

# Linkage between Pharmacies and Health Systems for NCDs Management

## A Guide for Policymakers and Practitioners





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## Abbreviation

CHORUS	:	Community- Led Responsive and Effective Urban Health Systems
CVDs	:	Cardiovascular Diseases
FCHV	:	Female Community Health Volunteers
GESI	:	Gender Equity and Social Inclusion
HFA	:	Health Facility Assessment
HFM	:	Health Facility Mapping
HH	:	Household
HMIS	:	Health Management Information System
NCDs	:	Non-communicable Diseases
NGO	:	Non-governmental Organization
OSM	:	Open Street Map
PEN	:	Package of Essential Non-communicable Diseases
PHCC	:	Primary Healthcare Centers
PHF	:	Public Health Facilities
PMC	:	Pokhara Metropolitan City
UHC	:	Urban Health Center
WHO	:	World Health Organization
WHO/ISH	:	World Health Organization/ International Society of Hypertension

## About this guide

This guide has been developed based on the successful implementation of an urban health system strengthening research programme conducted in Pokhara Metropolitan City of Gandaki Province, Nepal. The research was conducted through a partnership between the Health Division of Pokhara Metropolitan City and HERD International under Community Led Responsive and Effective Urban Health System (CHORUS) Research Consortium. The major aim of the research was to strengthen urban health system through evidence generation and use of evidence in improving access to quality health services for non-communicable diseases (NCDs) in an urban setting.

The study was conducted in four phases- need assessment (identifying gaps in health systems), co-design (collaborative designing of an intervention model), Implementation (to address gap and its implementation) and evaluation (assessment of the intervention's impact).

The need assessment results found that a large proportion of the urban population seeks health care from private pharmacies, often using them as the first point of contact for health services. Although they had an important role in service delivery, the mechanism that links pharmacies with public health facilities remained lacking. Despite being the first point of contact in the community, their service readiness to provide standardized NCD care was limited. At the same time, pharmacies were identified as critical stakeholders with high potential to contribute to improved continuity of care and early management of NCDs.

Recognizing this gap, under the leadership of health division, the stakeholders in Pokhara Metropolitan City co-created the linkage model connecting pharmacies with wider health system. As a key component of the NCD management was the delivery of the Package of Essential Noncommunicable Disease (PEN), the intervention selected private pharmacies for early management of hypertension and diabetes. The initiative enabled pharmacy operators to screen hypertension and diabetes, counsel clients, maintain record of the clients and refer cases to nearby public health facilities where service was available. They were also equipped with necessary tools and support such as IEC materials, blood pressure, sugar level measuring equipment, height and weighing machine, printed algorithm demonstrating step by step process to handle the cases, PEN Package booklet was also customized for pharmacies and supportive supervision by the team of expert.

After the implementation of this linkage model for one year, we performed evaluation on the reach, effectiveness, adoption, implementation and maintenance of the intervention using the RE-AIM framework. Largely our evaluation found improved coordination between service providers, better utilization of public health facilities, and enhanced service quality of the pharmacies.

Drawing on these practical experiences and lessons learned, this guide has been prepared to support local governments in Nepal for implementing the PEN package through private pharmacies. It provides step-by-step guidance on establishing functional partnerships, strengthening service readiness at pharmacy level, and integrating private providers into the health system. The guide is intended to assist federal, provincial and local government in designing context-appropriate public-private partnership models that improve access, quality, and continuity of NCD services in urban areas.



## Introduction

Noncommunicable diseases (NCDs) are illnesses that do not spread from one person to another, but are influenced by an individual's diet, behavior, lifestyle, and genetic factors. NCDs include heart diseases, diabetes, chronic respiratory conditions, cancers, and similar illnesses. These diseases are currently the leading causes of death globally. NCDs, particularly hypertension and diabetes, are rapidly increasing in urban settings and disproportionately affecting the urban poor. The 2019 STEP survey, which uses a standard method to measure (NCDs) and their risk factors, found that diabetes and hypertension were more common among males than females aged 15- 49 years. Diabetes affected 6.3% of males and 5.3% of females, while hypertension was found in 29.8% of males compared to 19.7% of females. The survey also showed clear differences between urban and rural areas in Nepal. Both diabetes and hypertension were more common in urban areas. Hypertension affected 26.5% of adults in urban areas compared to 23.8% in rural areas, while diabetes prevalence was 7.2% in urban areas and 4.6% in rural areas.

Strengthening early detection, counseling, treatment, and follow-up at the primary level is essential to reduce the burden of these disease conditions. Pharmacies and primary health care facilities such as Primary Health Care Centers (PHCCs), Urban Health Centers (UHC) and Health Posts are often the first point of contact for individuals seeking health services, offering an important opportunity to extend NCD services closer to the community.

The PEN Protocol (Package of Essential Noncommunicable Disease) is an important guideline developed by the World Health Organization (WHO) and implemented by Nepal government. Its key purpose is to strengthen primary health care systems in low- and middle-income countries to prevent and control NCDs. PEN aims to reduce complications and premature deaths by ensuring early detection, treatment, and regular follow-up of such diseases through primary health care services.

This “How to do guideline” has been developed to offer a practical guide to federal, provincial and local governments, health facilities and pharmacies in designing and implementing feasible and cost effective model of PEN implementation and systematically integrating the WHO PEN into community-based service delivery. Since pharmacies and community-based public health facilities are key stakeholders in managing NCD services at community level, effectively engaging them in NCD management through implementation of PEN can be crucial intervention in addressing NCDs. The guideline outlines step-by-step processes to enable pharmacies and public health facilities to deliver hypertension and diabetes at primary care levels. The process includes, but not limited to, mapping, selection, and enrollment of pharmacies and public health facilities (PHFs), training, supportive supervision to the selected health facilities and pharmacies and providing practical guides on service delivery, referral management, and reporting. The guide also provides practical guidelines on service readiness assessment, development of job-aid tools, referral mechanisms, community engagement approaches such as social mapping and transect walks, and the roles and responsibilities of health system actors in implementing the customized PEN. By following this guideline, service providers can ensure that hypertension and diabetes services are delivered safely, consistently, and equitably, particularly for underserved populations. This document guides policy makers, service providers and practitioners on delivering PEN. It serves the following purposes:

- Standardize service delivery for diabetes and hypertension screening, counseling, and follow-up in pharmacies.
- Strengthen provider capacity by guiding health workers and pharmacists in appropriately applying PEN protocols and job-aid tools.
- Ensure consistent documentation using the designated recording and reporting registers and templates.
- Enhance coordination and referral mechanism between pharmacies and public health facilities for timely and appropriate management of the hypertension and diabetes cases.

# 1. Selection of Pharmacies

Implementation of PEN in pharmacies starts from the selection of the pharmacies. The selection of private pharmacies should follow a systematic assessment that includes total number of private pharmacies in the program area, their operating hours, the qualifications of service providers and population reach of the pharmacies. Priority should be given to reliable, registered, and licensed pharmacies with trained and qualified pharmacists.

The selection process should assess key service readiness factors, including the availability of essential medicines, proper stock and expiry-date management, privacy for clients, accessible and user-friendly services. For people with chronic conditions who require regular medication, pharmacies should have competent staff who can provide continuous services and counseling, as well as ensure the availability of medicines at reasonable prices.

Given the sensitivity of pharmacy selection, decisions should be guided by clear criteria related to quality, safety, service standards, accessibility, and transparency. In addition, local context such as existing policies and regulations, available resources and the priorities of health system should be carefully considered to ensure alignment with health system goals. Followings are the specific criteria for selecting pharmacies.

## i. Client Load/ Number of clients

When selecting the pharmacies, client load must be carefully considered. Pharmacies with very high client flow may overburden staff and affect the quality of PEN service delivery, while those with very low client flow may not effectively reach the target population. Therefore, it is important to define an appropriate monthly client volume for pharmacies to be included in PEN service implementation, ensuring service quality and appropriate coverage.

## ii. Service hours

When selecting the pharmacy, opening hours should be given careful attention as they directly affect access to services. Public health facilities are generally open from 10 a.m. to 4 p.m., which may create challenges for client with diabetes who require fasting blood sugar tests early in the morning. Pharmacies that open in the early hours provide a more suitable and convenient option for such diagnostic services. Additionally, the total duration of daily operating hours is important, particularly for the urban poor, who often have irregular work schedules and limited flexibility during standard office hours. Pharmacies that remain open for longer hours increase accessibility, allow clients to seek services at convenient times, and improve the likelihood of consistent service use and follow-up.

## iii. Distribution/ Coverage

When assessing community coverage for pharmacy-based services, two key aspects need to be considered. First is the extent to which a pharmacy serves the urban poor population, including the size, characteristics, and geographic distribution of the community it reaches, as well as the accessibility of services for vulnerable and marginalized groups. Understanding whether the pharmacy's catchment area covers urban poor settlements is important to ensure that services are reaching the intended population. Second, it is important to assess the number and distribution of pharmacies operating in the given location, including the distance between each other. Mapping the distribution of pharmacies helps identify areas with adequate coverage and also the gaps or overlaps in service delivery. This helps to maximize the coverage of pharmacies and avoid duplication of services.

## iv. Engagement of Pharmacist

While selecting pharmacy, we also need to keep in mind that the qualified pharmacists stays in the pharmacy during opening hours as a fulltime staff. Since other concurrent engagements could affect the service delivery timings, it's important to ensure that pharmacist is available in the pharmacy during its fixed opening hours.

## 2. Health Facility Mapping and Assessment

Health Facility Mapping (HFM) is a systematic process to identify, verify, and document all public and private health facilities within a defined geographic area, while Health Facility Assessment (HFA) evaluates the services provided and the readiness of these facilities in terms of human resources, infrastructure, equipment, supplies, and service quality. Together, HFM and HFA generate accurate geospatial and service-related information on facility location, service availability, staffing, accessibility, and readiness, supporting evidence-based planning, resource allocation, health system strengthening, and monitoring of service coverage, including assessment of facility capacity to manage diabetes and hypertension.

Please refer to Health Facility Mapping and Assessment Tool used during our study at Pokhara Metropolitan City (PMC), in Annex I.

## 3. Social Mapping of Urban Poor

A social map is a participatory appraisal tool used to map the social structures, institutions and key landmarks of an area. This may include religious places, health facilities, traditional healing centers, community and social interaction spaces, markets, parks, police stations and public utility structures like water pumps, dumping grounds and drainage system and so on. Additionally, social mapping helps identify poor households settlement and to understand their social structures, vulnerabilities, access to services, and everyday living conditions thereby providing a broader picture of urban poverty.

