives in the upazillas received PEN training.

Table 3.5: Key human resources and training status of Upazila Health Complexes (Round 3)

Facility	Physician		SACMO/MA		SSN/Nurses/Midwives	
	Available	PEN training	Available	PEN training	Available	PEN training
Chakaria	22	5	5	0	34	9
Kutubdia	9	1	1	0	15	2
Maheshkhali	8	4	4	5	23	6
Pekua	11	3	4	2	31	5
Ramu	11	5	3	3	22	8
Teknaf	25	5	4	3	13	2
Ukhia	31	4	4	3	45	5

Facility	Physician		SACMO/MA		SSN/Nurses/Midwives	
Total	117	30	25	16	183	37

Table 3.6 shows data on NCD services in community clinics and UHCs. We observed functional NCD corners in all upazillas except Pekua, Routine screening of 40+ years old persons was available in four UHCs and in one CC. Though blood pressure was measured in all UHCs and visited CCs, height was not measured in Maheshkhali and Pekua, and BMI was not calculated in many UHCs and CCs. Some of the UHCs followed the national protocol for the management of hypertension and diabetes.

Table 3.6: Status of key NCD services by facility (Round 3)

Services	CKR		KBD		MHK		PKA		RMU		TNF		UKA	
	U	C	U	C	U	C	U	C	U	C	U	C	U	C
NCD corner	Y		N		Y		Y		Y		Y		Y	
Routine 40+ screening	Y	N	N	N	Y	N	Y	N	N	N	Y	Y	N	N
BP measured	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Height measured	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y
Weight measured	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
BMI calculated	Y	Y	N	Y	N	N	N	Y	Y	N	Y	N	Y	N
CVD-risk assessed	Y	N	N	N	N	N	N	N	Y	N	Y	Y	Y	Y
Hypertension treatment as per national protocol	Y	N	N	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Diabetes treatment as per national protocol	Y	N	N	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Asthma treatment as per national protocol	N	N	N	N	N	N	Y	N	Y	N	Y	Y	Y	N
COPD treatment as per national protocol	N	N	N	N	N	N	Y	N	Y	N	Y	Y	Y	N
Screening for breast cancer	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Screening for cervical cancer	Y	N	Y	N	Y	N	N	N	N	N	Y	N	N	N
Management of depression	N	N	N	N	N	N	Y	N	Y	N	Y	N	Y	N
Management of anxiety disorder	N	N	N	N	N	N	Y	N	Y	N	Y	N	Y	N
Primary management of MI	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Primary management of stroke	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Primary management of hypoglycemia	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Primary management of hyperglycemia	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Emergency referral as per national protocol	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Non-emergency referral as per national protocol	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

*CKR=Chakaria, KBD=Kutubdia, MHK=Maheshkhali, PKA=Pekua, RMU=Ramu, TNF=Teknaf, UKA=Ukhia, U=Upazila health complex, C= Community clinic

Table 3.7 presents data on the availability of key behavioural management services. In majority of health services, as reported by the health care providers, counseling for most of the risk behaviours was available. However, 5A-5R approach for counseling was not available in any health facility. Moreover,

observation of counseling sessions revealed that health care providers were giving advice instead of counseling.

Table 3.7: Status of key behavioral management services by facility (Round 3)

Services	CKR		KBD		MHK			PKA		RMU		TNF		UKA	
	U	C	U	C	U	C	U	C	U	C	U	C	U	C	
Counseling for smoking cessation	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	
Counseling for smokeless tobacco cessation	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	
Counseling for fruits and vegetable consumption	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	N	
Counseling for salt intake reduction	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	N	
Counseling for sugar intake reduction	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	
Counseling for trans-fat intake reduction	N	N	Y	N	Y	N	Y	N	N	N	Y	Y	N	N	
Counseling for adequate physical activity	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	N	
Counseling for weight management	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	
Counseling for alcohol consumption reduction	N	Y	N	N	Y	N	Y	N	N	Y	N	Y	Y	N	
Counseling for indoor air pollution reduction	N	Y	N	N	Y	N	N	N	N	Y	N	Y	N	N	
Counseling for adherence to medications	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	

*CKR=Chakaria, KBD=Kutubdia, MHK=Maheshkhali, PKA=Pekua, RMU=Ramu, TNF=Teknaf, UKA=Ukhia, U=Upazila health complex, C= Community clinic

Random blood sugar and fasting blood sugar were available in all the facilities visited. Lipid profile or total cholesterol assays were available only on Teknaf and Ukhia. All the UHCs had facilities for cervical cancer screening (VIA). Spirometry was not available in any facility.

Table 3.8: Status of key laboratory services by facility (Round 3)

Services	CKR		KBD		MHK		PKA		RMU		TNF		UKA	
	U	C	U	C	U	C	U	C	U	C	U	C	U	C
Random blood glucose	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fasting blood glucose	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Oral Glucose tolerance test (OGTT)	Y	N	N	N	Y	N	Y	N	N	N	Y	N	Y	N
HbA _{1c}	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N
Urine protein test	Y	N	Y	N	Y	N	Y	N	N	N	Y	Y	Y	N

Services	CKR		KBD		MHK		PKA		RMU		TNF		UKA	
Urine ketones test	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
Serum creatinine	Y	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Serum electrolyte	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Total cholesterol	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Lipid profile/Total cholesterol	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Retinal imaging/fundoscopy	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Spirometry	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mammography	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Visual inspection with acetic acid (VIA)	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Pregnancy test	Y	N	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N

*CKR=Chakaria, KBD=Kutubdia, MHK=Maheshkhali, PKA=Pekua, RMU=Ramu, TNF=Teknaf, UKA=Ukhia, U=Upazila health complex, C= Community clinic

National guidelines for the management of hypertension and diabetes were available in all UHCs. However, majority of the facilities did not have the national guideline for the management of chronic respiratory diseases. Some of the facilities did not have NCD green books (patient's book). In Kutubdia, NCD registers were not maintained (Table 3.9).

Table 3.9: Availability of guidelines and other materials (Round 3)

Guideline and other materials	CKR		KBD		MHK		PKA		RMU		TNF		UKA	
	U	C	U	C	U	C	U	C	U	C	U	C	U	C
National guideline for hypertension and diabetes	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
National guideline on chronic respiratory diseases	N	N	Y	N	N	N	Y	N	Y	N	N	Y	N	N
Laboratory-based CVD risk chart	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
Non-laboratory-based CVD risk chart	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
NCD flipchart	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N	Y	N
Guidelines for counseling using 5A-5R approach	Y	N	Y	N	Y	N	N	N	Y	N	Y	Y	Y	N
Guideline on screening and referral for cancer	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Guideline on screening and referral for mental health disorders	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Infection prevention guideline	Y	N	Y	N	Y	N	Y	N	N	N	Y	Y	N	N
NCD green book	Y	N	N	N	Y	N	N	N	N	N	Y	N	Y	N
NCD register	Y	Y	N	N	Y	N	Y	N	Y	Y	Y	Y	Y	N
Stock register	Y	N	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	N

Guideline and other materials	CKR		KBD		MHK		PKA		RMU		TNF		UKA	
NCD performance display board	N	N	Y	N	N	N	Y	N	Y	N	Y	Y	Y	N

*CKR=Chakaria, KBD=Kutubdia, MHK=Maheshkhali, PKA=Pekua, RMU=Ramu, TNF=Teknaf, UKA=Ukhia, U=Upazila health complex, C= Community clinic

All the UHCs reported regular supply of at least one calcium channel blocker, one angiotensin receptor blocker, one diuretics. In Kutubdia and Teknaf, calcium channel blocker (Amlodipine) was also available in the CCs. Among other drugs there was a regular supply of statins, metformin, gliclazide, aspirin, etc. In Teknaf and Ukhia, essential medicines for mental health disorders were also available (Table 3.10).

Table 3.10: Availability of drugs (Round 3)

Drugs	CKR		KBD		MHK		PKA		RMU		TNF		UKA	
	U	C	U	C	U	C	U	C	U	C	U	C	U	C
Amlodipine	Y	N	Y	Y	Y	N	Y	N	Y	N	Y	Y	Y	N
Other calcium channel blocker	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N
Losartan	Y	N	Y	Y	N	N	Y	N	Y	N	Y	Y	Y	N
Other Angiotensin receptor Blocker	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Beta-blocker	Y	N	Y	N	N	N	Y	N	N	N	N	N	Y	N
Angiotensin-converting enzyme inhibitor	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Hydrochlorothiazide	Y	N	Y	N	N	N	Y	N	Y	N	N	Y	N	N
Furosemide	Y	N	Y	N	Y	N	Y	N	Y	N	N	Y	Y	N
Rosuvastatin	Y	N	Y	N	N	N	Y	N	Y	N	Y	Y	Y	N
Other Statins	Y	N	Y	N	Y	N	N	N	Y	N	Y	Y	Y	N
Metformin	Y	N	Y	Y	N	N	Y	N	Y	N	Y	Y	Y	N
Gliclazide	Y	N	Y	Y	N	N	Y	N	Y	N	Y	Y	Y	N
Other Sulphonyl urea	Y	N	Y	N	Y	N	Y	N	Y	N	N	N	Y	N
Insulin	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Aspirin	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Clopidogrel	Y	N	Y	N	N	N	N	N	Y	N	Y	Y	Y	N
Isosorbide dinitrate, e.g: Isocard	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Glyceryl trinitrate, e.g: Nidocard, GTN	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Tablet Salbutamol	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N
Inhaler, e.g: Salbutamol	Y	N	Y	Y	Y	N	Y	Y	N	N	Y	Y	Y	N
Salbutamol solution for nebulizer	Y	N	Y	N	Y	N	Y	N	N	N	Y	Y	Y	N
Tablet. Theophylline	Y	N	N	N	N	N	Y	N	Y	N	N	N	N	N
Inj. Theophylline	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
Tablet. Prednisolone, e.g: Cortan	N	N	Y	Y	N	N	N	N	Y	N	N	Y	N	N
Inhaler Beclomethasone, e.g: Beclomin	N	N	Y	N	N	N	N	N	N	N	N	Y	Y	N
Tab. Spironolactone	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
Tab. Prednisolone	N	N	Y	Y	N	N	Y	N	N	N	N	Y	N	N
Inj. Hydrocortisone		N	Y	N	Y	N	N	N	Y	N	N	Y	N	N

Inhaler: Ipratropium	N	N	Y	N		N	N	N	N	N	N	Y	N	N
Tab. Montelukast, e.g: M-kast, Montril	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Inj. Epinephrine	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N
Inj. Heparin	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Tab. Penicillin	N	N	Y	N	Y	Y	N	Y	Y	Y	Y	N	N	N
Tab. Erythromycin	Y	N	N	N		N	N	N	Y	N	N	N	N	N
Cap. Amoxicillin	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
Tab. Paracetamol	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
Tab. Ibuprofen	N	N	Y	N	Y	N	N	N	Y	Y	N	Y	Y	N
Cap. Ampicillin	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N
Tablet. Amitriptyline	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N
Tab. Fluoxetine	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Tab. Risperidone	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Tab. Chlorpromazine	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N
Tab. Fluphenazine	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Tab. Biperiden	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Tab. Trihexyphenidyl	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Tab. Sodium Valproate	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Tab. Carbamazepine	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N
Tab. Diazepam	N	N	Y	N	Y	N	N	N	Y	N	Y	N	Y	N
Inj. Diazepam	Y	N	Y	N	Y	N	N	N	Y	N	Y	Y	Y	N
Promethazine	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
Tab. Haloperidol	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Inj. Haloperidol	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
Tab. Phenobarbital	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y	N
Tab. Phenytoin	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
Inj. Atropine	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Dextrose/ Glucose infusion e.g: (DA, DNS)	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N
Sodium chloride infusion (Normal saline)	Y	N	Y	Y	Y	N	Y	N	Y	N	Y	Y	Y	N
Oxygen	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Y	Y	N

*CKR=Chakaria, KBD=Kutubdia, MHK=Maheshkhali, PKA=Pekua, RMU=Ramu, TNF=Teknaf, UKA=Ukhia, U=Upazila health complex, C= Community clinic

Among the equipment and devices, digital BP machines were unavailable in some UHCs (Kutubdia, Pekua), and height scales were unavailable in Maheshkhali and Pekua. Glucometer was available in all facilities, but some facilities ran out of glucose test strips (Table 3.11).

