2. Technical and operational outline
Integration of essential NCD Interventions into primary care in low-resource settings

2.1 Planning and implementation at district and national levels

The broad framework for integration of major NCDs into primary care is outlined here (Figure 5) to provide guidance to health managers and MoHs, international cooperation agencies and NGOs. The overall policy and integration of the WHO PEN into primary care in low-resource settings will rest at the central level of the MoH as the leading agency of the country health sector. Planning and implementation will be the responsibility of the district health level and the authorities of other institutions that provide primary care services.

WHO is providing technical support to Ministries of Health to develop and adapt clinical protocols for integration of NCD in primary care based on evidence based guidelines. A minimum set of NCD interventions should be accessible in primary care for people before any NCD screening programmes are initiated because it does not make sense to detect cases if care cannot be assured.

A primary care approach requires commitment and cooperation of the community. Therefore, it is important to devote time to building consensus and creating a broad base of support during the planning of activities. Countries are encouraged to follow a well-defined logical process: advocacy, political commitment, establishment of a national NCD strategy including a national plan for prevention and control of major NCDs
through a PHC approach, aligning it with the national health development plan.

The WHO PEN is still at the early stage of promotion and development. WHO will partner with multilateral and bilateral cooperation agencies, NGOs, academic institutions, civil society and the private sector to implement and evaluate the WHO PEN.

A manual developed at the national level will provide tools for key managerial elements in relation to mobilization of funds, situation analysis of primary care, financing approaches for the package, budgeting and procurement of essential medicines and technologies, development of training materials, training and supervision, feasibility testing, assessing impact at the district level and planning of national expansion.

The manual will also provide the basic information and key reference resources necessary to develop skills to:

1. enlist political, academic and professional support to implement the WHO PEN;
2. assess the capabilities of the primary care health infrastructure;
3. design communication messages for advocacy and community engagement;
4. formulate an information system to monitor and evaluate the implementation of the WHO PEN aligning it with the established health information system;
5. adapt training materials to train the health workforce;
6. monitor and evaluate the WHO PEN in a demonstration site;
7. develop a district implementation plan and national extension plan;
8. organize systematic supervision and evaluation of the impact of the WHO PEN.
Political commitment to scale up prevention and control of NCD in primary care

Sustainable scaling-up of prevention and control of major NCDs in primary care using the WHO PEN depends on acceptance and political commitment on the part of the national health authorities (Figure 5). Political commitment can be secured through policy briefs and advocacy meetings that discuss NCD issues and by highlighting WHO NCD action plan endorsed by the World Health Assembly in May 2008. The production of the policy briefs and the convening of the advocacy seminars can be organized by the NCD unit of MoH or any academic or teaching institution interested in enlisting support in developing an equitable NCD prevention and control programme in primary care. Advocacy seminars provide a forum for a large group of interested professionals to reach a common understanding of the practical concepts of the WHO PEN and its advantages to bring health equity to low-resource settings. The meetings could discuss the following steps:

- start a feasibility project to gain experience with the implementation of the WHO PEN;
- allocate initial resources for conducting the facility capacity assessment and feasibility study;
- establish coordination mechanisms with next referral level other institutions and agencies;
- prepare and issue an official statement announcing that the WHO PEN will be introduced into the district health system, beginning with a pilot phase;
- designate an officer as the focal point within the MoH to coordinate all relevant programmes and departments (the focal point may be the NCD focal point in the MoH or an officer from the PHC services);
- request that WHO or any technical agency provide technical collaboration to assist in the process of initiating the adaptation and development of the WHO PEN;
Figure 5. Framework for implementation of WHO PEN in primary health care

- Political commitment for NCD prevention and control
- Advocacy, Mobilization of resources, NCDs in the Development agenda
- National NCD policy framework
  - Strengthening equity and efficiency of the health system
  - Implementation of tobacco control policies
  - Consideration of health impact of all government policies
  - Policies to promote a healthy diet and physical activity
- Implement WHO PEN to make PHC responsive for NCD prevention and control
- Assessment of gaps
  - Monitoring and evaluation
  - Feasibility project (district) to estimate costs and for adaptation to local contexts
- Sustainable national extension
  - Conducive policy environment
  - Community engagement
  - Train and supervise health-care workforce
appoint a national working group to review the current practices in prevention and management of NCDs in the country and adapt the WHO PEN to suit the local context.