To identify urban poor, we can use a participatory social mapping process. A similar process can be followed for other settlements with appropriate contextual adaptations. For instance, in our study in Pokhara Metropolitan City, we mapped the urban settlement in two phases. First, major locations within poor household concentration were identified using OpenStreetMap (OSM) through the consultation with key informants, including metropolitan city officials, local NGOs, community health workers and other stakeholders. This phase helped to broadly locate urban poor settlements and inform the selection of communities for detailed mapping. In the second phase, detailed social mapping was conducted within the selected communities. A diverse group of key informants including Female Community Health Volunteers (FCHVs), ward chairpersons and secretaries, village representatives, health facility in-charges and community members were engaged in this process. This process ensured that gender equity, social justice, and other intersecting factors were considered in the intervention. Prior to mapping, informed consent was obtained from the participants reassuring their voluntary participation and confidentiality.

Urban poor households were identified based on a locally agreed, community-defined understanding of poverty. Criteria used to define poor households included:

- Ability to meet basic needs
- Housing conditions
- Ability to afford health care during illness
- Source and stability of household income/occupation
- Lifestyle and healthcare seeking behavior

Following agreement on these criteria, participants collectively identified and marked poor households on the community map, using predefined legends. The maps were then reviewed and refined through group discussion, including reflections on changes in the number of poor households over time. Revisions were made to ensure the final maps accurately reflected the distribution and lived realities of the urban poor.

Please refer to the guideline for Social mapping and Transect walk applied in our study at PMC, in Annex II.

## 4. Preparation for training of Pharmacies

### **i. Formation of technical committee at the Health Division:**

A technical committee to facilitate PEN Implementation should be formed at the local level involving health division representative, PEN trainer and experts as relevant in local contexts. This committee reviews the PEN protocol implemented by the Government of Nepal and adapts it to local needs. The committee analyzes factors such as the local burden of NCDs, available resources, the impact of NCDs, and existing legal and policy frameworks. Based on this analysis, the PEN protocol is revised as needed. For example, in our study during the implementation of PEN in pharmacies, we prioritized only hypertension and diabetes. The committee is also responsible for providing overall guidance and technical oversight for the implementation of PEN services, including reviewing and endorsing health information leaflets for the NCD service seeking clients and flipchart calendar, a job-aid tool for health workers. The committee also ensures that all materials align with national standards, facilitate coordination among relevant health service providers, and supports quality assurance by applying supervision and monitoring tools throughout the PEN implementation process.

### **ii. Development of customized PEN protocol for pharmacies:**

A PEN protocol should be revised and adapted for use in pharmacy drawing on content related to diabetes and hypertension. The content used for customized PEN for pharmacies will include four major areas: i) screening of the clients, ii) advice to them iii) referral of the cases, and iv) recording and reporting of the client data. Once the customized PEN protocol is prepared, it must be reviewed and endorsed by the concerned authority. For instance, customized PEN was endorsed by the technical committee formed by the health division of PMC prior to its implementation in our study.

### **iii. Development of Brochures:**

A disease-specific brochure shall be developed for clients, with separate versions. Such brochures may include health promotion messages, key risk factors, common symptoms etc, in alignment with the Basic Health Service Guideline. Pharmacy personnel shall screen all clients aged 40 years and above and provide appropriate health information related to hypertension, diabetes, or both, based on the client's health condition. In addition to verbal counseling, pharmacy personnel shall distribute the brochures to clients to make them aware of the particular disease aiming to improve their lifestyle and health-seeking behavior.

# Brochure on Diabetes

## How can diabetes and its complications be prevented and controlled?

-  Maintain a healthy body weight for height
-  Stay physically active. Engage in at least 30 minutes of physical exercise daily.
-  Eat healthy foods that are locally available. A person should consume a variety of fruits and vegetables every day, at least 3 to 5 servings.
-  Do not use tobacco products and do not consume alcohol.
-  Properly manage mental stress
-  Pay attention for tingling, burning, numbness and wounds in the feet. Check your feet to ensure there are no cuts or wounds.
-  Regularly check up eyes. Diabetic patients are twice as likely to have eye problems as compared to other people.
-  Regularly check up and monitor the level of blood glucose and HbA1c
-  Regularly take medication prescribed by the healthcare professional

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## Diabetes

- Diabetes is a type of Non-communicable disease.
- There are different types of diabetes, in which type 2 diabetes are mostly seen in people.
- When diabetes occurs, the amount of sugar (glucose) in the blood is increased.
- This disease is caused by lack of insulin hormone produced by the human body. Diabetes occurs due to a deficiency in the production or utilization of insulin.



## Who is at high risk of having diabetes?

- Having a mother, father or sibling with type 2 diabetes increases the risk of developing diabetes.
- Risk of developing type 2 diabetes also increases with age, especially after 40 years of age.
- Obese people have a higher amount of fat, which causes the body's cells to gradually become resistant to insulin, thereby increasing the risk of diabetes.
- Lack of adequate physical activity makes it difficult to control body weight, thereby increasing the risk of diabetes.
- Consumption of foods that are high in calories, fat, sugar and low in fiber can lead to weight gain and increase the risk of diabetes.
- Having high blood pressure or high cholesterol level in the blood also increases the risk of diabetes in a person.
- Diseases of the pancreas increase the risk of developing diabetes.
- During pregnancy, women have a high risk of developing type 2 diabetes.

## What are the common symptoms of type 2 diabetes?

Diabetes can be suspected if a person has some of the following symptoms:

- Swelling of the pupil of the eye and blurred vision
- Feeling tired for no reason
- The person has to urinate more frequently than before
- Burning sensation while urinating
- Dry mouth
- Feeling more thirsty than usual
- Wounds that do not heal quickly, frequent infections of the skin, bladder or gums and itching around the external genitalia
- Weight loss even after eating according to your appetite
- Feeling more hungry and eating more foods than before
- Numbness or tingling in the hands and feet










## How can individuals with diabetes care for their feet?

- Check your feet regularly. Detect wounds, spots, boils, changes in color and swelling, nails growth.
- Use thick shoes, soft socks or slippers according to the size of the feet.
- Cover the wounds on the legs with a clean bandage.
- Clean the cuticles of the toes daily with soapy water. Do not use hot water.
- Dry the feet with a clean soft cloth including the toes.
- Keep the skin of the feet soft by using lotion or Vaseline, but do not use it on between the toes.
- Cut the ingrown nails straight so as not to affect too much inside the skin.
- Get your feet checked regularly by health workers.



## What are the complications of diabetes?

-  Heart attack (Cardiomyopathy)
-  Stroke
-  Chronic kidney disease
-  Protein excretion in the urine (Proteinuria)
-  Loss of vision (Retinopathy)
-  Nerves problem in hands and feet (Neuropathy)
-  Wound in foot (Diabetic Foot)



## Emergencies in Diabetes

### 1) Low Blood Sugar

**Symptoms:** Dizziness, sweating, blurred vision, thirst, hunger, body tremors, lack of concentration, rapid heartbeat, tingling, headache.

**Treatment:** - Give juice, chocolate, sweets, glucose, etc.  
- Give 1–2 teaspoons of sugar (if the person can swallow).

### 2) Severe drop in blood sugar

**Symptoms:** Unconsciousness

**Treatment:** Do not give food orally to an unconscious patient. Only give sweet foods by mouth once the patient is able to eat.  
- A hypoglycemic patient usually regains consciousness after sugar; if not, it may be the signal of another problem and requires immediate hospital referral.

3) If blood sugar levels rise excessively (>250 mg/dL or >13.9 mmol/L), visit the nearest hospital for testing.

# Brochure on Hypertension

## Prevention and treatment of high blood pressure:

Consume less than 5 grams of salt per person per day



Do not smoke and consume tobacco products and alcohol

Do regular physical exercise or yoga for at least 30 minutes daily with light sweating



Stay stress free

Lose excess body weight and maintain a healthy weight



Eat a healthy and balanced diet (eat more green vegetables and fruits)

Check blood pressure regularly



Consume less amount of red and high-fat meat

If you have high blood pressure, you should take medicine regularly without skipping on the advice of a healthcare professional and have regular physical examinations and blood pressure checked. Regardless of symptoms or not, blood pressure should be checked regularly otherwise high blood pressure can damage vital organs such as the brain, heart, and eyes and even lead to death.



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## HYPERTENSION

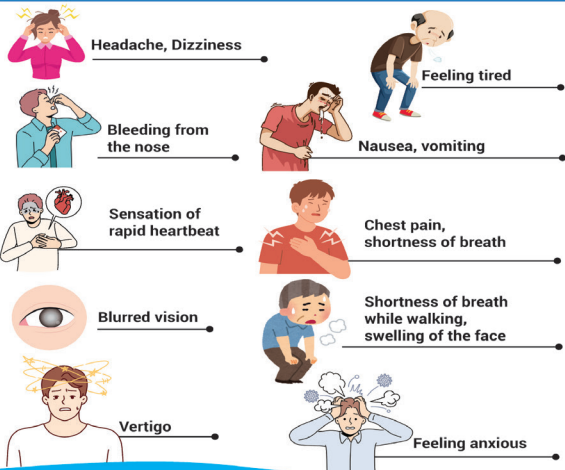


- Hypertension is a Non-communicable disease.
- Hypertension is the most common cardiovascular disease.
- High blood pressure refers to high pressure in the blood vessels that carry blood.
- Hypertension is a condition where systolic pressure is 140 mm Hg or higher and a diastolic pressure is 90 mm Hg or higher.

### Classification of Blood Pressure

<b>Normal blood pressure:</b> Systolic 120 mm Hg and/or diastolic 80 mm Hg or below	<b>Pre-hypertension:</b> Systolic 120-139 mm Hg and/or diastolic 80-89 mm Hg
<b>Hypertension Stage I:</b> Systolic >140-159 mm Hg and/or Diastolic >90-99 mm Hg	<b>Hypertension Stage II:</b> Systolic >160 mm Hg and/or diastolic >100 mm Hg

### Some major symptoms of High Blood Pressure



### Emergency situation in Hypertension

- Sometimes there may be pain in the chest, left arm, neck, and upper part of the abdomen.
- Patients with heart-related blood vessel disease may not feel any pain, but they may suddenly experience difficulty breathing, nausea, and may even lose consciousness.
- Usually such symptoms occurs when the patient performs vigorous activities such as walking or doing heavy work.
- If chest pain occurs even while resting, or if the pain persists despite taking adequate rest afterward, it may be a sign of a heart attack.