Table 3.11: Availability of equipment/device (Round 3)

Services	CKR		KBD		MHK		PKA		RMU		TNF		UKA	
	U	C	U	C	U	C	U	C	U	C	U	C	U	C
Thermometer	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Stethoscope	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
BP machine-digital	Y	N	N	N	N	Y	N	N	Y	N	Y	Y	Y	N

BP machine-analogue	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
Measuring tape	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Adult weighing scale	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Adult height scale	Y	Y	Y	Y	N	Y	N	N	Y	N	Y	Y	Y	Y
Peak flow meter	N	N	N	N	Y	N	N	N	N	N	N	N	N	N
Spacers for inhalers	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nebulizer	Y	Y	Y	N	Y	N	Y	N	Y	Y	Y	Y	Y	Y
Pulse oximeter	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N
Tuning fork	N	N	Y	N	N	N	Y	N	N	N	Y	Y	Y	N
Electrocardiograph (ECG)	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Glucometer	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Blood glucose test strips	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y
Urine protein test strips	Y	N	N	N	Y	N	N	N	N	Y	Y	Y	Y	N
Urine ketones test strips	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Troponin test strips	N	N	N	N	Y	N	N	N	N	N	N	N	N	N
Urine microalbuminuria test strips	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Equipment for serum electrolyte	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fundoscope	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Mammogram	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pregnancy test strip	Y	N	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N
Equipment for VIA	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N

*CKR=Chakaria, KBD=Kutubdia, MHK=Maheshkhali, PKA=Pekua, RMU=Ramu, TNF=Teknaf, UKA=Ukhia, U=Upazila health complex, C= Community clinic

During the supportive supervision visits, we also provided some on site capacity strengthening activities. The following table (Table 3.12) summarizes these activities.

Table 3.12: Health system strengthening activities performed by the supportive supervisors (Round 1-3)

Activities	CKR		KBD		MHK		PKA		RMU		TNF		UKA	
	U	C	U	C	U	C	U	C	U	C	U	C	U	C
Demonstrate height measurement	Y	N	N	N	N	N	N	N	Y	N	Y	N	N	N
Demonstrate weight measurement	Y	N	N	N	N	N	N	N	Y	N	Y	N	Y	N
Demonstrate BP measurement	Y	N	N	N	N	N	N	N	Y	Y	N	N	N	N
On the job training on CVD Risk chart	Y	Y	N	Y	N	Y	N	Y	Y	C	N	Y	N	Y
Postering of PEN protocol	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Add new variable to NCD register	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
Suggestion given to rearrange the NCD corner	Y	N	N	N	N	N	Y	N	Y	N	N	N	N	N

4. CHALLENGES AND LEARNINGS

4.1 Training on WHO PEN intervention for PHC providers

A summary of trainers' feedback and recommendations for improvement of the training program is given below.

4.1.1 *Training module*

- The trainers became more efficient in time management over time and could finish the training sessions on time. There were some challenges in starting the session in the morning since some participants could not arrive on time.
- Some sessions could be more customized for different categories of trainees (e.g., more practical exercises on clinical protocol/risk management for Medical Officers and more counseling practice for Nurses).
- Although the trainers explained the issues carefully, the midwives and SACMOs who are not engaged with NCD management had difficulty completing the case management in the OSPE. Most trainees showed an eagerness to learn new protocols and drug therapy.
- Participants enthusiastically participated in development of team-based approach of implementing PEN interventions. The teams were bold to share their challenges and suggest solutions. The gallery walk was extremely helpful in terms of cross learning and addressing the challenges.
- The simulation session gave an opportunity to clarify the team approach and reiterate the key steps/issues.

4.1.2 *Training implementation*

- Conducting 6 batches of PEN training in consecutive six weeks was extremely challenging. With support from the Civil Surgeon, UH&FPOs, senior leadership of implementing partner NGOs, the WHO this could be completed as scheduled. Participant's interest and enthusiasm was also clearly helpful.
- All relevant materials/handouts/supporting documents were timely available, and there was no problem with them.
- All trainers paid adequate attention to engage all participants to attend the training actively.
 - ✓ Situations for more active participation of each trainee need to be created.
 - ✓ More exercises/practical exercises in the session could help to make interactive and stimulate motivation to learn.
- Regular supportive supervision with on-the-job support at the facility level after the training both

at the UHCs and at the PHCs is required to facilitate quality service delivery. The participants were appreciative of the supportive supervision support that they were receiving at the UHCs.

- An evaluation of training participants and their facilities is also required after a few months.

4.2 Supportive Supervision on PEN Implementation and Referral linkage

The following tables summarize challenges and ways to overcome (as described by the primary health care providers)

Table 4.1: Supply-side challenges and proposed ways to overcome

Domain	Challenges	Ways to overcome
Human resources	<ul style="list-style-type: none"> • Shortage • Turnover, frequent change • Lack of training 	<ul style="list-style-type: none"> • At least one physician, one nurse/SACMO and one counselor in the NCD corner, fixed staff for NCD corner • 1 doctor needed the CC at least once in a week • Lab technologists in facilities that did not have them • Training and refresher training for all doctors, Nurse, SACMO, Medical Assistants, CHCPs
Drugs, equipment and supplies	<ul style="list-style-type: none"> • Irregular supply/over supply/lack of supply 	<ul style="list-style-type: none"> • Regular supply based on the need of the facilities • Adequate supply of the medicine, glucose test strips • NCD Green book • Lab logistics • Local level coordination and sharing of drugs, supplies and equipment • Digital BP machines and weighing scales are needed in all health centers • Glucometers, BP machines and weighing scales need calibration and standardization
Service delivery	<ul style="list-style-type: none"> • Overload • Lack of time for counseling 	<ul style="list-style-type: none"> • Decentralization of services (screening, medicine refilling at CC) • Involve union facilities and doctors posted to the union facilities • All services should be delivered from one location
MIS and record keeping	<ul style="list-style-type: none"> • Paper-based record • No use of data for local level decisions • Data not reported to DGHS 	<ul style="list-style-type: none"> • Digital record keeping and use of data for decision making • Reporting of NCD services and inclusion of NCD indicators in the DHIS • NCD display board for all health centers • Stock register for NCD • Record keeping book needed • Supportive supervision log is needed for all health centers
Financing	<ul style="list-style-type: none"> • Inadequate and NCD services 	<ul style="list-style-type: none"> • Adequate evidence-based financing and prioritization of NCD services

Domain	Challenges	Ways to overcome
	are not prioritized	<ul style="list-style-type: none"> Local level financing and procurement of NCD drugs, equipment and supplies
Governance	<ul style="list-style-type: none"> Irregular supervision of NCD services Local political influence 	<ul style="list-style-type: none"> Implementation of supportive supervision District level NCD prevention and control coordination committee
Others		<ul style="list-style-type: none"> Some facilities do not have functional toilets for patients All facilities need chairs with back support for accurate measurement of BP Waiting chairs needed for NCD corner for all UHC TV needed in almost all facilities to show NCD video clips

Apart from the facility level challenges, the health service providers also talked about some of the demand side challenges and proposed ways to overcome them.

Table 4.2: Demand-side challenges and proposed ways to overcome

Domain	Challenges	Ways to overcome
Adherence	<ul style="list-style-type: none"> Poor adherence to medication 	<ul style="list-style-type: none"> Regular supply of medicines Count Counseling drug adherence
Self-care	<ul style="list-style-type: none"> No awareness of self-care 	<ul style="list-style-type: none"> Training of health care providers on self-care and counseling of the patients
Medicine shopping	<ul style="list-style-type: none"> Patients come to health centers just to collect medicines 	<ul style="list-style-type: none"> Digital recording and use of NID
Service delivery	<ul style="list-style-type: none"> Long wait, laboratory facilities are far away 	<ul style="list-style-type: none"> PoC tests at the NCD corner
Involvement of RMP	<ul style="list-style-type: none"> Patients go to RMPs RMPs advise against regular medications Overmedication 	<ul style="list-style-type: none"> Involve CHCP and union facilities Awareness raising and counseling
Counseling need	<ul style="list-style-type: none"> Individual counseling is time-consuming 	<ul style="list-style-type: none"> Brief intervention (5A-5R approach) Group counseling using audio-visual aids Use of posters/flip charts

5. CONCLUSION

WHO's team-based training package of essential NCD interventions provides a high-quality training to build capacity of primary healthcare providers to implement PEN as part of the essential health service package in Bangladesh. Imparting the training within a short duration and during these difficult hours proves the commitment of all the stakeholders, the WHO, implementing partner organizations, Civil Surgeon, UH&FPOs, NCDC of directorate general of health services. This also demonstrated the strength of a productive partnership and commitment.

The PEN training created an understanding among the health care providers that they need to work together and help each other for delivery of essential NCD services from PHC facilities. During the service delivery flow discussion, they could identify the gaps and opportunities in their current system, and each primary health care facility team proposed a feasible NCD service delivery model for the prevention and management of NCDs. The team divided the tasks and responsibilities of each category of staff, considering the existing resource limitations. Sharing of these groups works during the gallery walk also facilitated cross learnings within the teams. The participants were requested to facilitate discussion within their organization and health facilities and devise a feasible service delivery model at their hospitals following the CVD risk-based approach. The participants were also informed on the supportive supervision and were requested to seek support from the supportive supervision team.

Limitations of this training program were expressed already as feedback from trainees and trainers. Despite those limitations, the outcomes of the training looked satisfactory. The DGHS, the WHO need to consider further improvement of the reporting system linking the NCD registers of the DHIS 2, so that NCDs related activities are better reported, and progress is monitored.

The unique implementation challenges in their respective health facilities and communities will demand timely support from the government, WHO, and their supervisors. The NCDC and WHO Bangladesh should be committed to providing such supports with regular communication and encouragement. The BRAC James P Grant School of Public Health of BRAC University will also be committed to working with the government and WHO Bangladesh in the future.

Moreover, the supportive supervision initiative should continue and a sustainable model for supportive supervision should be developed.