The official statement should be distributed among all departments in the MoH, all agencies and institutions that deliver health services, schools that train health professionals and agencies collaborating with NCDs programmes and PHC programmes.

The WHO PEN activities need to be linked to various levels of the health system and various departments within the MoH. The coordination and linkages need to be strengthened through regular meetings of national and district level health managers of the MoH with the participation of specific and support programmes involved in NCD prevention and control.

The coordination between NCD prevention and control and PHC services should result in:

- adopting the WHO PEN protocols for diagnosis and treatment of major NCDs for health posts, health centres and first level referral facilities or district hospitals;
- developing materials and organizing activities to train health workers in integrated case management;
- ensuring the supply of essential medicines and equipment;
- delivering educational messages on prevention of NCDs;
- expanding the information system so that it covers all major NCDs;
- monitoring activities for assessment of progress in implementation and impact.

The WHO PEN can be the first building block to integrate NCDs into PC in low-resource settings. In countries with high HIV infection prevalence, close coordination should be established with the HIV/AIDS programme and Stop TB programmes. These partnerships will promote joint activities with the identification of tuberculosis (TB), HIV-positive individuals among patients with NCDs, prevention of NCDs among HIV-infected
persons and development of joint training modules and educational materials.

Linkages should also be established with NGOs that provide health-care services. The collaboration of external allied health agencies may be critical to effective implementation of the WHO PEN in many countries. Collaboration with other multilateral organizations and bilateral cooperation agencies is also useful in securing funding for some activities, or for implementation in specific districts or regions, in conjunction with more general health programmes supported by the agencies.

Coordination with support programmes in the MoH

The main MoH supporting programmes, services and departments at regional and central levels that should participate in the WHO PEN implementation are:

- The Human Resources Development Department: can collaborate in the adaptation of training materials to train staff on the use of the WHO PEN technical protocols and tools and organize in-service training courses and evaluate the training activities.
- The Essential Drugs Programme: procure and distribute medicines.
- The Laboratory Services: issue guidance on laboratory procedures, supplies materials and reagents, and undertake training and quality assurance.
- Essential Medical Equipment Programme: can procure and distribute BPMDs, pulse oximeters, nebulizers, peak flow meters and oxygen sources.
- The Health Education Bureau: develop and produce educational materials for patients, families and the community.
- The Public Relations Department: develop and implement advocacy strategies.
- The Health Information Management System Department: should review the information needed to monitor and evaluate the WHO PEN.
- The **Nursing Services**: develop guidance on the role of nurses in integrated approaches to prevention and management of NCDs.
- The **Medical and Nursing Schools**: integrate guidance into medical and nursing curricula on the role of physicians and nurses in integrated approaches to prevention and management of NCDs.

**Assessment of capacity of primary care facilities**

An important step in the preliminary phase of integrating the WHO PEN into primary care is to assess the capabilities of the health infrastructure to implement the WHO PEN. Therefore, there is a need to collate information on the institutions that provide general health services, their organization, the number, type and distribution of the health facilities, the available resources (equipment, medicines, health workforce), the access to and the utilization of the health services by the population. The “facility capacity questionnaire” available in the WHO PEN package can be used for this purpose. This tool helps to gather information on:

- public health sector policies in relation to: programme priorities, management of health care, planning and financial decentralization, community involvement, budget priorities and contribution of external financial aid to the health sector;
- managerial organization in the form of an organizational chart of the MoH at central, regional and district levels; lines of authority and linkages with primary care;
- managerial activities to implement interventions such as training and supervision;
- structure of general health facilities: number and distribution of hospitals by level of complexity, health centres and health posts;
- average catchment population for district hospitals, health centres and health posts and maps marking the location of the health units and the major roads;
- categories of health workers managing NCD patients at district hospitals, health centres and health posts;
- number of persons in each category: specialists, general physicians, nurses, other paramedical staff and community health workers;
- specialized services for NCDs at hospitals and health centres;
- availability of equipment and materials for diagnosis of major NCDs at hospitals and health centres: blood tests, ECG, radiology, pulse oximeters, peak flow meters and other relevant equipment;
- availability and quantities of medicines used for NCDs that are included in the national list of essential drugs;
- availability of equipment for treatment of NCD in PHC;
- usual referral practices at first level health facilities for patients who need specialized or hospital care and types of transportation;
- description of health information system at health posts and health centres: type of information collected, frequency, forms and periodic reports;
- training needs for personnel at peripheral health units, district hospitals and laboratories.

**Training and supervision of the primary care workforce**

Health workers need to be prepared to assess, diagnose, manage and refer patients appropriately based on the guidance provided in WHO PEN package. They also need to be guided on counseling activities and on recording and reporting of data.

Workshops need to be conducted to train primary care workers to deliver integrated NCD care. According to a scheduled plan, the health personnel at first level health facilities need to be convened to participate in training workshops by district or provincial health administration. Workshop facilitators/trainers have to be identified from among the members of
the national/provincial working group or a team of master trainers or general physicians or specialists at national or provincial levels.

The training workshop programme may differ among different settings after taking into account the knowledge and skills acquired by local health personnel in their basic training and previous in-service training. In general, for primary care physicians, a two-day workshop will be adequate to update knowledge. For non-physician health workers, longer training will be required. Training materials for this purpose will be available and can be used for different settings after translation and minor adaptations. The main objectives of a training workshop are to provide the essential knowledge and skills to deliver WHO PEN and to comply with the recording and reporting procedures of the information system.

At the end of the training, the participants should be able to at least:

- deliver essential NCD interventions to diagnose, treat and appropriately refer patients with major NCDs;
- use a BPMD, glucometer, peak flow meter, spacer, pulse oximeter and nebulizer;
- become acquainted with the system to collect and report essential data for monitoring and evaluation;
- competently interpret the results of blood pressure, blood sugar and peak flow measurements and WHO/ISH cardiovascular risk prediction tools for the classification and the follow-up of patients;
- become acquainted with standards to be achieved through implementation of the WHO PEN.

In addition, health workers need to acquire the appropriate skills to deliver preventive health interventions. Communicating health education messages and individual counseling are integral parts of the delivery of preventive health interventions in primary care. In many settings, physicians undertake these tasks although performance of these tasks does not require a medical degree. Ideally, physicians should offload these tasks
from their busy clinical schedules to trained health workers and nurses who can provide much of these preventive health interventions. Under the guidance and supervision of a physician, non-physician health workers, preferably from the same locality, should devote adequate time to counseling patients and family members, listening to patients concerns and following up on adherence. Such a change in approach would enhance the continuity of care and build trusting relationships that are central to primary care. Furthermore, this would free up time for physicians to diagnose new cases, conduct clinical examinations, order medication changes and handle physician-level supervisory and managerial duties of the health-care facility.

The health education messages related to regular physical activity, healthy diet, harmful effects of alcohol and tobacco that are contained in the counseling protocols should be adapted to the local needs, including the cultural background and educational level of people. Health workers should give brief individual counseling for cessation of tobacco and harmful use of alcohol at each contact when a smoker attends a health facility. Family members must be made to understand that encouragement from the family can help people to adopt healthy living, e.g. cessation of tobacco and alcohol and taking regular physical activity.

**Supervision of implementation of the WHO PEN**

Supervision is an important extension of training and should be conducted as a well-organized systematic activity after the health personnel have been trained on the WHO PEN.