### Causes of High Blood Pressure

	<b>Smoking and consumption of tobacco products and alcohol</b>
	<b>Increasing age</b>
	<b>Obesity</b>
	<b>Unhealthy diet</b>
	<b>Physical inactivity</b>
	<b>Hereditary</b>
	<b>Stress</b>

#### iv. Development of Job Aid Tools:

Job-aid tools are simple and practical resources designed to help health care providers to perform their tasks accurately, consistently, and efficiently by offering quick guidance at the point of service, reducing reliance on memory. These tools are essential for the effective implementation of the PEN protocol, supporting service providers by providing step-by-step guidance on early identification, risk assessment, counseling, and medication management of noncommunicable diseases such as hypertension and diabetes in line with PEN protocol. The development of these tools requires following steps:

- Identify the areas and topics for which the tools are needed.
- Discuss in team and prepare outline of the tool.
- Based on the outline, develop the contents of the tool using standard protocol.
- Gather and develop images, infographics, table, flow chart as necessary to be included in the tool.
- Prepare the audience-friendly design using professional designing elements (images, tables, step-by-step guidance, or flowcharts).
- Pre-test the draft tools in a small number of pharmacies and revise them as needed.
- If an approval mechanism exists, coordinate with the concerned body for formal approval.
- Decide whether the tools will be produced in print or digital format and distribute them accordingly.
- During distribution or training, provide instructions on how to use the tools.
- Finally, assess the effectiveness of the tools and update them if necessary.

Concerned authorities such as health division of local government or any other stakeholders can assign job aid tool development to a group of internal or external experts based on the capacity and resources. During our study, job aid tools were developed through discussion among stakeholders. The tools were printed and distributed to the pharmacies and PHFs to support PEN implementation. Some examples of the job aid tools include the following.

- A flipbook with a calendar can be developed to provide health messages for pharmacy personnel and health care providers to use as reference material during client consultations. The usefulness of calendar may motivate them to showcase it on the table and the information highlighted in the calendar offers easy, repeated and accessible health information.

#### Flipbook Calendar



जेठ ४: विश्व उच्च रक्तचाप दिवस  
जेठ १०: विश्व धूम्रपान रहित दिवस

जेठ २०८१		MAY/JUNE 2024		ने. उ. १५२०		
आइतबार Sunday	सोमबार Monday	मंगलबार Tuesday	बुधबार Wednesday	बिहीबार Thursday	शुक्रबार Friday	शनिबार Saturday
		१	२	३	४	५
६	७	८	९	१०	११	१२
१३	१४	१५	१६	१७	१८	१९
२०	२१	२२	२३	२४	२५	२६
२७	२८	२९	३०	३१		
१	२	३	४	५	६	७
८	९	१०	११	१२	१३	१४

धूम्रपान तथा सुर्तीजन्य पदार्थ त्यागी र निरोगी बनौं ।

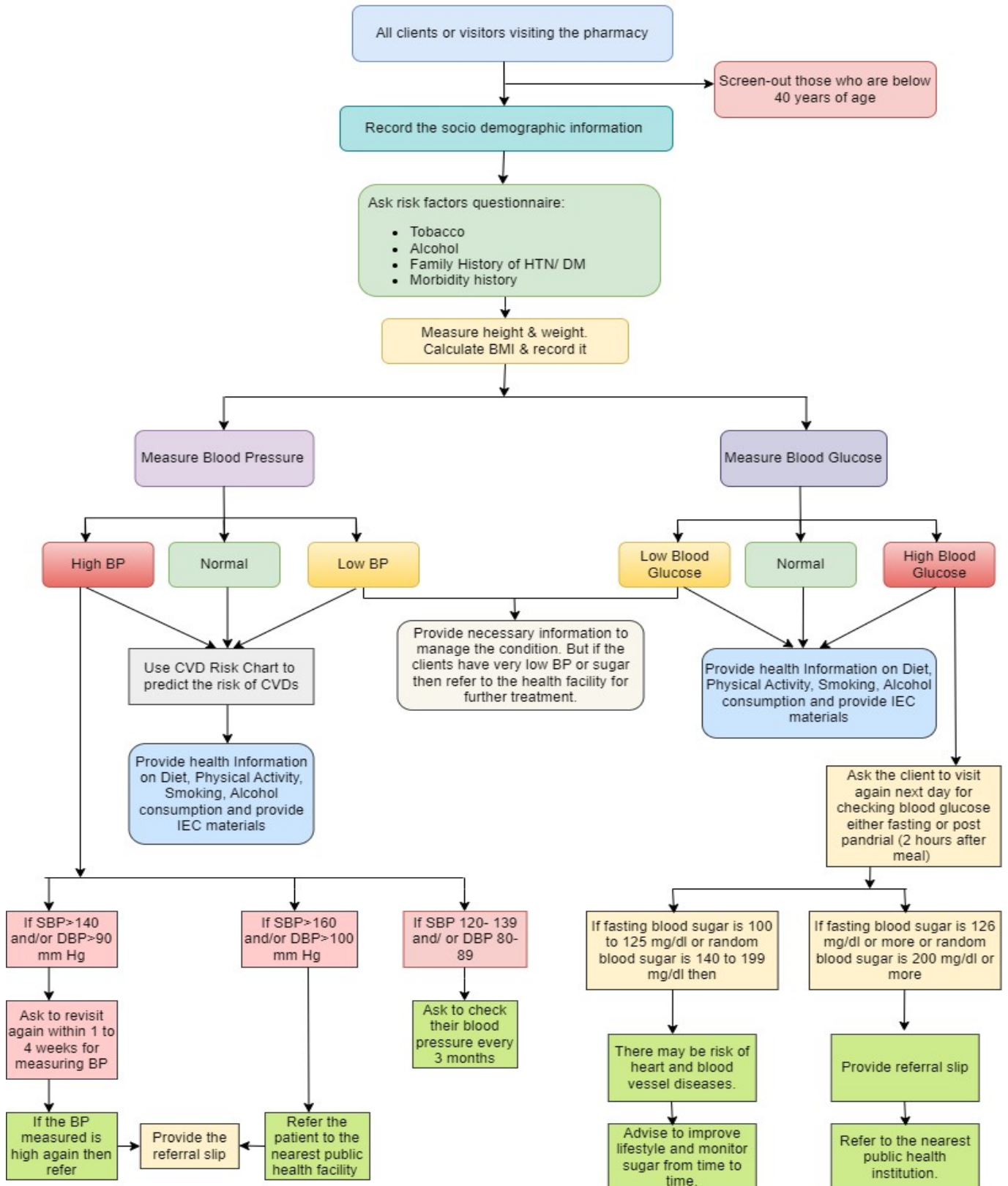


#### कस्तो अवस्थामा मधुमेह रोग लाग्ने उच्च जोखिम हुन्छ ?

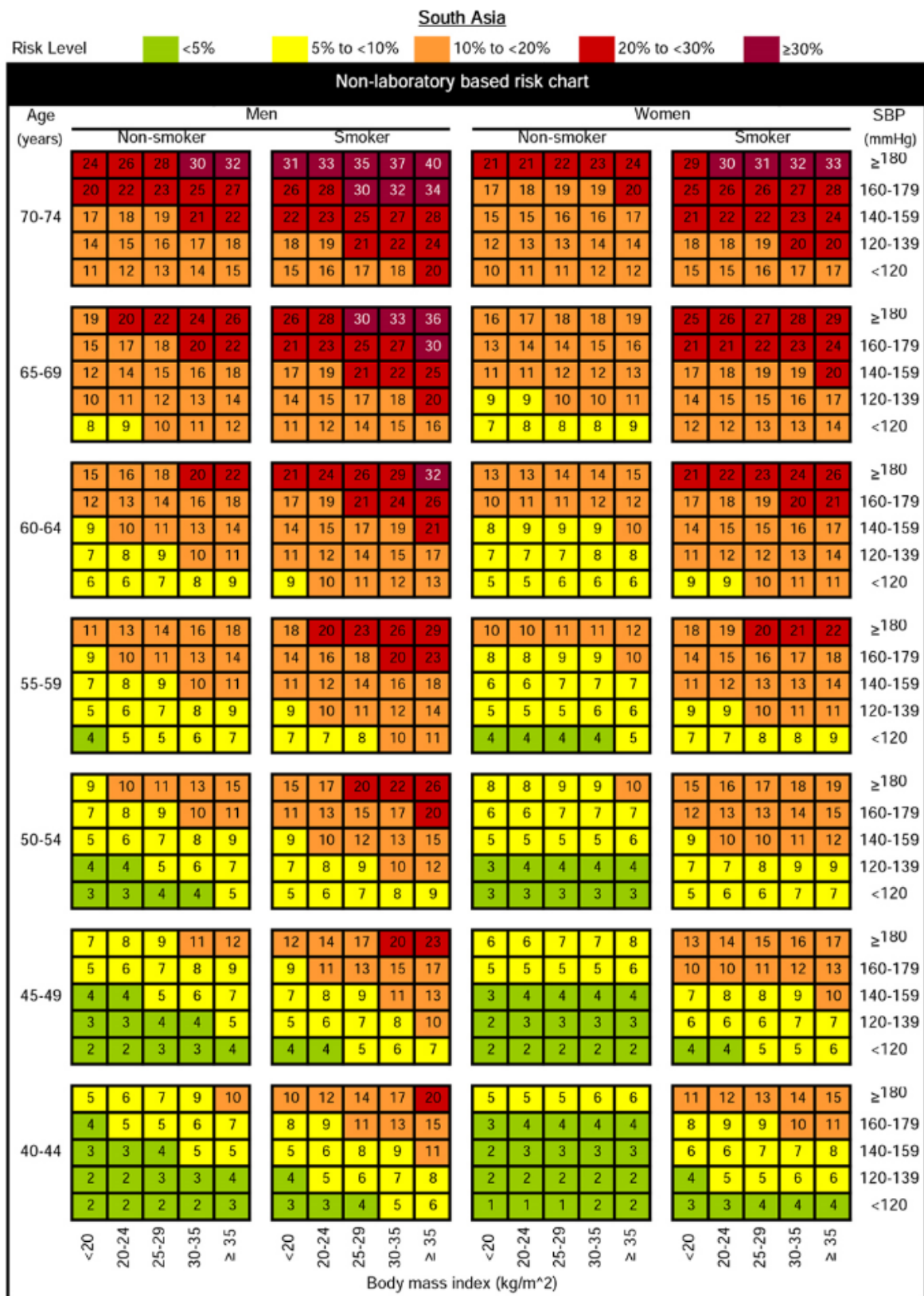
- ▶ उमेर बढ्दै जाँदा, विशेष गरी ४५ वर्ष पुगेपछि
- ▶ आमा, बुबा वा सहोदरमा टाईप १ मधुमेह रोग लागेको छ भने
- ▶ अत्यधिक शारीरिक क्रियाकलापले गर्दा
- ▶ अत्यधिक चर्को खानेपानी जस्तै च्याउलगायत धेरै भएको, चिल्लो, चिनीयुक्त र कम रेशा (Fiber) युक्त खानेपानी
- ▶ धूम्रपान तथा सुर्तीजन्य पदार्थहरू र मदिरा सेवन गर्नाले
- ▶ मोटापनाले व्यक्तिलाई भएको बढी बोसोका कारण शरीरका कोषहरू इन्सुलिन प्रतिरोधक बन्दै जान्छ
- ▶ उच्च रक्तचाप, मलिनकाय वा रगतमा उच्च चिल्लोको मात्रा (High Cholesterol Level) हुनाले मधुमेह हुने सम्भावना बढी हुन्छ
- ▶ प्यान्क्रियाज ग्रन्थीको रोग लागेमा यसले राम्रोसँग काम गर्दैन वा शरीरले इन्सुलिन प्रयोग गर्न सक्दैन जसले रगतमा चिनीको मात्रा बढ्छ र मधुमेहको उच्च जोखिम हुनसक्छ
- ▶ कुनै कुनै गर्भवतीहरूमा गर्भावस्थाले हार्मोनसम्बन्धी परिवर्तन ल्याउँछ र तील बढाउँछ, जसले इन्सुलिनलाई कम प्रभावकारी बनाउने हुदाँ मधुमेहको उच्च जोखिम हुन्छ

- b. An algorithm chart with step-by-step guide based on the PEN protocol should be provided to assist pharmacy personnel in the quick and accurate management of NCDs. This algorithm provides procedure of NCD management in pictorial format at glimpse. Please refer to the algorithm developed based on the PEN protocol during our study in PMC, below.