6. WAY FORWARD

In future, similar training program will require further adaptation depending on the context and needs. The WHO is promoting a 5X5 approach (5 diseases; CVD, COPD, T2D, Cancer and Mental Health disorders, and 5 risk factors: unhealthy diet, tobacco consumption, alcohol consumption, physical inactivity and air pollution) and the future training program should integrate the missing components such as chronic respiratory diseases and cancers. Separate training programs for CHCPs and the HAs might be helpful with customized package based on the national NCD implementation plan.

BRAC JPGSPH considers the in-house training as a steppingstone towards the quality NCD service delivery. The PEN's quality implementation will need the **regular supportive supervision** mechanism to continue at different level and periodic evaluation of knowledge, skill, and service quality. The PHCs and UHCs will need committed management of different organizations to for regular availability of supplies and medicines. BRAC JPSPH is eager to work with WHO to support capacity building of implementing partners on supportive supervision and PEN implementation.

Proper **documentation and record keeping** can increase commitment and accountability among the health care providers, improve the interaction between the providers and the patients, and thereby improve adherence to the treatment and follow-up plan. The participants showed their interest in a standardized recording system for the health facilities and a patient record book. The WHO can facilitate discussions among different partners to develop a record-keeping system for NCDs in a consultative process. **Digital care coordination system** can address the challenges in consistent and quality of NCD service delivery at the primary health care settings. BRAC JPG School of Public Health has developed a digital care coordination system to provide decision support to primary care providers for appropriate delivery of NCD care and improve record keeping. The system is developed following the national protocol and is currently going through proof-of-concept study. If WHO is interested, there is a scope to work together to implement the digital system for NCD care.

Expansion of services beyond CVD risk-based approach for hypertension and diabetes should be considered. There is a need for a continued education program to support health care providers with updated knowledge and skills. An **online learning and certification program** can be established so that a large number of PHC providers can be trained. Moreover, in case of online training, the training materials can be shared with the participants at least one week in advance informing them about the training dates so that they can be prepared for the training.

There is a need for proper monitoring and evaluation of the NCD training programs so that the implementation of the skills learnt from the training can be evaluated. Without a proper monitoring and evaluation system in place, there is a chance that the trainees will soon forget their skills. As NCD programs are relatively new, it will take consistent support and resources to make a meaningful change and this training can be regarded only as a start point aimed towards this goal.

Based on the findings from the initial supportive supervision activities carried out by BRAC James P Grant School of Public Health and the World Health Organization, we believed that a sustainable supportive supervision system is feasible and should be implemented in Cox's Bazar. The process of setting up a supportive supervision system, planning, and conducting supportive supervisory visits, and follow-up activities for improving NCD prevention and control in Cox's Bazar District, Bangladesh is given in the annex.

7. ANNEXES

Annex 7.1: Agenda for the 4-days PEN training for Doctors, Nurses and Paramedics



TRAINING AGENDA

Training on package of essential non-communicable diseases (PEN) interventions for primary health service providers

Cox's Bazar

August-September 2020

Day 1		
Time	Activity	
08:15-08:30	Registration	
08:30 -9:15	Inauguration, introduction and ice breaking, training objectives and ground rules	
9:15-9:45		Pre-test
9:45 -10:00	Healthy Break	
10.00- 11.45	Module A	A. An overview of NCD burden and PEN as a primary health care approach to delivering essential NCD services and organizing NCD services through a team-based approach
11:45 -13:00	Module B	B. Overview of Cardiovascular diseases (CVD)
13:00 -14:00	Lunch & prayer break	
14:00- 14:10	Energizer Dance	
14:10 -15.30	Module C	C1. Risk factors for non-communicable diseases: Tobacco use
15.30- 15.45	Healthy Break	
15:45- 17.00	Module C	C2. Risk factors for non-communicable diseases: Unhealthy diet

Day 2		
Time	Activity	
08:30 -09:00		Recap
09.00- 10.15	Module C	C3. Risk factors for non-communicable diseases: Physical inactivity
10.15- 10.30	Healthy Break	
10.30- 12.00	Module C	C4. Risk factors for non-communicable diseases: Overweight and obesity
12.00- 13.00	Module D	D1. Total cardiovascular risk-based approach
13:00 -14:00	Lunch & prayer break	
14:00- 14:10	Energizer Dance	
14:10 -15:10	Module D	D1. Total cardiovascular risk-based approach (continued)
15:10 -15:25	Healthy Break	
15.25- 16.00	Module D	D1. Total cardiovascular risk-based approach (continued)
16.00-17.00	Module D	D2. Total cholesterol and test of urine using urine strips

TRAINING AGENDA

Training on package of essential non-communicable diseases (PEN) interventions for primary health service providers

Cox's Bazar

August-September 2020

Day 3		
Time	Activity	
08:30 -09:00		Recap
09:00 -10:45	Module E	E. Assessment and Management of Hypertension
10.45- 11.00	Healthy Break	
11.00- 13.00	Module F	F. Assessment and Management of Type 2 Diabetes
13:00 - 14:00	Lunch & prayer break	
14:00- 14:10	Energizer Dance	
14:10 -15:15	Module G	G1. Healthy lifestyle: Basics of counseling
15:15 -15:30	Healthy Break	
15:30 -17:00	Module G	G2. Brief interventions for non-communicable disease risk factors: Tobacco cessation, healthy diet and physical activity

Day 4		
Time	Activity	
08:30 -9:00		Recap
9:00 -10:45	Module H	H1. Develop and present team-based approach of implementing PEN intervention in existing health facility
10:45 -11:00	Healthy Break	
11:00 -12:30	Module H	H2. Simulation of service delivery in the PHC
12:30 - 13:30	Lunch & prayer break	
13:30 -15:30	Evaluation	<ul style="list-style-type: none"> Evaluation: Objective Structured Practical Examination (OSPE) Post-test and evaluation
15:30 -15:45	Healthy Break	
15:45 -16:15	Closing	Closing and certificate distribution

Annex 7.2: Pre and post-test of 4-day PEN training



Training on Bangladesh Package of Essential Noncommunicable Disease Interventions (PEN) for Primary Health Care Pre-Training Assessment/Post-training Assessment

Time: 20 minutes

Trainee Name: _____	Designation: _____	Date: ___/___/2020
Name of the healthcare facility: _____		Batch: _____

Read the following Case Scenario and answer the following questions

[নিচের গল্পটি পড়ে প্রশ্নগুলোর উত্তর দিন।]

Mst. Lutfa Begum, 64-year-old women presents again to the Upazila Health Complex. Two weeks ago, she came for a runny nose and her blood pressure was 154/86 mmHg. Today, her blood pressure is measured again, and it is 152/88 mmHg.

Lutfa weights 74kg and she is 5 feet 5 inches tall (1.68 meters). Her waist circumference is 94 cm.

Lutfa was diagnosed with diabetes two years ago but she stopped taking the prescribed medication after 1 year. Her random plasma glucose today is 14 mmol/L. Her cholesterol level is 5.2 mmol/L.

Lutfa tells the health care worker that she chews betel nut, but never smokes, although her husband smokes cigarettes every day in the house around her 2 grandchildren – her grandson ages 16 yrs and her granddaughter ages 10 yrs. Every afternoon, she goes for a brisk walk for 10 minutes around the neighborhood with her grandson.

She is a little concerned about her weight, and her brother died at the age of 43 from a heart attack. She eats one orange a day, and really likes soft drinks, cake and rice with *sutki vorta*.

[মোছাঃ লুতফা বেগম, ৬৪ বছর বয়স উপজেলা স্বাস্থ্য কমপ্লেক্সে এসেছেন। ২ সপ্তাহ আগেও তিনি সর্দি নিয়ে এসেছিলেন তখন তার রক্তচাপ ছিল ১৫৪/৮৬ মিলি মিটার মার্কারি। আজ তার রক্তচাপ পাওয়া গেছে ১৫২/৮৮ মিলি মিটার মার্কারি।

লুতফার ওজন ৭৪ কেজি এবং তার উচ্চতা ৫ ফিট ৫ ইঞ্চি (১.৬৮ মিটার)। তার কোমরের পরিধি (waist circumference) ৯৪ সে.মি.।

লুতফার ২ বছর আগে ডায়াবেটিস রোগ নির্ণয় হয়েছিল, কিন্তু ১ বছর পর তিনি ডায়াবেটিসের ঔষধ খাওয়া ছেড়ে দিয়েছেন। আজ তার রক্তের র্যানডোম গ্লুকোজের (random plasma glucose) পরিমাণ ১৪ মিলিমোল/লিটার। তার কোলেস্টেরল এর পরিমাণ ৫.২ মিলিমোল/লিটার।

লুতফা স্বাস্থ্যকর্মীকে জানিয়েছেন যে, তিনি সুপারি খান কিন্তু কখনও ধূমপান করেননি। বাড়িতে তার স্বামী প্রতিদিন তাদের দুই নাতিনাতির সামনে ধূমপান করেন। তাদের নাতির বয়স ১৬ বছর এবং নাতির বয়স ১০ বছর। প্রতিদিন বিকালে লুতফা তার নাতির সাথে বাড়ির আশেপাশে ১০ মিনিট হেঁটে বেড়ান।

তিনি তার ওজন নিয়ে কিছুটা চিন্তিত এবং তার ভাই ৪৩ বছর বয়সে হার্ট অ্যাটাকে মারা গেছেন। তিনি প্রতিদিন একটা কমলা খান এবং কোমল পানীয়, কেক, ভাত ও গুটিকি ভর্তা তার অনেক পছন্দ।]

Answer the following questions: [নিচের প্রশ্নগুলোর উত্তর দিন]

1. Lutfa's risk of having a fatal heart attack or stroke in the next 10 years is: [আগামী ১০ বছরে লুতফার হার্ট

অ্যাটাক অথবা স্ট্রোকের ঝুঁকি কত?] (circle)

- <10% [$<10\%$]
- 10-<20% [$10\% - <20\%$]
- 20-<30% [$20\% - <30\%$]
- 30-<40% [$30\% - <40\%$]
- >40% [$>40\%$]

2. Considering Lufta's weight and height, she is: [লুতফার উচ্চতা এবং ওজন অনুযায়ী তার পুষ্টির অবস্থা] (circle)
- Underweight [কম ওজন]
 - Normal weight [স্বাভাবিক ওজন]
 - Overweight [অতিরিক্ত ওজন]
 - Obese [স্থূলতা]
3. If Lufta's diabetes remains uncontrolled, she is at risk of foot ulcers and amputation. [যদি লুতফার ডায়াবেটিস অনিয়ন্ত্রিত থাকে, তবে, তার পায়ে ঘা এবং অঙ্গহানির ঝুঁকি আছে।] (circle)
- True [সত্য]
 - False [মিথ্যা]
4. Lufta should be diagnosed with hypertension [লুতফার উচ্চ রক্তচাপ রোগ সনাক্ত হওয়া উচিত] (circle)
- True [সত্য]
 - False [মিথ্যা]
5. Lufta's target for blood pressure control will be $\leq 140/90$ mmHg: [লুতফার রক্ত চাপ নিয়ন্ত্রনের লক্ষ্যমাত্রা $\leq 140/90$ মিলি মিটার মার্কারি] (circle)
- True [সত্য]
 - False [মিথ্যা]
6. Lufta and her grandchildren are being exposed to secondhand smoke [লুতফা এবং তার নাতি নাতনি পরোক্ষ ধূমপানের শিকার] (circle)
- True [সত্য]
 - False [মিথ্যা]
7. Lufta's family history of a heart attack is also a risk factor for her having a heart attack of stroke. [লুতফার হার্ট অ্যাটাকের পারিবারিক ইতিহাস তার জন্যও হার্ট অ্যাটাকের ঝুঁকি হিসাবে কাজ করছে।] (circle)
- True [সত্য]
 - False [মিথ্যা]
8. Currently Lufta is meeting the recommended physical activity guidelines for adults [লুতফার বর্তমানে হাঁটার অভ্যাস প্রাপ্তবয়স্কদের শারীরিক পরিশ্রমের গাইডলাইন অনুযায়ী পর্যাপ্ত] (circle)
- True [সত্য]
 - False [মিথ্যা]
9. Which of following foods that Lufta likes are high in salt? [লুতফার পছন্দের নিচের কোন খাবারটি অতিরিক্ত লবনযুক্ত?] (circle)
- Orange [কমলা]
 - Sodas [কোমল পানীয়]
 - Cake [কেক]
 - Sutki vorta [শুটকি ভর্তা]