Completeness and accuracy of data recorded and collected in primary care facilities need to be supervised. This information gathered from first level health facilities and first referral services will help to identify priority health problems, plan training of the health personnel and provide a regular supply of consumables and essential medicines.
The supervision of the WHO PEN activities should be carried out at three levels. The activities at first level health facilities and first referral services could be supervised by a district medical officer who in turn could be supervised by a director at the district, provincial or national levels.

The supervision of the first level health facilities should be carried out at least once every three months, depending upon the local situation, through a visit by officials from the district health office.

**Health information system**

Health information system needs to be adapted to track the availability and distribution of human resources, infrastructure, equipment, supplies, and monitor the cost and impact of implementing NCD interventions in primary care. The collection of health information involves data gathering, data analysis and synthesis and use of findings for decision making. To this end, some adaptation may be needed in the existing medical records and reports that are completed by the health personnel. In places where there are no instruments for collection of data, an information system on the delivery of prevention and case management services needs to be developed. If there are ongoing initiatives to support the development of measurement strategies to track health system metrics this work should be aligned with them.
Package of Essential Noncommunicable (PEN) Disease Interventions for Primary Health Care in Low-Resource Settings
2.2 Prevention and management of major NCDs in primary care in low-resource settings

Evidence based clinical protocols have been developed for delivery of a minimum set of essential interventions addressing the four major NCDs. They target physicians and non-physician health workers. They are structured as simple flow charts with clear referral criteria based on the following realities in resource constrained settings:

- The per capita health expenditure of a significant number of low- and middle-income countries is inadequate for providing universal coverage for all interventions and all NCDs (with domestic funds).
- Due to lack of appropriate prevention and care many people are unnecessarily suffering from preventable NCDs and their complications.
- Health-care costs are rising because the cost of treatment of complications (e.g. coronary bypass surgery, amputations, heart attacks and strokes).
- In most regions of the world, the four major NCDs (cardiovascular disease, cancer, diabetes and chronic respiratory diseases) contribute to at least 50% of the NCD burden. Flow charts address these NCDs only.
- Only evidence-based and cost-effective interventions feasible for application in primary care in low-resource settings have been selected.
- Flow charts take cognizance of the fact that most major NCDs are not symptomatic until late in the development of the disease. A syndromic approach alone, therefore, is not appropriate for NCDs because such an approach will not detect NCDs early in the course of disease to avoid complications. Symptoms that have more discriminatory ability for diagnoses of major NCDs have been selected for symptom-based protocols.
- The integrated multifactoral risk approach is more appropriate for low-resource settings because it is more cost effective and it improves health outcomes.
- A total risk factor approach enables health workers to target those who are at highest risk of developing heart attacks, strokes, amputations and kidney failure.
- Patient-oriented rather than a disease-oriented approach is needed as NCDs are chronic and present for routine care or with exacerbations as emergencies in the long term.
- Depending on local needs and feasibility protocols for other prevalent conditions can be added (e.g. epilepsy, organophosphate poisoning, treatment of snake bite).

The implementation of the WHO PEN interventions, which requires training, adequate financing, provision of essential medicines and equipment, will strengthen the health system efficiency and equity. Once the workforce develop skills to effectively implement these protocols, the portfolio can be expanded to other NCDs and other interventions for major NCDs giving due consideration to issues of equity. A set of complimentary protocols will be developed for the district hospital level.

2.3 Measurement of quality, equity, performance and impact

Quality assurance

The minimum quality assurance standards identified below can be achieved with modest investments, even in low-resource settings. They form a core set of standards for improving the quality of care for people with major NCDs and will also provide simple indicators to measure the performance of the health services with regard to NCD care. Audits of these standards can be conducted to evaluate how well major NCDs are managed in primary care, given the availability of a minimum set of technologies and essential medicines. The core set of standards could be expanded when more services are delivered as the resource situation improves.
**1. Registration of basic demographic and clinical data of people reporting to primary care with major NCDs**

Objective: Register basic demographic and clinical data to be used for follow-up care, tracking trends in utilization of health posts/primary care centres, and monitoring and evaluation.

**Action**
- entering relevant data of people who access the healthcare facility using paper registers or appropriate computer software.