### Algorithm for Screening of Clients Visiting Pharmacy



c. A CVD risk chart is another job aid tool essential for health care providers enabling them to rapidly assess and categorize clients' future risk of developing cardiovascular diseases, ensure timely counseling and perform referral when needed. We can adopt the WHO/ISH non-laboratory-based CVD (cardiovascular disease) risk chart for South Asia, used to estimate a person's 10-year risk of developing a major cardiovascular event without needing blood tests.



## v. Referral slips:

A referral slip is a paper used to send a client to a higher-level health facility, providing basic details, screening findings, and the reason for sending there so that the next provider can follow and continue care smoothly. For the referral of the clients, referral slip should be provided to the pharmacy which will contain three slips (2 of which are carbon copies) per referred client. One slip will be provided to the client, another is kept by the pharmacies and the last one is reported to public health facilities for the documentation. This will help to map the key referral sites nearby the PEN service implementation clusters and information will be displayed on the referral slip.

Please refer to the sample of referral slips developed and used in our study.

प्रेषण पूजा				सेवा दिएको विवरण तथा फिर्ती जानकारी			
पूजा नं:				मिती	२ ० ८		
सेवाग्राहीको नाम थर:				उमेर			
	Systolic	Diastolic		लिंग	महिला	पुरुष	अन्य
पहिलो प्रेसर नाप			mmHg	ग्लुकोज मात्रा	mg/dl		
दोस्रो प्रेसर नाप			mmHg	किसिम	<input type="checkbox"/> Random Sugar <input type="checkbox"/> Fasting Sugar <input type="checkbox"/> Postprandial (PP)		
पठाईएको स्वास्थ्य संस्थाको नाम				स्वास्थ्य संस्थाको सम्पर्क नं			
यस संस्थामा सेवा लिन आउनुभएको उपरोक्त विवरण भएका व्यक्तिलाई आवश्यक सेवाका लागि त्यहाँ पठाईएको छ । सम्पर्क गर्न आएपछि फिर्ती जानकारी पठाई दिन हुन अनुरोध छ ।							
प्रेषण गर्ने संस्थाको नाम:				सम्पर्क नं:			
				फिर्ती जानकारी दिनेको नाम:			
				पद:			
				संस्थाको नाम:			

## vi. Procurement of other Logistics:

All pharmacies engaged in PEN service delivery should be provided with the necessary equipment, including weighing machines, height measurement tools, blood pressure monitors, and glucometers, to ensure they can deliver quality care. To support information linkage and evidence-based decision-making, each pharmacy should be provided with a record register based on the NCD register (HMIS 5.9) developed by Nepal government, capturing client name, age, gender, ethnicity, address, investigations, diagnosis, services provided, improvement status, and referred health facility. An orientation session should be delivered to the pharmacists on record register to enable them to use the recording tool and practice data entry on day to day basis.

## 5. Enrolment of pharmacies, Public Health Facilities and Referral hospital

Pharmacies and public health facilities should be enrolled in the intervention based on the mapping and assessment exercise mentioned above. Although the customized PEN primarily targets pharmacies, since public health facilities are already mandated by the government to implement PEN, it is essential to engage them as they also serve as referral facilities. The criteria of selecting pharmacies, public health facilities and referral hospital are described below:

### **i. Enrolment criteria for pharmacy:**

- Existing provision of NCD care services in the pharmacy.
- The pharmacy registered at Nepal government entity.
- Availability of paramedics in the pharmacy.
- Willingness of pharmacy owners to participate in the study.
- Opening and service delivery timing
- The majority of the service receivers from slum/unmanaged settlements.

### **ii. Enrolment criteria for PHF:**

- Availability of health care providers for NCD care.
- The majority of the service receivers from slum/unmanaged settlements.
- The catchment area of the health facilities has slums, unmanaged settlements.
- The public health facilities located in a considerable distance from another referral hospital and urban center.
- Selected public health facilities are a single cluster of basic hospital.

### **iii. Enrolment criteria for Referral Hospital:**

- A basic service hospital for the selected catchment area.
- The catchment area of the hospital has more slums/ unmanaged settlements.

## 6. Training of Pharmacies

Pharmacy personnel from the selected pharmacies should be trained in the customized PEN protocol. The training should cover screening, counseling, prevention, medication management, clients follow-up, and referral related to NCDs. Training under the PEN protocol helps pharmacy personnel understand proper service delivery procedures, builds confidence, enhance skills, and clarifies responsibilities.

To conduct the training, a plan should be prepared based on available resources, including participants, trainers, venues, refreshments, training materials, printed protocol booklets, tools mentioned earlier, and other support materials. The duration of the training can be determined based on participants' education and experience which may normally range from 2 to 3 days.

## 7. Training requirement for PHF and referral hospital on PEN package

### i. Training on PEN

Since public health facilities are serving as a referral center for the clients referred by the pharmacies, it is crucial to ensure that public health facilities are well-equipped to deliver PEN to the clients. Training on PEN Protocol should be provided to the health workers of all public health facilities. The training sessions should include proper use of PEN guidelines, step-by-step assessment protocols, and decision-making algorithms. By reinforcing their understanding of the guidelines, these trainings help health workers feel more confident and skilled in delivering quality PEN services as part of their routine work.

### ii. Procurement of supplies:

- **Job Aid Tool:** Facilities should be provided with a flipbook calendar to ensure health messages are delivered consistently across all service points.
- **Supply of Recording and Reporting Registers:** Health workers should receive special registers (HMIS 5.9) designed according to PEN guidelines. These registers will support accurate and consistent documentation of client information and treatment outcomes.
- **CVD risk chart:** CVD risk charts should also be supplied to the PHF to enable providers to quickly assess and categorize clients' future risk of developing cardiovascular diseases, ensuring timely counseling and referral for the needful cases. We can adopt the WHO/ISH non-laboratory-based CVD (cardiovascular disease) risk chart for South Asia as mentioned earlier.
- **Brochure:** A disease-specific brochure developed for clients, with separate versions for diabetes and hypertension, incorporating health promotion messages, key risk factors, and common symptoms, in alignment with the Basic Health Service Guideline should be provided to PHF.
- **Height and Weighing Scale:** We need to make sure that the enrolled health facilities have a functioning height and weight scale and blood pressure machine.

## 8. Implementation of PEN services

### 8.1 Responsibilities of Selected Pharmacies on NCDs service delivery

Pharmacies which are an integral part of the health system, have the responsibility to provide safe, quality, and timely services to the community. These pharmacies must be registered and licensed as per government standards and ensure the presence of competent and trained pharmacists.

Their responsibilities include:

- Recording all details of service users in the provided register.
- Measuring weight, height, blood pressure, and conducting diabetes testing properly.
- Using flipbook calendar and algorithm.
- Assessing risks, asking relevant questions, and identifying the client's condition.
- Providing clear instructions on medication use, including dosage, timing, and method of intake, when medicines are dispensed.
- Offering proper counseling on healthy diets and physical activity.
- Counseling individuals who smoke or consume alcohol on cessation.
- Determining whether the client is adhering to treatment and monitoring their health condition.
- Referring clients using the provided referral slips or appropriate methods when needed.
- Regularly submitting records to assigned public health facilities.

Additionally, pharmacies must adhere to all agreements made at the start of the program and follow directives from the concerned authorities. They should also actively contribute to national health programs, such as NCD control, emergency response coordination, and public health promotion.

### 8.2 Responsibilities of PHF on NCDs service delivery

The selected primary health care facilities play a central role in ensuring the effective delivery of services for diabetes and hypertension within the community. These facilities are responsible for maintaining accurate and complete records of all individuals who seek services related to these conditions, using the HMIS 5.9 record register.

To strengthen their capacity, training on the WHO PEN should be conducted for all health care providers working in these facilities. Through these activities, the public health facilities ensure systematic identification, assessment, counseling, treatment, follow-up, and referral of clients with diabetes and hypertension, contributing to improved NCD care at the primary care level.

### 8.3 Supportive Supervision

#### 8.3.1 Formation of a supportive supervision team and assignment of responsibilities

Since the implementation of PEN in pharmacies is a new initiative, pharmacies require guidance and support during its execution. For this purpose, the Health Division of the local government should form a Supportive Supervision Team for pharmacies implementing PEN and define its responsibilities. This team will periodically visit pharmacies and provide advice on resolving challenges encountered during PEN implementation and provide actionable feedback. Additionally, the supervision team helps ensure effective program implementation, quality service delivery, and identify areas for improvement.