10. The maximum recommended intake of salt is 2 teaspoons per day. [প্রতিদিন সর্বোচ্চ ২ চা চামচ লবন খাওয়ার সুপারিশ করা হয়েছে] (circle)
- True [সত্য]
 - False [মিথ্যা]
11. Women of childbearing age having possibility of becoming pregnant should not be prescribed Losartan to control hypertension [সন্তান জন্মানের বয়স সীমার মধ্যে যেসব মহিলার গর্ভবতী হবার সম্ভাবনা আছে তাদের উচ্চ রক্তচাপের ঔষধ হিসেবে লোসারটান দেয়া উচিত নয়] (circle)
- True [সত্য]
 - False [মিথ্যা]
12. Hydrochlorothiazide is the first line choice of drug to treat hypertension in primary health care in Bangladesh [বাংলাদেশের প্রাথমিক স্বাস্থ্যসেবা কেন্দ্রগুলোতে উচ্চ রক্তচাপের চিকিৎসায় হাইড্রোক্লোরোথায়াজাইড প্রথম পছন্দের ঔষধ হিসেবে নির্ধারিত] (circle)
- True [সত্য]
 - False [মিথ্যা]
13. Metformin is the first line drug of choice for managing Type II diabetes in primary health care setting [বাংলাদেশের প্রাথমিক স্বাস্থ্যসেবা কেন্দ্রগুলোতে টাইপ ২ ডায়াবেটিসের চিকিৎসায় মেটফরমিন, ডায়াবেটিসের প্রথম পছন্দের ঔষধ হিসেবে নির্ধারিত] (circle)
- True [সত্য]
 - False [মিথ্যা]
14. Patients with diabetes should have an eye exam every 3 years [ডায়াবেটিসের রোগীদের প্রতি তিন বছর পর পর চোখ পরীক্ষা করা উচিত] (circle)
- True [সত্য]
 - False [মিথ্যা]
15. Patients presenting with blood pressure >200/120 mmHg should be urgently referred to a higher facility [কোন রোগীর রক্তচাপ > ২০০/১২০ মিমি মার্কারি পাওয়া গেলে তৎক্ষণাৎ তাকে উচ্চতর স্বাস্থ্য সেবা কেন্দ্রে রেফার করা উচিত] (circle)
- True [সত্য]
 - False [মিথ্যা]
16. Tobacco kills approximately one third of its users: [তামাক ব্যবহারকারীদের এক তৃতীয়াংশই এটি সেবনের কারণে মারা যায়] (circle)
- True [সত্য]
 - False [মিথ্যা]
17. How much fruits and vegetables should be eaten every day? [প্রতিদিন কি পরিমাণে ফল ও শাকসবজি খাওয়া উচিত?]
- 100gm [১০০ গ্রাম]
 - 200gm [২০০ গ্রাম]
 - 400gm [৪০০ গ্রাম]
 - 800gm [৮০০ গ্রাম]

18. Jorda, Sada pata are not as harmful as *bidi*, cigarettes. [জর্দা, সাদা পাতা বিড়ি সিগারেটের মতো অতটা ক্ষতিকর নয়।]

- a) True [সত্য]
- b) False [মিথ্যা]

19. Diabetes can be preventable in 80% cases. [৮০ ভাগ ডায়াবেটিস প্রতিরোধ করা সম্ভব।]

- a) True [সত্য]
- b) False [মিথ্যা]

20. Brief interventions are expensive and not effective ways to support persons to change behaviors, like stopping smoking [সংক্ষিপ্ত কাউন্সেলিং বা ব্রিফ ইন্টারভেনশন ব্যক্তির আচরণ পরিবর্তন করতে সহায়তা করার জন্য, যেমন ধূমপান ছেড়ে দেয়ার জন্য কার্যকরী নয়] (circle)

- a) True [সত্য]
- b) False [মিথ্যা]

21. In brief Intervention Model, the 5 As are: [সংক্ষিপ্ত কাউন্সেলিং মডেলে ফাইভ এ কাউন্সেলিং এর ধাপগুলো লিখুন] (5 marks)

1. _____
2. _____
3. _____
4. _____
5. _____

22. In Brief Intervention Model, the 5Rs are: [সংক্ষিপ্ত কাউন্সেলিং মডেলে ফাইভ আর কাউন্সেলিং এর ধাপগুলো লিখুন] (5 marks)

1. _____
2. _____
3. _____
4. _____
5. _____

Annex 7.3: Name of the facilitators for PEN trainings

Name of the session	Name of the facilitators, Organization
A. Overview of NCD burden and PEN as a primary health care approach to organizing and deliver essential NCD services through a team-based approach at a primary health care setting	Batch 1: Prof. Malay Mridha, BRAC JPGSPH
	Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 2: Dr. Raisul Islam, WHO
	Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 3: Prof. Malay Mridha, BRAC JPGSPH
	Batch 4: Dr. Rina Rani Paul, BRAC JPGSPH
B. Overview of NCDs: Cardiovascular diseases (CVD) and Diabetes Mellitus	Batch 1: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 2: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 3: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 4: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 5: Dr. Samia Tabassum Sachi, BRAC JPGSPH
	Batch 6: Dr. Samia Tabassum Sachi, BRAC JPGSPH
C1. Risk factors for non-communicable diseases: Tobacco use	Batch 1: Dr. Ali Ahsan Hemel , BRAC JPGSPH
	Batch 2: Dr. Ali Ahsan Hemel , BRAC JPGSPH
	Batch 3: Dr. Ali Ahsan Hemel , BRAC JPGSPH
	Batch 4: Dr. Ali Ahsan Hemel , BRAC JPGSPH
	Batch 5: Dr. Ali Ahsan Hemel , BRAC JPGSPH
	Batch 6: Dr. Ali Ahsan Hemel , BRAC JPGSPH
C2. Risk factors for non-communicable diseases: Unhealthy diet	Batch 1: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 2: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 3: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 4: Dr. Raisul Islam, WHO
	Batch 5: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 6: Dr. Rina Rani Paul, BRAC JPGSPH
C3. Risk factors for non-communicable diseases: Physical inactivity	Batch 1: Dr. Ali Ahsan Hemel , BRAC JPGSPH
	Batch 2: Dr. Ali Ahsan Hemel , BRAC JPGSPH
	Batch 3: Dr. Priscilla Khyang , BRAC JPGSPH
	Batch 4: Dr. Priscilla Khyang , BRAC JPGSPH
	Batch 5: Dr. Rina Rani Paul, BRAC JPGSPH

Name of the session	Name of the facilitators, Organization
	Batch 6: Dr. Priscilla Khyang, BRAC JPGSPH
C4. Risk factors for non-communicable diseases: Overweight and obesity	Batch 1: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 2: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 3: Dr. Rina Rani Paul, BRAC JPGSPH Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 4: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 5: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 6: Dr. Rina Rani Paul, BRAC JPGSPH
D1. Total cardiovascular risk-based approach	Batch 1: Dr. Raisul Islam, WHO Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 2: Dr. Rina Rani Paul, BRAC JPGSPH Prof. Malay Mridha, BRAC JPGSPH
	Batch 3: Dr. Rina Rani Paul, BRAC JPGSPH Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 4: Dr. Rina Rani Paul, BRAC JPGSPH Dr. Raisul Islam, WHO
	Batch 5: Dr. Rina Rani Paul, BRAC JPGSPH Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 6: Dr. Rina Rani Paul, BRAC JPGSPH Dr. Ali Ahsan Hemel, BRAC JPGSPH
E. Assessment and Management of Hypertension	Batch 1: Dr. Raisul Islam, WHO Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 2: Dr. Raisul Islam, WHO Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 3: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 4: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 5: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 6: Dr. Rina Rani Paul, BRAC JPGSPH
F. Assessment and Management of Type 2 Diabetes	Batch 1: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 2: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 3: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 4: Dr. Raisul Islam, WHO

Name of the session	Name of the facilitators, Organization
	Batch 5: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 6: Dr. Ali Ahsan Hemel, BRAC JPGSPH
G1. Healthy lifestyle: Basics of counseling	Batch 1: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 2: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 3: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 4: Dr. Ali Ahsan Hemel, BRAC JPGSPH
	Batch 5: Dr. Priscilla Khyang, BRAC JPGSPH
	Batch 6: Ali Ahsan Hemel, BRAC JPGSPH
G2. Brief interventions for non-communicable disease risk factors: Tobacco cessation, healthy diet and physical activity	Batch 1: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 2: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 3: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 4: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 5: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 6: Dr. Rina Rani Paul, BRAC JPGSPH Prof. Malay Mridha, BRAC JPGSPH
H1. Develop and present team-based approach of implementing PEN intervention in existing health facility	Batch 1: Prof. Malay Mridha, BRAC JPGSPH Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 2: Prof. Malay Mridha, BRAC JPGSPH
	Batch 3: Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 4: Prof. Malay Mridha, BRAC JPGSPH, Dr. Rina Rani Paul, BRAC JPGSPH
	Batch 5: Prof. Malay Mridha, BRAC JPGSPH
	Batch 6: Dr. Rina Rani Paul, BRAC JPGSPH
Simulation of service delivery at PHC	Facilitators from BRAC JPGSPH, and WHO
OSPE	Facilitators from BRAC JPGSPH, and WHO

Annex 7.4: Participants' list for PEN training

Annex 7.4.1: Participants' list for PEN training-Batch 1

SI No	Name	Designation	Organization
1	DR. MUSARRAT NAZNEEN	Medical Officer	HOPE
2	DR. FAIRUZ HOMAYRA FARIHA	Medical Officer	HAEFA
3	DR.MD. ASADUZZAMAN	Medical Officer	HAEFA
4	DR.DR. AMITAB CHANDRO DAS	Clinic Manager	RTMI
5	DR. JANNATUL ISRATH	Medical Officer	RTMI
6	DR. MD. GOLAM MUTTAKIN	Medical Officer	IOM
7	DR. SING MONG PRUE MARMA	Medical Officer	IOM
8	DR. SHAMIM AKTER	Medical Officer	PHD
9	DR. OMAR KHALID	Medical Officer	PHD
10	DR. SANIA NASRIN	Medical Officer	IOM
11	DR. MUSHSHARAT HOQUE	Medical Officer	RTMI
12	SWEETY AKTAR SUBORNA	Nurse	IOM
13	ANANDI CHAKMA	Nurse	IOM
14	SAMMIKA CHAKMA	Nurse	IOM
15	M.A.B AZADI BIN MOSTUFA	Medical Assistant	RTMI
16	MITHAN CHANDRA ROY	Medical Assistant	IOM
17	SAJIB PAL	Medical Assistant	IOM
18	MD. ASADUL ISLAM	Medical Assistant	PHD
19	MAHABUBA KHATUN	Medical Assistant	IOM
20	MD. HUMAYUN KABIR	Medical Assistant	IOM
21	JESMIN SULTANA	Medical Assistant	RTMI
22	SARAH MARIUM	Medical Assistant	RTMI
23	NARGIS AKTER	Medical Assistant	RTMI
24	PRISCILLA KHYANG	Senior Research Assistant	BRAC JPG SPH