**Implications for service planning**
- provision of paper-based registries or computer hardware and appropriate software;
- training of staff for data entry and data analysis.

**2. Early identification of people with NCDs**

Objective: Detect major NCDs early to prevent complications that are costly to treat and have social and economic consequences, e.g. myocardial infarction, stroke, kidney failure, amputations and visual impairment.

**Action**
- increasing community awareness through community engagement and mobilization;
- targeted early detection;
- opportunistic screening in primary care centres.

**Implications for service planning**
- training of health staff to increase awareness;
- community-based mobilization to ensure success of targeted screening e.g. those with a family history of premature heart disease, family history of diabetes, past history of gestational diabetes, central obesity, tobacco use, etc.
3. Application of evidence-based interventions in NCD prevention and care

Objective: Provision of evidence-based clinical care of people with NCD to prevent, cure and/or delay onset of complications and improve quality of life.

Action

- adherence to follow-up;
- appropriate control of blood sugar, blood pressure and blood lipids;
- counseling for smoking cessation, adopting a healthy diet and weight control;
- use of evidence-based clinical protocols;
- conduct medical audits.

Implications for service planning

- empowering patients in self-care;
- providing facilities for measurement of blood sugar, blood pressure (and blood lipids if resources permit);
- training personnel for smoking cessation counseling;
- training health staff in the use of clinical protocols;
- training personnel in basic medical auditing;
- flagging and tracking methods to address non-adherence;
- establishing referral criteria;
- provision and maintenance of essential equipment and tools listed in Table 5;
- providing access to essential medicines listed in Table 6;
- training primary care workers in family/community empowerment and engagement.

4. Management of NCD emergencies and exacerbations

Objective: To provide evidence-based medical care to people with major NCDs presenting as emergencies, in order to improve outcomes.
Action

Training medical staff to use evidence-based clinical protocols to provide emergency care using available resources and for appropriate referral of:
- acute myocardial infarction
- stroke
- unconscious patient
- hypoglycaemia
- diabetic ketoacidosis
- severe asthma and COPD.

Implications for service planning
- educating people at worksites and communities to recognize and initially manage common emergencies, e.g. hypoglycaemia, heart attack;
- training of health-care professionals;
- implementing and auditing protocols for management of emergencies;
- ensuring modalities for referral.
5. Monitoring of complications

Objective: Minimize complications through early detection and appropriate intervention.

**Action**
- measurement of urine albumin;
- setting up foot care service (implementing foot care protocols and training of nurses in essential elements of foot care and prevention of amputation);
- appropriate referral for diagnosis, assessment and management of coronary heart disease, cerebrovascular disease, diabetic retinopathy and renal impairment.

**Implications for service planning** (assuming presence of necessary medical technologies, evidence-based care and medicines at the referral centre, e.g. district hospitals):
- training staff in foot care
- training staff on referral criteria.

6. Capacity strengthening for health system research and training

Objective: To strengthen national capacity for prevention and control of NCDs with special focus on PHC and health equity.

**Action**
- improving existing networks to facilitate and coordinate research and training;
- establishing an advisory board (central);
- establishing primary care working groups in each district;
- establishing a team of trainers to train health workers in each district.
Implications for service planning

- capacity building of medical and paramedical staff in implementation research;
- capacity strengthening in training and evaluation methodologies;
- earmark available primary care budget for training and research.

Measurement of equity, performance and impact

Programme performance needs to be monitored to ascertain that activities are accomplished as efficiently as planned. Monitoring is carried out at the health facility through direct contact with health workers and at the district health office by examining periodic reports. Evaluation aims at measuring the progress made in achieving the programmatic objectives, detecting performance shortcomings and planning future programme reform and extension. Evaluation should be based on valid, reliable and simple indicators. A few key indicators that can be accurately and reliably measured should be selected to evaluate managerial, operational, technical and epidemiological aspects of implementation of the WHO Package. Data collected should be disaggregated by gender and social class. Tools for this purpose have been developed in collaboration with Ministries of Health.