## Formation of the Supportive Supervision Team

Supportive supervision team is formed under the leadership of the local authority to provide technical facilitation and capacity building for pharmacies. The team may include the following members:

- **Chief of Health Division** – Coordinator
- **Public Health Officer** – Program Supervisor
- **PEN Trainer** – Technical Supervisor
- **Representative from the Pharmacy Association** (if possible)
- **Representative from the local health facility**

### 8.3.2 Tasks for Supportive Supervision Visit

Member	Responsibilities
<b>Chief of Health Division</b>	<ul style="list-style-type: none"><li>- Lead and coordinate the team</li><li>- Include activities in policy and budget planning</li><li>- Coordinate with relevant stakeholders</li></ul>
<b>Public Health Officer / Supervisor</b>	<ul style="list-style-type: none"><li>- Plan and implement regular monitoring of pharmacies</li><li>- Present reports to stakeholders</li><li>- Identify problems and recommend improvements</li><li>- Collect data on field-level activities and monitor service utilization</li></ul>
<b>PEN Trainer</b>	<ul style="list-style-type: none"><li>- Provide technical guidance for PEN implementation</li><li>- Monitor client screening processes and recommend improvements</li></ul>
<b>Representative from Health Facility</b>	<ul style="list-style-type: none"><li>- Strengthen collaboration and referral systems with nearby pharmacies</li><li>- Collect reports from pharmacies and analyze data</li><li>- Provide technical coordination with pharmacies</li></ul>
<b>Pharmacy Association Representative (if available)</b>	<ul style="list-style-type: none"><li>- Maintain ongoing dialogue with private pharmacy operators</li><li>- Support training and supervision activities</li></ul>

After implementing the PEN protocol in pharmacies, the main tasks to be performed during supportive supervision are as follows:

#### 8.3.2.1 Monitoring and Evaluation of Service Quality:

- Check whether pharmacies are providing services according to the PEN protocol.
- Evaluate whether screening and recording for blood pressure, diabetes, and other risk conditions are conducted correctly.
- Ensure service flow adheres to standards using checklists.

#### 8.3.2.2 Technical Facilitation and Guidance:

- Provide pharmacy operators and staff with necessary technical advice and support on the PEN protocol.
- Suggest immediate measures to address any issues observed in service delivery.

- Continuously support skills enhancement of pharmacy staff.

#### **8.3.2.3 Monitoring of Referral Systems:**

- Ensure that identified clients are referred to appropriate health facilities.
- Monitor the use of referral forms, develop feedback systems, and track referrals.

#### **8.3.2.4 Review of Data and Reports:**

- Check the records, reporting formats, and online/paper submissions used by pharmacies.
- Analyze collected data and provide advice to correct any errors.

#### **8.3.2.5 Monitoring Logistics:**

- Check the availability and condition of measuring instruments (e.g., BP machines, glucometers, strips, etc.).
- Recommend immediate replacement if materials are insufficient or not functioning.

#### **8.3.2.6 Active Engagement and Relationship Building:**

- Build trust-based and transparent working relationships with pharmacy operators.
- Encourage private sector participation and integration with the health system.

#### **8.3.2.7 Follow-up and Improvement Planning:**

- Prepare a follow-up schedule after each supervision visit.
- Develop corrective action plans to address identified problems and implement them.

### **8.4 Review Meetings**

Periodic review meetings are necessary to evaluate the progress and effectiveness of PEN implementation in pharmacies and public health facilities. These meetings should be attended by pharmacy personnel involved in delivering PEN, representatives from the Health Division, pharmacy staff, local health facilities, and partner organizations.

The meetings should discuss:

- Presentation on quarterly progress, focusing on the total number of clients served, health counseling provided, and cases recorded and referred.
- Experience in implementing PEN for hypertension, diabetes, and other chronic diseases.
- Early identification of diseases, interactions with clients, and positive experiences during service delivery.
- Areas where improvements are needed and the effectiveness of Job Aid tools.
- Supportive supervision findings, monitoring outcomes, and steps to be taken in the future.

Such meetings help ensure PEN implementation is smooth with regular supply of materials, improve reporting, and plan future training activities.

## 9. Recording and Reporting

Recording and reporting from pharmacies is essential for the effective implementation, monitoring, and evaluation of the PEN protocol. This process helps document services provided, ensure quality, and support overall public health improvement.

### 9.1.1 Reporting Process:

The method of report collection may vary depending on the local context. For example:

- Specific contracted personnel may collect reports from pharmacies.
- Local health facilities or the Health Division may collect reports during monitoring visits.
- Pharmacies may be given separate accounts and passwords to enter reports online.

In PMC, health division recommended that local health facilities nearby the pharmacies collect data and enter it online, as pharmacies may not be accustomed to reporting or may face additional financial and training burdens. Local authorities may adopt other methods depending on available resources and local needs.

#### ▪ **Timeline and Schedule:**

- Pharmacies prepare monthly reports.
- Local health facilities collect reports at the beginning of each month or on scheduled dates.

#### ▪ **Reporting Methods:**

- **Paper forms:** Pharmacies fill out service forms and submit them to the health facility.
- **Digital systems:** Pharmacies submit reports online, and health facilities monitor them.

#### ▪ **Options for Data Collection:**

- Pharmacies submit reports themselves.
- Health facilities or supervision teams collect reports through field visits.
- Local health facilities collect reports at a scheduled time (monthly).

### 9.1.2 Reporting Content (according to government-approved forms):

- Details of service users as per HMIS-approved forms
- Status of equipment/materials used in the pharmacy
- Challenges or suggestions

### 9.1.3 Report Analysis and Use:

- Local health facilities review and analyze reports.
- Monthly reports are prepared based on service status, issues, and achievements.
- Analyzed reports are submitted to the Health Division.

### 9.1.4 Assignment of Responsibilities:

Task	Responsible Entity
Report collection	Local health facility
Review and analysis	Head of the health facility
Submission to Health Division / online entry	Local health facility
Providing recommendations	Supervision team and Health Division

# Annex I: Health Facility Mapping and Assessment Tool

## Section 1: Health Facility (HF) Identification

This section will be asked to the Health Facility In-charge/Manager of all the public and private health facilities; if not available Deputy In-Charge/Manager/Matron can be interviewed.

### Questionnaire:

Code	Questions	Options
date	Interview date	.....
name	Name of the interviewer	.....
q04	Name of the health facility	.....
q103	Ward number	.....
M102	Type of HF	.....
M102_1	Operating nature of the facility	1. Public 2. Non-public
M102_2	Is this health facility/institution registered?	1. Yes 2. No
M102_3	Where is it registered?	1. Ministry of Health and Population 2. Department of Health Services 3. Department of Drug Administration 4. National Public Health Laboratory 5. Provincial Health Directorate (PHD) 6. Pokhara Metropolitan City (PMC) 7. None of the above
M102_4	Has the registration been renewed?	1. Yes 2. No
hfid display	Health facility ID/ Identifier	.....
M103	Are you the health facility/hospital in-charge?	1. Yes 2. No
M103_1	Designation of respondent	1. Hospital Manager 2. Medical Officer 3. Senior Auxiliary Health Worker 4. Public Health Inspector 5. Matron 6. Nurse 7. Health Assistant 8. Auxiliary Health Worker 9. Senior Auxiliary Health Worker 10. Auxiliary Nurse Midwife 11. Senior Auxiliary Nurse Midwife 12. Pharmacist 13. Others (Specify)
<b>M106</b>	<b>Types of Health Care Services</b>	<b>Yes</b> <b>No</b>
M106_9	General Health Services	
M106_1	Neonatal and childhood illness	
M106_2	ANC	
M106_3	PNC	
M106_4	Delivery	
M106_5	Cesarean delivery	
M106_11	Family planning	

M106_6	Family planning (LARC)		
M106_7	Family planning (Surgical)		
M106_8	Child Immunization		
M106_10	In-patient		
M106_15	ENT service		
M106_12	Eye health		
M106_13	Dental		
M106_14	NCD care services		
M106_16	General surgery		
106_18	Minor Surgery		
M106_17	Drug dispensing		
M106_19	DOTS		
M106_20	Medical Abortion		
	Surgical Abortion		
M106_21	ART Clinic		
M106_22	Lab Services		
M106_23	Mental Health Services		
M106_24	Nutrition Services		
M106_25	Hemodialysis		
	Dermatology Clinic		
M106_26	Orthopedic Clinic		
M106_27	Gynecology Clinic		
M106_oth_name	Name of the other healthservice provided	.....	
M106_oth_days	Number of days per week the mentioned health service is provided	.....	

### Questions related to NCD Services

Code	Questions	Options
M107	Type of NCD services delivered	<ol style="list-style-type: none"> <li>1. Any services related to Diabetes</li> <li>2. Any services related to CVDs</li> <li>3. Any services related to CKD</li> <li>4. Any services related to COPD</li> <li>5. Any services related to mental health</li> <li>6. Any services related to cancer</li> </ol>

## Questions related to PMC Linkages

Code	Questions	Options
M108	Does this facility have any form of linkage with the Pokhara Metropolitan City (PMC)?  Probe: Like participation in the training/capacity building, data reporting, participation in review meeting	1. Yes 2. No
M108_1	If yes, what are the linkages?	1. Participation in the training 2. Participation in the review meeting 3. Data reporting 4. Health program related meeting 5. Partnership/ coordination for service delivery 6. Monitoring and supervision 7. Others (Specify)
M109	How interested are you to develop or strengthen the partnership with PMC? ( <i>Here the answer should be focused not on a personal level but need to probe from an organizational perspective</i> )	1. Highly Interested 2. Interested 3. Don't know/ can't say 4. Not interested 5. Not interested at all

## Questions related to Infrastructure:

Code	Questions	Options
Infrastructure		
G105	Does this facility have 24 hour running water supply?	1. Yes 2. No
G106	Does this facility have a 24 hour power supply?	1. Yes 2. No
G106_2	Does this facility have a backup in case of a power outage?	1. Yes 2. No
G106_1	Does this facility have a functioning Ice Lining Refrigerator (ILR) to store vaccine vials?	1. Yes 2. No
G107	How many rooms in total does this facility have?	.....
G108	Currently, how many rooms deliver the health-care services ?	.....
G109.1	Do all the rooms have visual and auditory privacy?	1. Auditory and visual privacy in all rooms (100%) 2. Audio and visual in most rooms (more than 50%) 3. Audio and visual in few rooms (less than 50%) 4. No auditory and visual privacy
G110	Do all the service rooms have running water?	1. Yes, in all rooms (100%) 2. Yes, in most of the rooms (more than 50%) 3. Yes, in few rooms (less than 50%) 4. No
G111	Do all the service rooms have handwashing soap or liquid?	1. Yes, in all rooms (100%) 2. Yes, in most of the rooms (more than 50%) 3. Yes, in few rooms (less than 50%) 4. No
G112	Do all the service rooms have alcohol based hand rub?	1. Yes, in all rooms (100%) 2. Yes, in most of the rooms (more than 50%) 3. Yes, in few rooms (less than 50%) 4. No