Annex 7.4.2: Participants' list for PEN training-Batch 2

Sl No	Name	Designation	Organization
1	DR. SAYED IFTAKHARUL ISLAM	MEDICAL OFFICER	UHC, CHAKARIA
2	DR. ALI NEWAJ CHOWDHURY	MEDICAL OFFICER	UHC, RAMU
3	DR. MAHFUZUR RAHMAN	MEDICAL OFFICER	UHC, PEKUA
4	DR. FAHIM SHAHRIAR SHAON	MEDICAL OFFICER	UHC, MOHESHKHALI
5	DR. AHASUN ULLAH SIKDER	MEDICAL OFFICER	UHC, MOHESHKHALI
6	DR. MD. MAJHARUL HOQUE	MEDICAL OFFICER	UHC, TEKNAF
7	KUSUM AKTAR	SSN	UHC, UKHIYA
8	AYESHA AKTER	STAFF NURSE	RESPONSE PLAN
9	A.K.M AZAD SARKER	SSN	UHC, MOHESHKHALI
10	FARIDA EASMIN	SSN	UHC, MOHESHKHALI
11	DIPANKAR MOLLICK	SSN	UHC, CHAKARIA
12	SHANAZ PARVIN	SSN	UHC, CHAKARIA
13	RAKHA SOLTANA	SSN	UHC, TEKNAF
14	SHOHANA AKTER	SSN	UHC, TEKNAF
15	ARUNA BARUA	SSN	UHC, RAMU
16	KAJALI BARUA	SSN	UHC, RAMU
17	KARIMUN NESHA	SSN	UHC, PEKUA
18	SHILPI DAS	SSN	UHC, KUTUBDIA
19	JANNATUL FERDOUSHI	SACMO	UHC, RAMU
20	ASIS CHANDRA DAS	SACMO	BAROBAKIA USC, PEKUA
21	MD. RAIHANUL ALAM	SACMO	UHC, MOHESHKHALI
22	MD. NAJMUL HUSSAIN	MEDICAL ASSISTANT	UHC, TEKNAF
23	SAIFUDDIN	SACMO	UHC, UKHIYA

Annex 7.4.3: Participants' list for PEN training-Batch 3

Sl No	Name	Designation	Organization
1	DR. SAIFUL ALAM PRODHAN	MO	FH/MTI
2	DR. MD. TAMIM IQBAL	MO/IPC FOCAL	FH/MTI
3	DR. MD. SADDAM HOSSAIN	MO	UHC, PEKUA
4	DR. BINOY SEN	MO	UHC, MOHESHKHALI
5	DR. MD. NURUL HUDA MAZUMDER	MO	UHC, RAMU
6	DR. LUTFUN NAHER IVY	MO	UHC, UKHIYA
7	DR. MOHAMMAD RIASHAD AZIM SIDDIQUE	MO	UHC, CHAKARIA
8	DR. MUHAMMED AHNAF CHOWDHURY	MO	UHC, TEKNAF
9	DR. SAYEMA TABASSUM	MO	UHC, KUTUBDIA
10	FAHAD NUR SHEUL	NURSE	FH/MTI
11	SHAMIM MOLLA	NURSE	FH/MTI
12	SUJATA RANI DEV	SSN	UHC, CHAKARIA
13	HUR-E-JANNAT KHUKUMONI	SSN	UHC, CHAKARIA
14	MST. EITY AKTER	SSN	UHC, PEKUA
15	ROKSHANA AKTER SUMI	SSN	UHC, MOHESHKHALI
16	MANIK KUMAR DAS	SSN	UHC, MOHESHKHALI
17	SUPARNA BARUA	SSN	UHC, RAMU
18	RANI BISWAS	SSN	UHC, RAMU
19	HAYATUN NAHAR	SSN	UHC, UKHIYA
20	FATEMA BAHAR	SSN	UHC, UKHIYA
21	RASEDUL ISLAM	SSN	UHC, KUTUBDIA
22	MAHADEB PAL	MA	FH/MTI
23	MAHMUDA SARWAR URMI	MA	FH/MTI
24	NURUL HAMID	SACMO	UHC, PEKUA
25	MD. RAHAMAT ULLAH	SACMO	UHC, UKHIA
26	MIRASUL ALAM QUADERI	SACMO	UHC MOHESHKHALI
27	AHSAN RUBEL	SACMO	UHC, RAMU
28	MD. SHAKHAUT HOSSAIN	SACMO	UNC, TEKNAF

Annex 7.4.4: Participants' list for PEN training-Batch 4

Sl No	Name	Designation	Organization
1	DR. MOSTAFA REZOWAN SIDDIKY	CLINIC SUPERVISOR	RI
2	DR. ABU NASER MD. FAIAZ	MO	UHC, RAMU
3	DR. RIFAT ARA NOOR	MO	UHC, RAMU
4	DR. MOUSUMI CHOWDHURY	MO	UHC, PEKUA
5	DR. KANINIKA DASTIDAR	MO	UHC, MOHESHKHALI
6	DR. SHUBHRO DEB	MO	UHC, TEKNAF
7	DR. KAZI FAHMIDA YASMEEN	MO	UHC, UKHIYA
8	MOSAMMAT TAHMINA	SSN	UHC, RAMU
9	BAPPI BARUA	SSN	UHC, RAMU
10	RUBY MOLLICK	SSN	UHC, CHAKARIA
11	BIPASHA DAS	SSN	UHC, CHAKARIA
12	ZOLY RANI SUSHILL	SSN	UHC, PEKUA
13	MD. MOHI UDDIN	SSN	UHC, MOHESHKHALI
14	HAMIDA AKTHER	SSN	UHC, MOHESHKHALI
15	SWEETY DEWANY	SSN	UHC, UKHIYA
16	NAIMA NISHAT REKA	SSN	UHC, UKHIYA
17	ROKIB UDDIN	MA	RI
18	KAWSAR PARVEN	MA	RI
19	PARAG SHIL	SACMO	UHC, RAMU
20	MD. NURUL AMIN	SACMO	UHC, MOHESHKHALI
21	MAHMUDUL HASAN	SACMO	UHC, UKHIYA
22	MD. ISKANDER MIRZA	SACMO	UHC, TEKNAF

Annex 7.4.5: Participants' list for PEN training-Batch 5

Sl No	Name	Designation	Organization
1	DR. SYED MD. NURUDDIN PARVEZ	MO	SCI
2	MD. ABDULLAH AL MAMUN	CLINIC SUPERVISOR	SCI
3	DR. BARSHA CHAKRABORTY	MO	UHC, RAMU
4	DR. MD. TARIQUL ISLAM LIMON	MO	SADAR, COX BAZAR
5	DR. MILTON SEN GUPTA	MO	UHC, UKHIYA
6	DR. SUFIA AKTER RUPA	MO	UHC, TEKNAF
7	DR. AFSANA AKTER	MO	CIS
8	DR. ISMOT ARA BEGUM	MO	UHC, MOHESHKHALI
9	MST. ASRAFUN JAHAN	SSN	SCI
10	ONJANA PARVIN	SSN	CIS
11	SHILA DAS	SSN	UHC, CHAKARIA
12	DEZI NATH	SSN	UHC, RAMU
13	MD RIPON MIAN	SSN	MSF(OCP)
14	MD SAKIB UDDIN	SSN	AWARD
15	SABINA YEASMIN BABY	SSN	UHC, PEKUA
16	UMME BILKIS	SSN	UHC, PEKUA
17	MD. EMRUL KAYES	MA	MSF (OCP)
18	MD. RAKIB HASAN TALUKDER	MA	SCI
19	ISRAT JAHAN KEYA	MA	CIS
20	AMIRUL ISLAM	MA	AWARD
21	ABU SADAK MOHAMMAD	SACMO	SADAR, COXBAZAR
22	SUMATI SEN	SACMO	UHC, MOHESHKHALI

Annex 7.4.6: Participants' list for PEN training-Batch 6

Sl No	Name	Designation	Organization
1	DR. SHARMIN SULTANA RIPA	MO	GK
2	DR. FATEMA RAHMAN	MO	TDH
3	DR. ZANNATUL FATHEMA	MO	MEDGLOBAL
4	DR. PROYON JOHN GOMES	MDS	MSF
5	DR. RUHUL AMIN SUJUN	MO	IOM
6	DR. LUTFUL HAIDER ROB CHOWDURY	MO	IOM
7	DR. AKTHER HOSSAIN (RONY)	MO	DCHT
8	DR. SIDDIKA SULTANA	MO	AWARD
9	DR. S M NASIM	MO	AWARD
10	DR. ZANNATUL ANDALIB MUSHFEE	CM	GK
11	DR. MD. MIZANUR RAHMAN	CM	RTMI
12	DR. AFAJUL HOQUE	MO	UHC, RAMU
13	DR. MD. FAISHAL RANA	MO	UHC, CHAKARIA
14	DR. ASIF ALVI	MO	UHC, TEKNAF
15	DR. UMMUL KHAIR MARZAN	MO	UHC, CHAKARIA
16	DR. MD. NAZMUS SAKIB	MO	COXS BAZAR, SADAR
17	SHAFIQU L ISLAM	NURSE	GK
18	AMENA KHATUN	NURSE	GK
19	MST. FATEMATUZ ZOHRA	NURSE	MSF
20	MUKTA RAHMAN	MIDWIFE	DCHT
21	SORNA DEB	NURSE	RTMI
22	TULSHI SEN	SSN	UHC, RAMU
23	SHILPI MALLICK	SSN	UHC, CHAKARIA
24	SONIA MOLLICK	SSN	UHC, CHAKARIA
25	MD. JAKIRUL ISLAM	MA	GK
26	MANOJ DAS	MA	GK
27	PABITRA ROY	MA	MSF
28	ZAINAL ABEDIN	SACMO	UHC, MOHESHKHALI
29	SANIYA KHAN	MA	TDH
30	MONIRA AKTER	SACMO	COXS BAZAR, SADAR
31	MD. NURUL ANWAR	MA	RTMI
32	MD. SARJIL ISLAM	MA	IOM

Annex 7.5: Training evaluation form for PEN training



Training on package of essential non-communicable diseases (PEN) interventions for primary health care providers Training Evaluation Form Overall

Name: _____ Batch: _____ Date: ____/____/2020
(you might skip the name here if you want to give anonymous feedback)

