Prioritized research agenda for prevention and control of noncommunicable diseases through a primary health care approach

Report of the regional workshop
Kandy, Sri Lanka, 8–10 August 2012
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# List of acronyms and abbreviations

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<th>Acronym</th>
<th>Definition</th>
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<tr>
<td>CC</td>
<td>community clinic</td>
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<td>CRP</td>
<td>C-reactive protein</td>
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<td>GP</td>
<td>general practitioner</td>
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<td>HbA1C</td>
<td>haemoglobin A1C</td>
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<td>ISH</td>
<td>International Society of Hypertension</td>
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<td>MDG</td>
<td>millennium development goals</td>
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<tr>
<td>NCDs</td>
<td>noncommunicable diseases</td>
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<td>PEN</td>
<td>package of essential interventions for NCD</td>
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<td>PDA</td>
<td>personal digital assistant</td>
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<td>PHC</td>
<td>primary health care</td>
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<td>TIA</td>
<td>transient ischemic attack</td>
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<td>UN</td>
<td>United Nations</td>
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<td>UNHLM</td>
<td>United Nations High Level Meeting</td>
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<tr>
<td>VIA</td>
<td>visual inspection with acetic acid</td>
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<td>WHO CC</td>
<td>WHO collaborating centre</td>
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<td>WHO</td>
<td>World Health Organization</td>
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1. Introduction

Noncommunicable diseases (NCDs) have emerged as a leading cause of morbidity and mortality in most countries. Of the 57 million deaths reported globally every year, 38 million (63%) are caused by NCDs. Most of these deaths (80%) occur in low-and middle-income countries. Largely, cardiovascular disease, cancer, chronic respiratory disease and diabetes are responsible for these deaths. The determinants and risk factors – tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol – are shared by these diseases. Hence, it is prudent to have an integrated prevention and control strategy targeting these common risk factors.

Evidence shows that NCDs are largely preventable. It is feasible to establish prevention and control programme even in low- and middle-income countries to arrest the rising epidemic of NCDs. Cost-effective interventions for population-wide application and for individual-level implementation in health systems based on primary health care are available. These interventions can be implemented in low- and middle-income countries at a per capita cost of USD 1.20 and 2, respectively. The Global Strategy for the Prevention and Control of NCDs and its Action Plan has laid out a road map for establishing effective programmes to achieve the global target of a 25% reduction in NCD deaths by 2025.

Although there is enough knowledge for scaling-up the NCD prevention and control programme, a continued focus on research is also needed to sharpen the knowledge base about the pathways of disease development and prevention. Moreover, operational research to find the best ways of implementing the NCD prevention and control programme in diverse sociocultural and economic contexts and settings is required to accelerate programme implementation in low- and middle-income countries.

To refine the response to the rising burden of NCDs, the World Health Organization (WHO) has prioritized a research agenda after extensive consultation. Its aim is “to generate knowledge and to help translate knowledge into action through innovative approaches in the
context of low- and middle-income countries, and to support low-and middle-income countries in building capacity for epidemiological and health-system research, including the analytical and operational research required for programme implementation and evaluation in the area of noncommunicable diseases”. The Prioritized Research Agenda outlines 20 top priority areas under four domains to assist researchers to identify national and regional problems that require research for solutions.

Most countries in the South-East Asia Region have adopted policies and initiated programmes for prevention and control of NCDs as they are the leading cause of death in this Region. However, operational research on ways to implement the programme has lagged behind due to the limited capacity and resources. Therefore, a three-day workshop was conducted in Kandy, Sri Lanka, on 8–10 August 2012, to review the prioritized research agenda and augment research capacity for scaling-up NCD prevention and control programme in the Member States of South-East Asia Region.