GIP1	Do all the service rooms have color coded dustbins for waste disposal in every room?	<ol style="list-style-type: none"> <li>1. Yes, in all rooms (100%)</li> <li>2. Yes, in most of the rooms (more than 50%)</li> <li>3. Yes, in few rooms (less than 50%)</li> <li>4. No</li> </ol>
GIP2	Do all the service rooms have a separate safety box/sharps container for disposal of sharp instruments like lancet needles or syringes?	<ol style="list-style-type: none"> <li>1. Yes, in all rooms (100%)</li> <li>2. Yes, in most of the rooms (more than 50%)</li> <li>3. Yes, in few rooms (less than 50%)</li> <li>4. No</li> </ol>
G112_1	Does this facility have a computer with internet service?	<ol style="list-style-type: none"> <li>1. Yes, both available</li> <li>2. Yes, only computer</li> <li>3. Yes, computer available but internet access from other</li> <li>4. Yes, internet available but no computer</li> <li>5. No</li> </ol>
G112_2	Does this facility have an ambulance service?	<ol style="list-style-type: none"> <li>1. Yes, own</li> <li>2. Yes, access from others</li> <li>3. No</li> </ol>

### Questions related to Quality Assurance:

Code	Questions	Options
<b>Quality Assurance</b>		
Q101	Does this facility routinely carry out quality assurance activities for any service areas?  By this I mean some formal review system or comparison of work or systems to a standard?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
Q102	Are such activities implemented throughout the facility or only in specific services?	<ol style="list-style-type: none"> <li>1. Throughout facility</li> <li>2. Only specific services</li> </ol>
Q103	Does this facility have a quality assurance committee?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
Q104	When was the most recent time the quality assurance committee met?	<ol style="list-style-type: none"> <li>1. Within past 1 month</li> <li>2. 2-3 months ago</li> <li>3. 4-6 months ago</li> <li>4. More than 6 months ago</li> <li>5. Don't know</li> </ol>
Q105	Is there any documentation that shows quality assurance activities being done?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>3. No</li> </ol>
q105_1	IF YES, ASK: May I see the documentation?	If "yes", observe the documentation. If possible, take a picture of the document.

### Section 2: General Information

This section deals with the basic information of health facilities regarding opening and closing time, infrastructure, functioning of management committees and how quality assurance is ensured.

Code	Questions	Options
G101	What is the usual opening time of this facility for delivering the health care services?	.....
G102	What is the usual closing time of this facility for delivering the health care services?	.....
G103	Does this facility offer out-reach clinic services? (see the definition below)	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
G103_1	How many outreach clinics are organized per month?	.....

G104	Which type of the population are intended to reach via out-reach clinics? Multiple response	<ol style="list-style-type: none"> <li>1. Dalit/ Janajati</li> <li>2. Female</li> <li>3. Children</li> <li>4. Slum</li> <li>5. Elderly population</li> <li>6. Poor</li> <li>7. People with disability</li> <li>8. Others (Specify)</li> </ol>
S213	Is there any provision of free treatment to patients?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
S213_1	What type of population groups are provided with free treatment? Multiple response	<ol style="list-style-type: none"> <li>1. All</li> <li>2. Dalit/ Janajati</li> <li>3. Slum</li> <li>4. Poor</li> <li>5. People with different ability</li> <li>6. Pregnant women</li> <li>7. Geriatric Population</li> <li>8. Others (Specify)</li> </ol>
S213_2	Is there any provision of discount to patients?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
	If yes, please specify the population type, discount scheme and specific terms	<p>.....</p> <p>Note: Please write the discount percentage and its service kind. Forexample: 10% discount (Medicine), 20% (Lab)</p>

### Section 3: Human Resources

This section comprises the identification of the number of staffs serving the health facility. Further, to document if the present staff are equipped with the Package of Essential Non-Communicable Disease (PEN) training and deliver Non-Communicable disease (NCD) related services in this health facility.

#### Questions related to Human Resource:

Code	Questions	Total Number	Guidance
H100	Total number of staff in the facility		Ask the respondent about the total number of staffs within the facility. Make sure the number provided is accurate and enter it correctly. Check the records to verify if possible.
	How many staff members are working in each of the following designation in this facility?	<b>Male</b>	<b>Female</b>
	Hospital In-charge/ Director (Male)		
	Pathologist		
	Anesthesiologist		
	Dermatologist		
	ENT Surgeon		
	Gynecologist		
	Pediatrician		
	Physician (General)		
	Diabetic specialist		
	Cardiovascular specialist		

Nephrologist		
Psychiatrist		
Other specialists		
Medical Officer		
Surgeon		
Dental Surgeon		
Radiologist		
Microbiologist		
Hemato/bio-chemist (Lab technician)		
Microbiology (Lab technician)		
Resident doctors		
Intern doctors		
Lab Assistant		
Radiographer		
Matron		
Staff Nurse		
HA		
Microbiology (Lab technician)		
Resident doctors		
Intern doctors		
Lab Assistant		
Radiographer		
Matron		
Staff Nurse		
AHW		
Sr. AHW		
ANM		
Sr. ANM		
Medical Record Officer		
Accounting Staff		
Administrative Staff (including store)		
Office Assistant/helper/Ward boy		
Housekeeping (Cleaning, Mopping)		
Receptionist		

	Pharmacist with other background inparamedics		
	Pharmacist		
	Other staff		

#### Section 4: NCD Services

This section comprises questions to find out if the health facility provides NCD services. Particularly focused on diabetes and CVD. Ensure this section is responded to by the NCD care provider. Select the respondent from the HRlist you just filled in H101.

#### Questions related to Diabetes

Diabetes		
S101_1	In your current position, and as a part of your work for this facility, do you personally diagnose and/or manage diabetes?	<ol style="list-style-type: none"> <li>1. Yes, provisional diagnosis only</li> <li>2. Yes, definitive diagnosis only</li> <li>3. Yes, definitive diagnosis and treatment</li> <li>4. No</li> </ol>
S101_2	Have you received any in-service training, training updates or refresher training on the diagnosis and/or management of diabetes?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
S101_3	Have you received training on implementation of PEN package (NCDs related)?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
S101_4	How long ago did you receive the training on implementation of PEN package(NCDs related)?	<ol style="list-style-type: none"> <li>1. Within 1 year</li> <li>2. Within 1-2 years</li> <li>3. More than 2 years ago</li> <li>4. Don't remember</li> </ol>
S102	Do you have any guidelines (Like PEN handbook) for the diagnosis and management of diabetes available here?	<ol style="list-style-type: none"> <li>1. Yes, observed</li> <li>2. Yes, not observed</li> <li>3. No</li> <li>4. Don't know</li> </ol>
S103	What do you do for the diabetescases that cannot be managed at this facility?	<ol style="list-style-type: none"> <li>1. Send to another health facility with referral slip</li> <li>2. Send to another health facility without referral slip</li> <li>3. Turn away</li> <li>4. Not received such cases yet</li> <li>5. Other (Specify)</li> </ol>
R103	Which facility do you send the patients to? Please specify all.	<ol style="list-style-type: none"> <li>1. Government hospital</li> <li>2. PHCC</li> <li>3. HP</li> <li>4. Ayurvedic facility</li> <li>5. Homeopathy/ Unani</li> <li>6. Private hospital</li> <li>7. Medical college/ teaching hospital</li> <li>8. Mission/ NGO hospital/ community hospital</li> <li>9. Others (Specify)</li> </ol>
R104db	How many diabetes cases were sent/referred in last three months in there?	.....
R106db	How much time does it require to travel there? (with available transport means)	.....
S103_2	On an average, how frequently do you schedule the follow-up of a diabetic patient?	<ol style="list-style-type: none"> <li>1. Daily</li> <li>2. Weekly</li> <li>3. Fortnightly</li> <li>4. Monthly</li> <li>5. Every 3 months</li> <li>6. Every 6 months</li> <li>7. Do not call for follow up</li> </ol>

S103_3	How frequently do you suggest diabetic patient to check their blood glucose at the facility?	<ol style="list-style-type: none"> <li>1. Daily</li> <li>2. Weekly</li> <li>3. Fortnightly</li> <li>4. Monthly</li> <li>5. Every 3 months</li> <li>6. Every 6 months</li> <li>7. Do not suggest for blood test</li> </ol>
S103_4	What are the common diagnostic tests that you prescribe for the diabetes patient?	<ol style="list-style-type: none"> <li>1. Random Blood Glucose</li> <li>2. Fasting blood glucose</li> <li>3. Post Prandial (PP)</li> <li>4. HbA1C</li> <li>5. Lipid profile</li> <li>6. Others (Specify)</li> </ol>
S103_5	What is the most commonly prescribed first line drug that you prescribe for diabetes patients?	.....
S103_6	On average, how much time is required for dealing with the new patient?	<ol style="list-style-type: none"> <li>1. Less than 15 minutes</li> <li>2. 15- 30 minutes</li> <li>3. 30-60 minutes</li> <li>4. More than an hour</li> </ol>
S104_6	On average, how much time is required for dealing with the follow-up patient?	<ol style="list-style-type: none"> <li>1. Less than 15 minutes</li> <li>2. 15- 30 minutes</li> <li>3. 30-60 minutes</li> <li>4. More than an hour</li> <li>5. Do not call for follow up</li> </ol>
DBIP1	Does the diabetes service delivery room where you usually provide service have color coded dustbins for waste disposal?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
DBIP2	Does the diabetes service delivery room where you usually have a separate safety box/sharps container for disposal of sharp instruments like lancet needles or syringes?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
DBIP3	Do you practice sanitizing your hands before and after touching each patient?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
DPIP4	Do you practice sanitizing the stethoscope before and after examining each patient?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
S107	Do you offer counseling services for diabetes?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
S108	As part of diabetes care services, what areas do you give advice/counseling to?	<ol style="list-style-type: none"> <li>1. Food habit</li> <li>2. Tobacco</li> <li>3. Alcohol</li> <li>4. Physical activity</li> <li>5. Others (Specify)</li> </ol>
S112	What is the registration charge for the patient?	.....
S112	What are the charges for follow-up visits?	<ol style="list-style-type: none"> <li>1. No charge within first week and same charge as consultation afterwards</li> <li>2. No charge up to 2<sup>nd</sup> week and same charge as consultation afterwards</li> <li>3. Same charge as consultation</li> <li>4. Less than consultation charge</li> <li>5. No charge at all</li> </ol>