1. রোগীদের অস্বাস্থ্যকর আচরণ পরিবর্তনে সহায়তা করতে ফাইভ এ এবং ফাইভ আর পদ্ধতি ব্যবহারে আপনি কতটা আত্মবিশ্বাসী? সঠিক উত্তর গোল করুন [How confident you are to apply the 5A's and 5R's technique to support patients to change their unhealthy behavior? Circle]

Not Much	A little	Somewhat confident	Confident	Very Confident
1	2	3	4	5

2. WHO risk prediction chart ব্যবহার করতে আপনি কতটা আত্মবিশ্বাসী? সঠিক উত্তর গোল করুন [How confident you are to use the WHO risk prediction chart?] [Circle]

Not Much	A little	Somewhat confident	Confident	Very Confident
1	2	3	4	5

3. জাতীয় নির্দেশিকা ব্যবহার করে উচ্চরক্তচাপের ব্যবস্থাপনা করতে আপনি কতটা আত্মবিশ্বাসী? সঠিক উত্তর গোল করুন [How confident you are to manage hypertensive patient based on the national guideline? Circle]

Not Much	A little	Somewhat confident	Confident	Very Confident
1	2	3	4	5

4. জাতীয় নির্দেশিকা ব্যবহার করে ডায়াবেটিসের ব্যবস্থাপনা করতে আপনি কতটা আত্মবিশ্বাসী? সঠিক উত্তর গোল করুন [How confident you are to manage Diabetic patients based on the national guideline? Circle]

Not Much	A little	Somewhat confident	Confident	Very Confident
1	2	3	4	5

5. এই প্রশিক্ষণ আপনার প্রত্যাশা কতটা পূরণ করেছে? সঠিক উত্তর গোল করুন [How much the training met your expectations? Circle]

Not Much	A little	Somewhat	Met expectations	Exceeded expectations
1	2	3	4	5

6. কোন সেশনগুলো আপনার সবচেয়ে ভাল লেগেছে? ভালোর ক্রম অনুসারে লিখুন [Please mention below the session(s) you enjoyed most]

- a) _____
- b) _____
- c) _____
- d) _____

7. কোন সেশনগুলো আপনার তেমন ভাল লাগেনি? খারাপ লাগার ক্রম অনুসারে লিখুন [Please mention below the session(s) you did not enjoy that much]

- a) _____
- b) _____
- c) _____
- d) _____

8. কোন বিষয়গুলো আরো ভালো হতে পারতো? [List of things that could have been better]

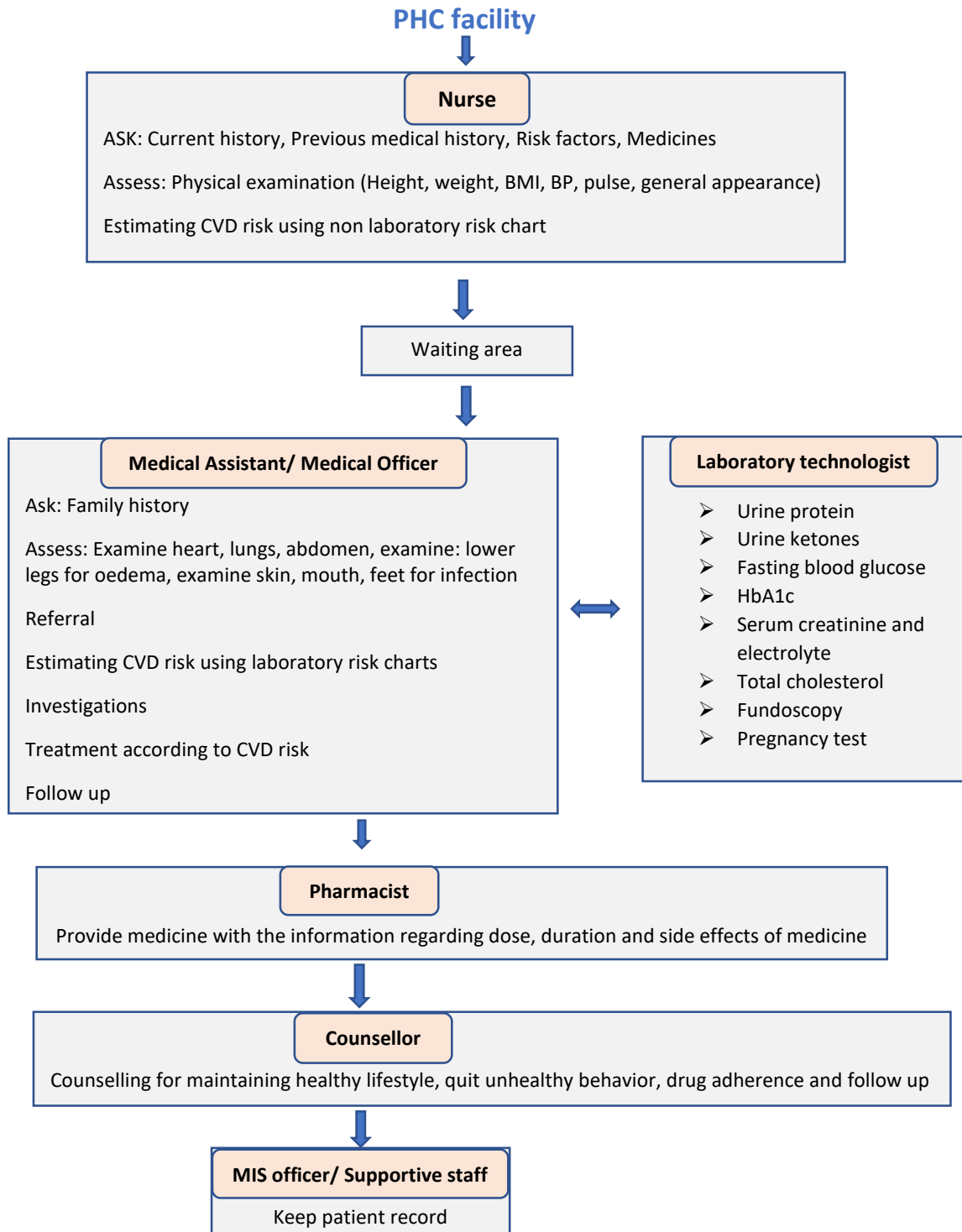
9. ট্রেনিং এর মান ও বিষয় নিয়ে সাধারণভাবে আপনার মন্তব্য লিখুন [Any general comment or suggestion on training quality and content]

10. Foods and logistics [Please comment on the overall quality of training logistics (tick in the appropriate column for each area)]

Area	Excellent	Good	Average	Bad	Very bad
Accommodation					
Foods					
Communication					
Training materials					

11. Please give your suggestions for improvement in the area of training accommodation, foods, materials, and other logistics arrangements for future training.

Annex 7.6: NCD patient flow-chart in the PHCs



Annex 7.7: Sample treatment card that can be used in the PHC

<p>A. PATIENT IDENTIFICATION: ID No. _ _ _ _ _ _ _ _ _ _ Full name: _____ Gender: Male _ Female _ Others _ Age: _ _ Patient Type: NEW/FOLLOW-UP Address: Household no. _ _ _ _ _ _ _ _ _ _ Block no.: _ _ Camp no.: _ _ Upazilla: Ukhiya/Teknaf</p>	<p>Laboratory Examination FBS: _ _ _ _ _ mmol/L HbA1C: _ _ _ % RBS: _ _ _ _ _ mmol/L Total cholesterol: _ _ _ _ _ mmol/L Urine Ketone: Negative / ± / + / ++ / +++ Urine Protein: Negative/ Trace / + / ++ / +++ D. REFERRAL: _ _ Referred to: _____ Reason: _____ E. CVD RISK CATEGORY AND DIAGNOSIS CVD Risk: _ _ _ % Category: Low/Moderate/High/Very High Clinical Diagnosis: _____ _____ Target BP: _____/_____ mmHg Target FBS: _____ mmol/L</p>
<p>B. ASK Current history: Any acute symptoms of: Heart attack _ Stroke _ Chief complaints: _____ Previous history: Heart attack _ Stroke _ HTN _ Diabetes _ Family history: Heart attack _ Stroke _ HTN _ Diabetes _ Medicines: _____ Risk factors: Smoking (12 months): _ Other Tobacco: _ Alcohol (30 days): _ F/V (≤ 5 servings): _ Sugar: _ Extra salt: _ Sugary drinks: _ Fats: _ P/A (≤ 150 mins/wk): _ </p>	<p>F. TREATMENT _____ G. FOLLOW-UP DATE: _____/_____/202__</p>
<p>C. ASSESS (Physical Examination) Ht: _ _ . _ _ _ m Wt: _ _ _ _ _ Kg BMI: _ _ _ _ _ kg/m² SpO2 _ _ _ % BP: _____/_____ mmHg Pulse: _ _ _ _ /minute Temp: _____°C R/R: _ _ _ /minute Anemia: _ Jaundice: _ Edema: _ Heart: _____ Lungs: _____ Abdomen _____ Legs and feet _____ Skin/Mouth _____</p>	<p>H. COUNSELING Smoking (12 months): _ Other Tobacco: _ Alcohol (30 days): _ F/V (≤ 5 servings): _ Sugar: _ Extra salt: _ Sugary drinks: _ Fats: _ PA (≤ 150 mins/wk): _ M/A: _ Advice: _____</p>
<p>Staff Name: _____</p>	<p>Signature: _____</p>

Annex 7.8: Sample format for NCD register in the PHC

SN	Date	FDMN ID or NID/ Patient ID	Name	Smoker? Y/N	Sex/ Age(Y) M/F/O	New/ FU N/FU	Weight (kg)/ Height (Cm)	BMI	BP Sys/Dias	FBS/RBS ___/F/R	CVD Risk (%)	Diagnosis (circle)	Counseling on (circle)	Comments
1	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	
2	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	
3	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	
4	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	
5	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	
6	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	
7	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	
8	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	
9	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	
10	___/___/202_				M/F/O					F/R		HTN / DM/ Others	S / ST Salt / Fat PA / MA	

Annex 7.9: Important moments of the PEN training captured in photographs



Line Director NCDC, Prof. Robed Amin sharing his vision with the trainee



Dr. Alim Pradhan, Program Manager, NCDC addressing the



Prof. Robed Amin, Line Director, NCDC distributing certificates to a trainee



Weight, Height and Waist circumference measurement (module C4)



Group work CVD risk-based management (Module D)

CASE-02
 CVD Risk → 35% (Very High Risk)

Lifestyle:

- Diet: ✓ Diabetic diet/low sugar
- ✓ Avoids alcohol
- ✓ Less fat intake

Physical activities: At least 150-300 minutes/week → moderate

Stop smoking & tobacco intake

B.P.: Hypertension

- ✓ Start anti-hypertensive drug
- ✓ Healthy life style counselling
- ✓ Follow-up

Diabetes: Present

- ✓ Start Anti-Diabetic medication
- ✓ Advice on diet and exercise
- ✓ Assess risk of foot ulcer/leg amputation annually
- ✓ Referred to next level for the service
- Diabetic Retinopathy
- Diabetic Neuropathy
- Diabetic Nephropathy

Follow up - Every 3 months

Cholesterol + Aspirin:

- ✓ Advise lipid lowering diet
- ✓ Start Statin 10mg OD
- ✓ Give Aspirin 75mg OD
- Do not give Aspirin

Follow up - Every 3 months

Role play on counseling (Module G)



Group work presentation and discussion (Module H)



Group work presentation and discussion (Module H)



Group work presentation and discussion (Module H)



Line director NCDC Prof. Robed Amin, Program Manager Dr. Alim Pradhan with Dr. Sadhana Bhagwat, Medical Officer WHO and other facilitators and the participants

Annex 7.10: Supportive supervision framework

Based on the findings from the initial supportive supervision activities carried out by BRAC James P Grant School of Public Health and the World Health Organization, we believed that a sustainable supportive supervision system is feasible and should be implemented in Cox's Bazar. Figure 2 below outlines the process of setting up a supportive supervision system, planning, and conducting supportive supervisory visits, and follow-up activities for improving NCD prevention and control in Cox's Bazar District, Bangladesh.

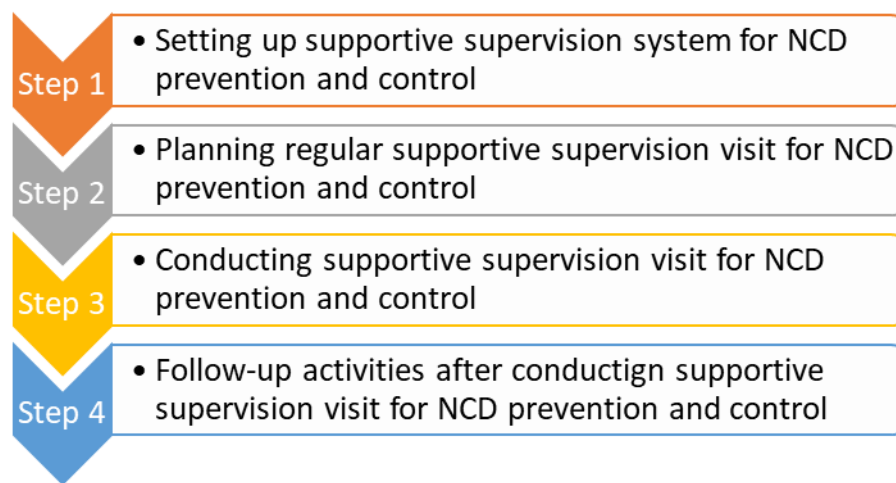


Figure 2: Steps of supportive supervision

The following sections describe these steps.

STEP 1. Setting up supportive supervision system for NCD prevention and control

Setting up a supportive supervision system involves three Rs: **Right** supervisor, **Right** tools, and **Right** resources. Therefore, there is a need for a core group of supervisors who are well-trained in the techniques of supportive supervision and have updated knowledge and skill on NCD prevention and control interventions. To implement the system, checklists, and forms for recording supporting supervision findings and recommendations; training materials and job aids for the health care providers will be required. Moreover, to implement the system, there is a need for financial and other resources, e.g., transportation support, tablet computers, etc. Accordingly, setting up a system for supervision system for NCD prevention and control will require three broad activities.

- Training a core set of supervisors
- Creating checklists, recording forms, job aids, and training materials
- Ensuring appropriate resources

1.1 Training a core set of supervisors

A core set of supervisors will be identified and trained on supportive supervision for NCD prevention and control. The supervisors may include Upazila health and family planning officer (UHFPO), Medical Officers from the Civil Surgeon's Office, Medical Officer in the NCD corners of the Upazila health complexes, and mid-level managers of the NGOs implementing health programs in the Rohingya camps. The Office of the Civil Surgeon, Cox's Bazar, WHO, and BRAC James P Grant School of Public Health may jointly identify training needs and implement the training. The training needs to focus on the following issues:

- Techniques of supportive supervision and participatory approaches (Identification of problems, ways to solve the problems, adult learning and training techniques, communication, mentoring)
- NCD prevention and control interventions by type of health facilities and major issues relevant to NCD prevention and control including the monitoring framework

1.2 Creating checklists, recording forms, job aids and training materials

The supervisory checklists and recording forms have developed for Upazila health complexes (UHC), primary health care centers (PHC), community clinics, and health posts. The checklists and recording forms contain priority issues that must be observed and recorded by the supervisors. The information collected on the checklists and forms will help the supervisor to discuss strong and weak areas of health system building blocks in the facility and initiate discussions. These checklists and forms are short, simple, and specific and information can be collected using tablet computers so that data entry is not needed and summary findings can be available right away. A draft of the checklist and recording form for the UHC and PHC has been included in Annex-1.

As the supervisory visit is a wonderful opportunity to provide on-the-job training based on the problems identified. Therefore, the supervisors will need standard training materials and job aids. Accordingly, the supervisors will be given the following materials and job aids.

- National protocol of the management and hypertension and type 2 diabetes
- NCD management training materials developed by the DGHS, WHO and BRAC James P Grant School of Public Health
- Cardiovascular diseases (CVD) risk charts
- Health education materials (posters, flip chart)
- Referral facilities with contact numbers

The training methods that the supervisor can implement during the supportive supervision visits will include case-study, group discussion, group works, participatory exercises, demonstrations and practices, role play, presentations, questions and answer sessions, bed-side learning, role play, etc.

1.3 Ensuring appropriate resources

The supportive supervisory visits will require financial and non-financial resources including transport support, per diem, training materials, tablet computers, internet connectivity, etc. There will be a plan put together by the Office of the Civil Surgeon, WHO, and Health Sector to make sure how these resources will be arranged.

STPE 2. Planning regular supportive supervision visit for NCD prevention and control

Ideally, regular supportive supervision visit for NCD prevention and control should be an integral part of the district-specific annual action plan (DAP) for NCD. However, in the absence of a DAP, there can be an annual plan for supportive supervision. Initially, there can be monthly visits.

From January 2022, UHFPO of the respective Upazila, and the PHC in-charges may carry out supportive supervision of the UHC plus CC, and PHC plus health posts respectively. Each month, the UHFPO will conduct a supportive supervision visit of the UHC and 3 CCs. In the same way, each month, the PHC in-charge will carry out supportive supervision visits of the PHC and all the health posts under the PHCs.

Once the system is established, facilities for the supportive supervision visits can be prioritized based on the following criteria:

- Facilities with low performance
- Facilities with poor reports in the previous visits
- Facilities face frequent stock problems
- Facilities having no visits in the past 6 months
- Newly established PHCs and health posts

The supportive supervision visit plan can be prepared in a way that each facility receives at least 2 visits per year. The plan of supportive supervision visits will be provided to the facilities beforehand. The agenda for the visits will also be prepared and sent to the facilities before the visit.

3. Conducting supportive supervision visits for NCD prevention and control

As mentioned earlier, starting from January 2022, UHFPO of the respective Upazila, and the PHC in-charges may carry out supportive supervision of the UHC plus CC, and PHC plus health posts respectively. Each month, the UHFPO will conduct supportive supervision visits of the UHC and 3 CCs. In the same way, each month, the PHC in-charge will carry out supportive supervision visits of the PHC and all the health under the PHCs.

During the supervisory visits, the following activities will be carried out.

- Collection of data
- Feed-back and problem solving
- On the job-training
- Recording of summary results from the visit

3.1 Collection of data

The supervisor will collect data using a checklist and data record form. For the data collection, they will need to use a number of methods including talking with the health care providers, observation, review of health facility records, talking with the patients, review of data and recommendations from the last visit.

2. Feed-back and problem solving

For problem solving and feed-back, it is always necessary to start with the strong areas of the facility identified during the supervisory visit and congratulate the staff members for doing a good job. The problems identified need to be presented as areas of improvement. While solving a problem, the problem and its short-term and long-term impact need to be discussed at first. Afterward, the causes behind the problems, solutions to the problems can be discussed and actions to be taken should be identified.

3. On the job-training

Topics for on-the job training should be identified during the supervisory visits. If there are multiple areas identified for the on-the-job training, one or two areas need to be prioritized. For example, if it is identified that the staff members are unable to measure blood pressure accurately, on the job training will be provided on the measurement of blood pressure. As mentioned earlier these training will involve multiple methods including case-study, group discussion, group works, participatory exercises, demonstrations and practices, role play, presentations, questions and answer sessions, bed-side learning, role play etc.

4. Recording of summary results from the visit

Each facility will have a supportive supervision log book. The date of the visit, main observations, training given and agreed follow-up actions will be recorded in the supportive supervision record book. The record book need to be reviewed in the subsequent supervisory visits.

STEP 4. Follow-up activities after conducting supportive supervision visit for NCD prevention and control

After the supervisory visits, the following broad activities need to be carried out.

- Preparing supervisory visit reports
- Follow up on agreed actions by supervisors and supervised staff.
- Regular data analysis
- Feedback to all partners and stakeholders

4.1 Preparing supervisory visit reports

Facility-specific short supervisory visit reports should be prepared and shared with the facility and the Office of the Civil Surgeon, and WHO. The report should contain the status of each item in the supervisory checklists, observation findings, immediate improvement measures agreed, the timeline for the implementation of the immediate improvement measures, and the next visit plan. A summary of these reports needs to be presented in NCD prevention and control coordination committee meetings, and health sector meetings. Moreover, the reports can be included in the local health bulletin, Cox's Bazar, and health sector bulletin.

4.2 Follow up on agreed actions by supervisors and supervised staff

After the supportive supervision visit, the supervisors need to maintain regular communications with the health facilities to discuss the progress with the improvement measures agreed. S/he should also update the health care providers on the supply and delivery problems with the higher level, and discuss the

possibilities of involving the health care providers with planning and implementation process, and career growth and leadership opportunities for the development of staff.

4.3 Regular data analysis

The Office of the Civil Surgeon and WHO need to compile data from all facilities and carry out aggregated data analysis. These data can be used to compare the performance of the facilities, analyze trends of improvement, and plan for the support needed by the facilities. These data can also be presented in the monthly meeting of the NCD prevention control committee and the meeting of the health sector.

4. Feedback to all partners and stakeholders

Supportive supervision data should also be presented by the Office of the Civil Surgeon and the Health Sector to the RRC, MOHFW Coordination Center and other partners and stakeholders. After the presentation of the data and progress, support areas to be addressed by the partners and stakeholders need to be identified and relevant actions should be taken.

Annex 7.11: Supportive Supervision checklist

Supportive Supervision Checklist and Recording form

Background of the research:

The Government of Bangladesh is committed to develop Cox's Bazar as a model district for noncommunicable diseases (NCD) prevention and control. The Directorate General of Health Services, Office of the Civil Surgeon, MoHFW Coordination Center, Office of the Refugee Relief and Repatriation Commissioner (RRRC), and World Health Organization are working with other partners to strengthen NCD prevention and control activities in Cox's Bazar. BRAC James P Grant School of Public Health is working in collaboration with other partners on a supportive supervision system for NCD prevention and control.

Risks:

There is no risk of physical or emotional harm if you participate in this study.

Benefits:

There is no immediate or direct benefit for participating in this study. However, in the long term, the study may help improve the NCDs health services in Bangladesh. We are seeking your cooperation about accuracy of the collected information in this interview.

Privacy, anonymity, and confidentiality:

Collected information will be given a unique identifier code and will be kept confidential. All the documents will be stored carefully. Your name or any other privacy related information will not appear in the results of the study or in any publication. The knowledge gained from this research will be shared in summary form without identifying any participant.