CVDs		
S201_1	In your current position, and as a part of your work for this facility, do you personally diagnose and/or manage cardio-vascular diseases such as hypertension?	<ol style="list-style-type: none"> <li>1. Yes, provisional diagnosis only</li> <li>2. Yes, definitive diagnosis only</li> <li>3. Yes, definitive diagnosis and treatment</li> <li>4. No</li> </ol>
S201_2	Have you received any in-service training, training updates or refresher training on the diagnosis and/or management of cardio-vascular diseases?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
S201_3	Have you received training on implementation of the PEN package?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
S201_4	How long ago did you receive the training on implementation of PEN package (NCDs related)?	<ol style="list-style-type: none"> <li>1. Within 1 year</li> <li>2. Within 1-2 years</li> <li>3. More than 2 years ago</li> <li>4. Don't remember</li> </ol>
S202	Do you have any guidelines (Like PEN packages) for the diagnosis and management of CVDs available in this service area?	<ol style="list-style-type: none"> <li>1. Yes, observed</li> <li>2. Yes, not observed</li> <li>3. No</li> <li>4. Don't know</li> </ol>
S203	What do you do for the CVDs cases that cannot be managed at this facility?	<ol style="list-style-type: none"> <li>1. Send to another health facility with referral slip</li> <li>2. Send to another health facility without referral slip</li> <li>3. Turn away</li> <li>4. Not received such cases yet</li> <li>5. Others (Specify)</li> </ol>
R103	Which facility do you send the patients to? Please specify all.	<ol style="list-style-type: none"> <li>1. Government hospital</li> <li>2. PHCC</li> <li>3. HP</li> <li>4. Ayurvedic facility</li> <li>5. Homeopathy/ Unani</li> <li>6. Private hospital</li> <li>7. Medical college/ teaching hospital</li> <li>8. Mission/ NGO hospital/ community hospital</li> <li>9. Others (Specify)</li> </ol>
R104db	How many CVDs cases were sent/referred in last three months in there?	.....
R106db	How much time does it require to travel there? (with available transport means)	.....
S204	How do you assess the CVD risk for the patient? (Probe: all options)	<ol style="list-style-type: none"> <li>1. Use risk prediction chart</li> <li>2. Height measurement</li> <li>3. Weight measurement</li> <li>4. Waist circumference measurement</li> <li>5. Calculate BMI</li> <li>6. Waist- hip ratio</li> <li>7. Obtaining history (Stroke, Heart attack, etc.)</li> <li>8. Blood pressure measurement</li> <li>9. Others (Specify)</li> </ol>
S204_1	On an average, how frequently do you schedule the follow-up of a CVDs patient?	<ol style="list-style-type: none"> <li>1. Daily</li> <li>2. Weekly</li> <li>3. Fortnightly</li> <li>4. Monthly</li> <li>5. Every 3 months</li> <li>6. Every 6 months</li> <li>7. Do not call for follow up</li> </ol>

S204_2	How frequently do you suggest that a CVD patient have their tests done at the facility?	<ol style="list-style-type: none"> <li>1. Daily</li> <li>2. Weekly</li> <li>3. Fortnightly</li> <li>4. Monthly</li> <li>5. Every 3 months</li> <li>6. Every 6 months</li> <li>7. Do not suggest for blood test</li> </ol>
S 2 0 4 _ 3 . tests	What are the common diagnostic tests that you prescribe for the CVD patient?	<ol style="list-style-type: none"> <li>1. 2D ECHO</li> <li>2. ECG</li> <li>3. BNP/ANP</li> <li>4. Chest X-ray</li> <li>5. Cardiac Markers</li> <li>6. Others (Specify)</li> <li>7. Do not suggest for tests</li> </ol>
S204_3.1	Hypertension	<ol style="list-style-type: none"> <li>1. 3 BP readings in 2 different occasions</li> <li>2. 24-hour ambulatory BP monitoring</li> <li>3. Others (Specify)</li> <li>4. Do not suggest for tests</li> </ol>
S204_4.1	What is the most prescribed first line drug for hypertension patients in your practice?	.....
S204_4.2	What is the most prescribed firstline drug for other CVD patients in your practice?	.....
S204_5	On average, how much time is required for dealing with the patient?	<ol style="list-style-type: none"> <li>1. Less than 15 minutes</li> <li>2. 15- 30 minutes</li> <li>3. 30-60 minutes</li> <li>4. More than an hour</li> </ol>
CVDIP1	Does the CVD service delivery room where you usually provide service have color coded dustbins for waste disposal?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
CVDIP2	Do you practice sanitizing your hands before and after touching each patient?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
CVDIP3	Do you practice sanitizing the stethoscope before and after examining each patient?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
S207	As part of CVDs care services, what areas do you give advice/counseling to?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
S212	What is the registration charge for the patient?	.....
S212_1	What are the charges for follow-up visits?	<ol style="list-style-type: none"> <li>1. No charge within first week and same charge as consultation afterwards</li> <li>2. No charge upto 2<sup>nd</sup> week and same charge as consultation afterwards</li> <li>3. Same charge as consultation</li> <li>4. Less than consultation charge</li> <li>5. No charge at all</li> </ol>

## Section 5: Referral System

### Questions related to Referral System

Code	Questions	Options
R101	<p>What do you do for the cases that cannot be managed at this facility?</p> <p>(This question is asked to know the referral of any cases not only NCD)</p>	<ol style="list-style-type: none"> <li>1. Refer to other health facility</li> <li>2. Send to other hospital without specific mentioning/ refer</li> <li>3. Turn away</li> <li>4. Refer to another consultant</li> <li>5. Others (Specify)</li> </ol>

R102	If you refer, where do you usually refer the cases?	<ol style="list-style-type: none"> <li>1. Government hospital</li> <li>2. PHCC</li> <li>3. HP</li> <li>4. Ayurvedic facility</li> <li>5. Homeopathy/ Unani</li> <li>6. Private hospital</li> <li>7. Medical college/ teaching hospital</li> <li>8. Mission/ NGO hospital/ community hospital</li> <li>9. Others (Specify)</li> </ol>
R104	How many cases were referred in the last three months here?	.....
R106	How much time does it require to travel to the nearest referral center? (with available transport means)	.....
R107	How does this facility support the cases requiring referral service? Prompt all responses	<ol style="list-style-type: none"> <li>1. Provide referral slip</li> <li>2. Provide information on referral center</li> <li>3. Provide ambulance/ transportation service</li> <li>4. Communicate with referral center</li> <li>5. Others (Specify)</li> </ol>

## Section 6: NCD Equipment and Drug

The aim of this section is to find out whether the health facility is equipped with the logistics required for NCD service delivery. These include drugs and equipment's related for the prevention and treatment of non-communicable disease.

Ensure the person you are interviewing is involved in logistic management at the health facility.

### Questions related to NCD drug and equipment:

Code	Questions	Choices	Guidance
N1	Availability of equipment	Number of available and functioning Not available/ not functioning	Ask the respondent about the total number of each equipment mentioned below. Also inquire about the functioning and nonfunctioning ones. <b>Note:</b> In case of pharmacy, include the equipment's which are in use. (Not the equipment's which are only for the retail purpose)
	BP apparatus		Instrument used to measure blood pressure. Also called sphygmomanometer
	Glucometer		Instrument used to measure capillary blood glucose level.
	Glucose test strip		A glucometer used to measure capillary blood glucose.
	Adult weighing machine		A machine used to take the weight of an adult.
	Stadiometer		A tool to measure the height of an adult.
	Measuring Tape		A tool to measure waist circumference.
	ECG machine		A machine used to track the electrical activities in a heart and the result get printed in a paper.
	CVD risk chart		A chart used by CVD service providers to assess the risk of a patient for CVD.
	IEC material		IEC could be pamphlets, flyers or brochures on Diabetes and CVD's. (Here, referring to smoking and alcohol cessation, physical activity and healthy eating habit, etc)

<b>N2</b>	<b>Diagnostic</b>	<b>Service availability</b>	<b>Unit cost for patient</b>	
1	Blood glucose	Yes/No		
2	Urine protein	Yes/No		
3	Urine glucose	Yes/No		
4	Urine albumin	Yes/No		
5	Blood and Urine test	Yes/No		
6	Electrocardiogram (ECG)	Yes/No		
8	Arterial Blood Gas (ABG)	Yes/No		
9	Urine ketone	Yes/No		
10	Lipid profile	Yes/No		
16	Renal function test (RFT)	Yes/No		
17	Liver function test (LFT)	Yes/No		
<b>N3</b>	<b>Availability of drug</b>	<b>Available and within date</b>	<b>Stock for at least a month</b>	
1	Anti-hypertensive (nifedipine)	Yes/No		
2	25% Dextrose ampule			
3	5% Normal saline solution			
4	50% Dextrose ampule			
5	Amlodipine 10 mg			
6	Amlodipine 2.5 mg			
7	Amlodipine 5 mg			
8	Aspirin 100 mg			
9	Aspirin 150 mg			
10	Aspirin 350 mg			
11	Aspirin 50 mg			
12	Aspirin 75 mg			
13	Aspirin 80 mg			
14	Atenolol 100 mg			
15	Atenolol 25 mg			
16	Atenolol 50 mg			
17	Tab Digoxin 0.125 mg			
18	Tab Digoxin 0.25 mg			
19	Tab Digoxin 0.5 mg			
20	Tab Hydrochlorothiazide 12.5 mg			
21	Tab Hydrochlorothiazide 25 mg			

22	Adrenaline (Epinephrine) 1mg/1ml			
23	Atropine 0.6mg/1ml			
24	Benzathine benzylpenicillin 600,000 IU			
25	Benzathine benzylpenicillin 1,200,000 IU			
26	Calcium gluconate 1gm/10ml			
27	Furosemide 10 mg			
28	Furosemide 20 mg			
29	Furosemide 40 mg			
30	Furosemide 100 mg			
31	Glimepiride 1mg			
32	Glimepiride 2mg			
33	Losartan 25mg			
34	Losartan 50mg			
35	Methyldopa 250mg			

## Section 7: NCD Recording

This section seeks to describe the health information system at health posts and health centers: type of information collected, frequency, forms and periodic reports.

Ensure the respondent is involved in the recording process or identify the appropriate respondent from the HR list and interview this section.