Future use of information:

If there is a need for future use of the information collected in this study, we will provide the de-identified data so that privacy, anonymity, and confidentiality of the participants are maintained.

Right not to participate and withdraw:

Participation in this study is voluntary. You are free to decide to participate and can withdraw at any time without any consequence. But we are hopeful that you will answer all the questions which may have impact in improving the services provided by your facility.

Compensation:

There will be no financial compensation for participating in this study.

Contact persons:

In case you have any questions or queries about this research project, please contact Dr. Abu Abdullah Mohammad Hanif, who will be available at Tel: +8801717355517

Do you want to participate? Yes/No

for UHC/PHC/DH OPD

1. Details of the supervisor, date and time

1	Name:	Title:
1	Organization:	Phone number:
3	Email:	Date:_____/_____/2021 Time: _____:____

2. Details of the health facility

1	Name:	Type: UHC/PHC
2	ID:	Upazila:
3	Camp #:	Block #:
4	Name of the informant 1:	Title of the informant 1:
5	Phone #:	Email:
6	Name of the informant 2:	Title of the informant 2:
7	Phone #:	Email:
8	Name of the informant 3:	Title of the informant 3:
9	Phone #:	Email:
10	Year of establishment:	Opening hours: ___:___ to ____:____

3. Human resources:

Sl#	Designation	Total	Received NCD training	NCD training needed
1	Physician			
2	Nurse/Senior nurse			
3	Midwife			
4	SACMO/Medical Assistants			
5	Medical technologist			
6	Pharmacist			
7	Counselor			

4. Infrastructure

Sl#	Item	Available (1=Yes, 0=No)	Functional
1	Electricity connection		
2	Back-up power source		
3	Cell phone		
4	Land phone		
5	Computer		

Sl#	Item	Available (1=Yes, 0=No)	Functional
6	Television		
7	Toilet		
8	Running water		
9	Vehicle to transport patients		
10	Internet		

5. Clinical services

Sl#	Items	Available (1=Yes, 0=No)	Areas of improvement	Measures for improvement
1	NCD corner			
2	Routine screening of ≥ 40 years old for hypertension and diabetes			
3	History taking			
4	General physical examination			
5	Measurement of BP			
6	Measurement of height			
7	Measurement of weight			
8	Calculation of BMI			
9	CVD risk estimation using lab-based chart			
10	CVD risk estimation using non-lab-based chart			
11	Management of patients using CVD risk-based approach			
12	Management of hypertension using national protocol			
13	Management of type 2 diabetes using national protocol			
14	Management of Asthma using national protocol			

Sl#	Items	Available (1=Yes, 0=No)	Areas of improvement	Measures for improvement
15	Management of COPD using national protocol			
16	Use of algorithm for early detection of breast cancer			
17	Use of algorithm for early detection of cervical cancer			
18	Diagnosis and management of depression			
18	Diagnosis and management of anxiety disorders			
20	Primary management of MI			
21	Primary management of stroke			
22	Primary management of hypoglycemia			
23	Primary management of hyperglycemia			
24	Referral for emergencies as per national protocol			
25	Referral for non-emergency conditions as per national protocol			

6. Behavioral management services

Sl#	Items	Available	Use of 5A-5R	Areas of improvement	Measures for improvement
1	Counseling for smoking cessation				
2	Counseling for smokeless tobacco cessation				
3	Counseling for fruits and vegetables consumption				
4	Counseling for salt intake reduction				
5	Counseling for sugar intake reduction				
6	Counseling for trans-fat intake reduction				

Sl#	Items	Available	Use of 5A-5R	Areas of improvement	Measures for improvement
7	Counseling for healthy diet (fruits and vegetables)				
8	Counseling for adequate physical activity				
9	Counseling for weight management				
10	Counseling for alcohol consumption reduction				
11	Counseling for indoor air pollution reduction				
12	Counseling for adherence to medications				

7. Laboratory services

Sl#	Items	Available	Areas of improvement	Measures for improvement
1	Random blood glucose			
2	Fasting blood glucose			
3	Oral Glucose tolerance test (OGTT)			
4	HbA ₁ C			
5	Urine protein test			
6	Urine ketones test			
7	Serum creatinine			
8	Serum Electrolyte			
9	Total cholesterol			
10	Lipid profile/Total cholesterol			
11	Retinal imaging/fundoscopy			

Sl#	Items	Available	Areas of improvement	Measures for improvement
12	Spirometry			
13	Mammography			
14	Visual inspection with acetic acid (VIA)			
15	Pregnancy test			

8. Guidelines and others

Sl#	Items	Available	Areas of improvement	Measures for improvement
1	National guideline for hypertension and T2D			
2	National guideline on chronic respiratory diseases			
3	Laboratory-based CVD risk chart			
4	Non-laboratory-based CVD risk chart			
5	NCD flipchart			
6	Guidelines for counseling using 5A-5R approach			
7	Guideline on screening and referral for cancer			
8	Guideline on screening and referral for mental health disorders			
9	Infection prevention guideline			
10	NCD green book			
11	NCD register			
12	Stock register			
13	NCD performance display board			

Sl#	Items	Available	Areas of improvement	Measures for improvement

9. Drugs

Sl#	Items	Available	Currently in stock	Areas of improvement	Measures for improvement
1	Amlodipine				
2	Other calcium channel blocker				
3	Losartan				
4	Other Angiotensin receptor Blocker				
5	Beta-blocker				
6	Angiotensin-converting enzyme inhibitor				
7	Hydrochlorothiazide				
8	Furosemide				
9	Rosuvastatin				
10	Other Statins				
11	Metformin				
12	Gliclazide				
13	Other Sulphonyl urea				
14	Insulin				
15	Aspirin				
16	Clopidogrel				
17	Isosorbide dinitrate, e.g: Isocard				
18	Glyceryl trinitrate, e.g: Nidocard, GTN				
18	Tablet Salbutamol				
20	Inhaler, e.g: Salbutamol				
21	Salbutamol solution for nebulizer				
22	Tablet. Theophylline				
23	Inj. Theophylline				
24	Tablet. Prednisolone, e.g: Cortan				

Sl#	Items	Available	Currently in stock	Areas of improvement	Measures for improvement
25	Inhaler Beclomethasone, e.g: Beclomin				
26	Tab. Spironolactone				
27	Tab. Prednisolone				
28	Inj. Hydrocortisone				
29	Inhaler: Ipratropium				
30	Tab. Montelukast, e.g: M-kast, Montril				
31	Inj. Epinephrine				
32	Inj. Heparin				
33	Tab. Penicillin				
34	Tab. Erythromycin				
35	Cap. Amoxicillin				
36	Tab. Paracetamol				
37	Tab. Ibuprofen				
38	Cap. Ampicillin				
39	Tablet. Amitriptyline				
40	Tab. Fluoxetine				
41	Tab. Risperidone				
42	Tab. Chlorpromazine				
43	Tab. Fluphenazine				
44	Tab. Biperiden				
45	Tab. Trihexyphenidyl				
46	Tab. Sodium Valproate				
47	Tab. Carbamazepine				
48	Tab. Diazepam				
49	Inj. Diazepam				
50	Promethazine				
51	Tab. Haloperidol				
52	Inj. Haloperidol				
53	Tab. Phenobarbital				
54	Tab. Phenytoin				
55	Inj. Atropine				
56	Dextrose/ Glucose infusion e.g: (DA, DNS)				
57	Sodium chloride infusion (Normal saline)				

Sl#	Items	Available	Currently in stock	Areas of improvement	Measures for improvement
58	Oxygen				

10. Equipment

Sl#	Items	Available	Functional	Areas of improvement	Measures for improvement
1	Thermometer				
2	Stethoscope				
3	BP machine-digital				
4	BP machine-analogue				
5	Measuring tape				
6	Adult weighing scale				
7	Adult height scale				
8	Peak flow meter				
9	Spacers for inhalers				
10	Nebulizer				
11	Pulse oximeter				
12	Tuning fork				
13	Electrocardiograph (ECG)				
14	Glucometer				
15	Blood glucose test strips				
16	Urine protein test strips				
17	Urine ketones test strips				
18	Blood cholesterol assay				
18	Lipid profile assay				
20	Serum creatinine assay				
21	Troponin test strips				
22	Urine microalbuminuria test strips				
23	Equipment for serum electrolyte				
24	Fundoscope				
25	Mammogram				
26	Pregnancy test strip				
27	Equipment for VIA				

11. Number of services

Sl#	Question	Answer	Areas of improvement	Measures of improvement
1	How many new patients were identified as only hypertensive last month?			
2	How many new patients were identified as only diabetic last month?			
3	How many new patients were identified as having both diabetes and hypertension last month?			
4	How many old hypertensive only patients received services last month?			
5	How many old diabetic only patients received services last month?			
6	How many patients were having both diabetes and hypertension received services last month?			

12. Administration and management

Sl#	Question	Answer (1=Yes, 0=No)	Actions agreed by the supervisor and facility supervised
1	Are the quality improvement teams formed?		
2	Does the facility conduct quality enhancement discussions monthly?		
3	Are reports/notes of the quality enhancement meetings available		
4	Can you show us the reports/notes from the meetings?		

13. Previous supervisory visit, training and administrative

Sl#	Questions	Answer	Comment
-----	-----------	--------	---------

1	When was the last time this facility received a supervision visit from the higher level?	Date: ____/____/____	
2	What are the topics for on-the-job training identified during the current visit?		
3	On what topics, on the job training was provided during the current visit?		
4	Is there a quality improvement team in the facility?		
5	Does the facility conduct quality enhancement discussions monthly?		
6	Are reports/notes of the quality enhancement meetings available?		

14. Capacity strengthening needs

Sl#	What are the capacity strengthening needs of the health service providers?	What can be done?
1	Physicians:	
2	Nurse/Senior nurse:	
3	Midwife:	
4	SACMO/Medical Assistants:	
5	Medical technologist:	
6	Pharmacist:	
7	Counselor:	
8	Others:	

15. Challenges

Sl#	What are the key challenges faced by the facilities to provide NCD services?	What can be done?
1	HR:	
2	Service delivery:	
3	Drugs/equipment/supplies:	
4	Record keeping:	
5	Financing:	
6	Governance:	
7	Others:	

15. Supportive supervision record-book

Sl#	What were the agreed follow-up actions from the previous visit?	Current status (Fully achieved, partially achieved, not achieved)	To be achieved by (Date) [Only for partial and not achieved]
1			
2			
3			

4			
5			
6			
7			
8			
9			
10			
Sl#	What are the agreed follow-up actions from the current visit?	To be achieved by (Date)	Responsible person
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Thank you

Annex 7.13: Important moments of Supportive Supervision related activities



Line director NCDC Prof. Robed Amin providing his guidance in the consultation meeting on PEN implementation in CoxsBazar.



Program Manager NCDC Dr. Alim Pradhan addressing the consultation meeting on PEN implementation in CoxsBazar.



Program Manager Dr. Sarwar Milon sharing the NCD implementation plan in the consultation meeting on PEN implementation in CoxsBazar.



Line director NCDC Prof. Robed Amin, Program Manager Dr. Alim Pradhan with Dr. Sadhana Bhagwat, Medical Officer WHO and Prof. Malay Mridha, director CNCNDN the participants in the consultation meeting on PEN implementation in CoxsBazar.