### Questions related to NCD Recording

Code	Questions	Guidance
I01	Does this facility have a system in place to regularly collect health service data?	1. Yes 2. No
I01_1	If yes, does this include basic NCDs as well?	1. Yes 2. No
I06	Is there a digital/computerized recording system?	1. Yes 2. No
I06_oth	What is the name of the digital/computerized recording system do you use?	1. HMIS form 2. DHIS-2 3. Others (Specify)
I07	Does this facility have a designated person, who is responsible for management of health services data in this facility?	1. Yes 2. No
I02	Does this facility regularly compile any reports containing health services information?	1. Yes 2. No
I03.2	Is the person responsible for recording health data trained on HMIS?	1. Yes 2. No
I03	How frequently are these reports compiled?	1. Daily 2. At least weekly 3. At least monthly 4. More than a month
I03.1	Do you report health data to PMC?	1. Yes 2. No

I03_1	How do you report?	<ol style="list-style-type: none"> <li>1. HMIS form</li> <li>2. DHIS-2</li> <li>3. Others (Specify)</li> </ol>
I04_1	Who prepares the reports?	<ol style="list-style-type: none"> <li>1. Medical officer</li> <li>2. Statistician</li> <li>3. In charge/ Manager</li> <li>4. Matron</li> <li>5. Medical Superintendent</li> <li>6. HA</li> <li>7. AHW</li> <li>8. Staff Nurse</li> <li>9. ANM</li> <li>10. Others (Specify)</li> </ol>
I04	Do patients have a unique ID number?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
I09	What was the total number of outpatient/client visits for diabetes related care in the last three months?	.....
I09_1	How were the statistics for number of patients obtained?	<ol style="list-style-type: none"> <li>1. From register/ monthly report</li> <li>2. From recall</li> </ol>
I09_f	How many of the outpatient clients visiting for diabetes-related care during the last three months were females?	.....
I09_m	How many of the outpatient clients visiting for diabetes related care during the last three months were males?	.....
I11	What was the total number of outpatient client visits for CVDs related care in the last three months?	.....
I11_1	How were the statistics for number of patients obtained?	<ol style="list-style-type: none"> <li>1. From register/ monthly report</li> <li>2. From recall</li> </ol>
I11_f	How many of the outpatient clients visiting for CVD-related care during the last three months were females?	.....
I11_m	How many of the outpatient clients visiting for CVD related care during the last three months were males?	.....
I11_1.1	Hypertension	.....
I12	At the facility level, is there a routine process for reviewing data?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
I13	Does this facility routinely carry out data quality assurance activities for any service areas? (By this I mean some formal review system or comparison of work or systems to a standard.)	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
I114	If yes, when was the last time the data quality audit was conducted?	<ol style="list-style-type: none"> <li>1. Within past 1 month</li> <li>2. 2-3 months ago</li> <li>3. 4-6 months ago</li> <li>4. More than 6 months ago</li> <li>5. Don't know</li> </ol>
The_geom	GPS Location of the health facility	
	Remarks	Note any kind of information, observation which is relevant to the study. In addition, the information could be related to the tools as well.

## Annex II: Social Mapping and Transect Walk

Like other data collection processes, obtain the consent from the participants and mention the informants of confidentiality.

Objectives of the social mapping:

- To identify and map the community resources including the health care assets, informal health care providers, road, parks, other infrastructures
  - To identify and map the vulnerabilities particularly for NCDs in the community including alcohol bars, pollution, housing
  - To understand the definition of urban poor and map the distribution of poor households in the community
  - To explore the interaction of poor community with community resources and vulnerabilities
1. Social mapping in two phases: In first phase identify the major locations within PMC where poor households/ population resides using OSM and information from key informants (PMC officials, NGOs), could be urban poor mapping workshop. (We can utilize our other consultative meetings for this purpose too).

ID	Ethnicity	Education	Occupation	Age	Gender	Representation



Figure 1: Open Street Map of Pokhara

2. In second phase, prepare an open street map for the selected community identified above. Selection of key informants (FCHVs, Ward Chairperson, Ward secretary, Tole Chairperson/or representatives, Health Facility In charge/representatives, community HH member, Community based organizations, other relevant stakeholders) should be diverse ensuring GESI and engaging member from urban poor in all phases of the mapping process. Important for researchers to decide in advance: What legend should be used to denote landmarks like triangle for school, cross for health facility, blue dot for river, green dots for poor household.

*Material needed: Diary and recorder, tool, camera, newsprint paper, markers.*

3. Discuss with the participants on what determines a household as poor? As a probe and to know more about wellbeing/wealth rank, discuss following areas:
  - If household can fulfill their basic needs
  - Housing condition
  - Afford health care services during illness
  - Source of income/occupation of HH member
  - Lifestyle
  - Health care seeking
  - Display photographs
  - Other....

Based on the discussion, agree on definition of household; facilitators should ensure this during the mapping process that all the key informants have clearly understood this.

4. Display open street map to the participants and give them some time to understand the map. Facilitate them to draw map of the selected community based on OSM.
5. Determine the approximate boundaries of the community.
6. Facilitate the participants to map the community resources like health facilities, pharmacies, informal health care providers, main roads, slums, households, and landmarks nearby, and also map the vulnerabilities like alcohol bars.
7. Discuss whether the total number of poor households has increased or decreased in recent years. If there were any changes, ask why the number has changed and whether this has caused any problem for certain families or for the community at large.
8. Based on the discussion above, ask the group to locate and mark the poor households in the community.
9. Within identified households, mark the households with female, elderly, disability, if possible.
10. Identify and mark the community/social organizations/projects in the project community that mainly works in that area with poor household. Record the details in separate sheet about such organizations like address, contact person etc..
11. After the completion of the mapping work. Discuss and analyze the map with the participants:
  - Discuss the demographic distribution in the households
  - Discuss lifestyle like smoking, alcohol consumption, exposure to pollution,
  - Discuss major health problems including NCDs like diabetes, CVDs, hypertension
  - Discuss the health care seeking behavior and who makes influence in decision making
  - Who are most at risk? Who is accessing which health care facilities (according to different types) and why (differentiate between public and private)
12. Add/revise the map based on the discussion above; if possible, to identify people with NCD, exposure to risk factors, health care seeking.

## **Transect walk**

Like other data collection processes, obtain the consent from the participants and mention the informants on the process of confidentiality.

Based on the mapping, select the areas for transect walk. While forming the team, ensure GESI (could be male team and female team for transect walk, and ensuring the member from disadvantaged community). It is highly encouraged that the community members (urban poor) are engaged in the process where transect walk is planned. Team will validate the information generated from the mapping process; if the area they are walking represents what has been discussed. Besides, researchers should utilize this opportunity to further understand about the community.

### **Objectives of the transect walk:**

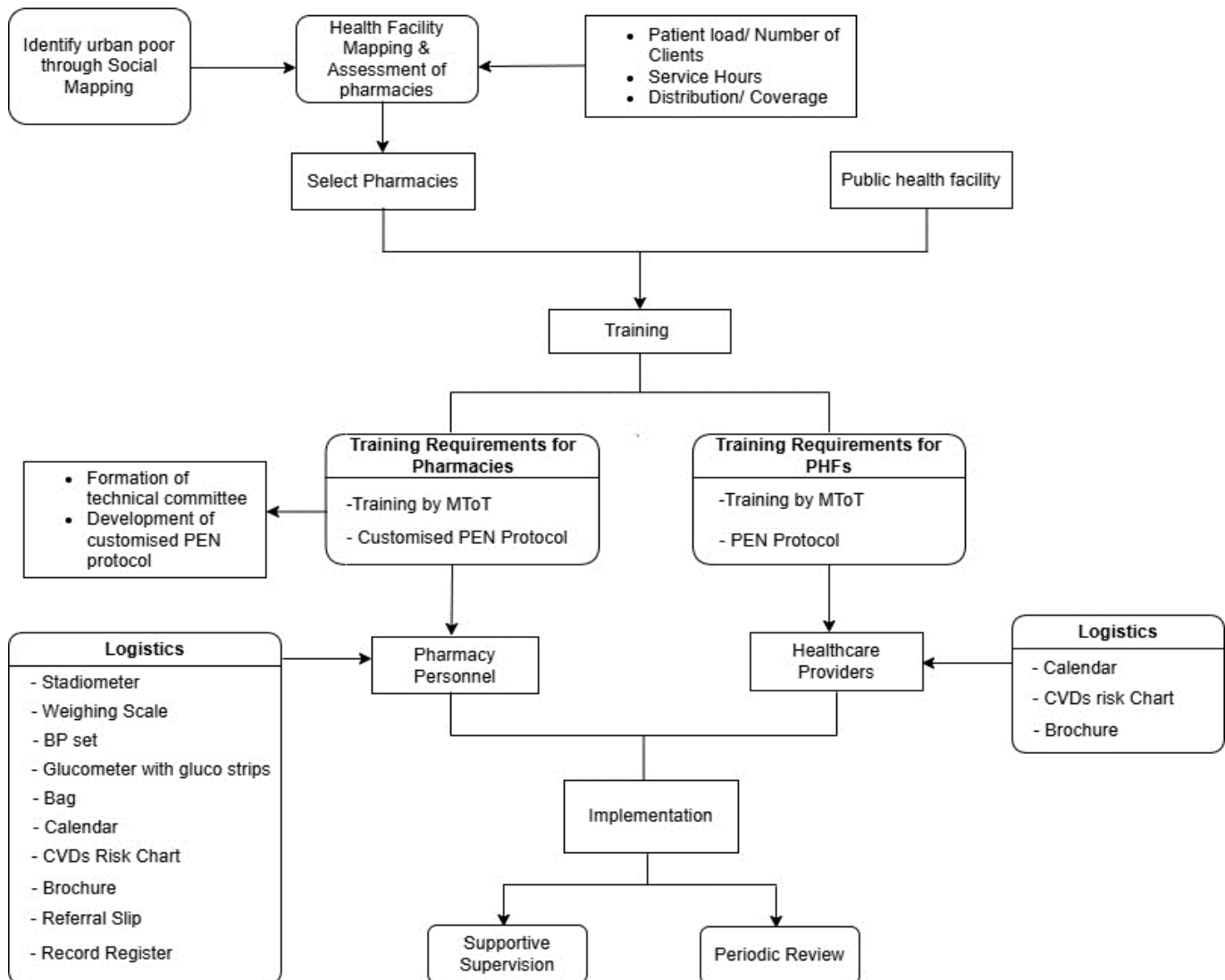
- To observe and discuss the location and distribution of poor households, infrastructure/assets, health care facilities, pharmacies, informal health care providers
  - To observe and discuss the livelihood and different activities taking place within, vulnerability (pollution, local bars, smoking, etc.) and living conditions in the selected area.
  - To explore the social interaction of the poor household with the vulnerabilities and health assets in the community and understand their health care service utilization behavior
1. Identify and list the selected pocket areas identified during the social mapping. It may not be possible to select all the identified areas but based on the diversity selected areas can be planned for the transect walk. Identify the key informants for the transect walk, ensure, where possible, they are from the same pocket area where transect walk will be done. Selection of key informants should be diverse ensuring GESI and engaging member from urban poor household.

ID	Ethnicity	Education	Occupation	Age	Gender	Representation

2. Discuss about the transect walk and its objectives with the informants in detail, and plan route and time for the walk. During the plan ensure the safety of the researchers and participants.
3. Within identified households, mark the households with female, elderly, disability, NCD clients, if possible. During the walk, also identify the health care seeking places like pharmacy, traditional healers, public health facilities. During the walk, discuss with informants regarding the livelihood, health problems, care seeking behavior etc.

## Annex III:

Flowchart showing the process of implementing the guideline







## HERD International

Sainbu, Cr- 10, Bhaisepati, Lalitpur, Nepal  
Phone: +977-01-5914875 / 5914873



[www.herdint.com](http://www.herdint.com)  
[info@herdint.com](mailto:info@herdint.com)