2. Inaugural session

In his message, Dr Samlee Plianbangchang, WHO Regional Director for South-East Asia welcomed the participants and drew their attention to many positive developments that have pushed forward the agenda of NCD in recent times. He pointed out that one of the mandates of WHO is to generate and disseminate evidence, hence, the global strategy for prevention and control of NCD has stated that WHO will promote and support research in priority areas. The Global Action Plan also calls for a coordinated agenda for NCD research to strengthen the evidence base for cost-effective interventions. After extensive consultation with experts a prioritized research agenda to identify key areas of research has been proposed at the global level. WHO Member States had reviewed this agenda at a Regional NCD Network Meeting in Chandigarh, India, in 2009. He emphasized that not only WHO, but also every Member State should prioritize its research agenda and carry out formative and operational research with the major focus on primary prevention, early diagnosis of NCDs, addressing social and economic determinants as well as testing multisectoral approaches for NCD prevention and control. As lack of research capacity is a crucial barrier in the Region, he stressed that the workshop should address this issue beside devoting time on sharpening the objectives and improving the design of several project proposals prepared by participants of the workshop.
In his speech, Dr Palitha Maheepala, Additional Secretary, Ministry of Health, Sri Lanka, emphasized that chronic NCDs are a leading cause of death. These diseases also cause a lot of disability and are a cause of catastrophic expenditure to the family. NCDs result in high expenditure to the health services and also to those who suffer from NCDs. In Sri Lanka, about 65% of deaths are caused by NCDs. Sri Lanka provides universal care to its citizens and has performed well in controlling communicable diseases. However, demographic transition and economic development have led to lifestyle changes and NCDs are increasing. The prevalence of risk factors of NCDs have been estimated. A National NCD Steering Committee, Technical Working Group and District Coordination Committees are in place. To what extent the health promotion activities and other innovative interventions will succeed in changing behaviour will be critical. Continuation of personalized care is also a key factor. Some of these issues can be addressed through the primary health care approach. Research in priority areas will help in channeling resources to evidence-based interventions. He added that a shared understanding of researchers, academia, and service providers will go a long way in formulating appropriate policies for prevention and control of NCDs.

His Excellency Honourable Tikiri Kobekaduwa, Governor, Central Province, Sri Lanka, extended a warm welcome to the participants. He pointed out that Sri Lanka is committed to NCD prevention and control. Sri Lanka was among the first countries in the Region to have anti-tobacco laws. Alcohol use is also being tackled through legislative approach. Schools are a suitable place for health education. All children attend school as education is free in Sri Lanka. Hence, through nutritious school meals without any junk food and allocation of school time for physical activity, one can inculcate healthy habits that will go a long way in preventing NCDs later.

3. Business session

The business session of the workshop started with a warm welcome by Dr Gamini Buthpitiya, Dean, Faculty of Medicine, University of Peradeniya. Dr Athula Kahandaliyanage, Director, Sustainable Development and Healthy Environments, WHO-SEARO summarized the objectives and expectations of the workshop.
4. Objectives of the workshop

4.1 General objective

To strengthen capacity of countries in implementation of research for prevention and control of NCD with a special focus on best buys and a primary health care approach.

4.2 Specific objectives

(1) To review WHO’s Prioritized Research Agenda and adapt it to country contexts.

(2) To review critically invited concept notes from Member States.

(3) To strengthen research capacity with a special focus on translational research and health system research for application of proven cost-effective strategies for prevention and control of NCDs.

4.3 Organization of the workshop

The workshop consisted of plenary sessions on research capacity building, presentation of research project proposals/concept notes, discussion on improving the research proposals, and group work. After the plenary presentation on prioritized research agenda for prevention and control of noncommunicable diseases, participants discussed the adaptation of the research agenda to national contexts. Subsequently, the outline of 18 research project proposals were discussed, and presentations made on: research into costing of health services; statistical methods in health research; evidence synthesis and meta-analysis; health policy and health system research; updated NCD action plan for implementation of the global strategy for NCD prevention and control; and research to inform policy making. Country participants developed one-page factsheets on prioritized research agenda for prevention and control of noncommunicable diseases to convince policy makers for investing in NCD research as a part of their working group activity. In the concluding session, the next steps for taking these research project proposals forward were discussed. The agenda of the workshop is contained in Annex 3.
4.4 Participants of the workshop

The workshop included 24 participants from all the 11 Member States of the Region, three temporary advisers, and 10 WHO staff from headquarters, the Regional Office for South-East Asia, and country offices. Four observers also attended the workshop. The list of participants is given in Annex 4.

5. Prioritized research agenda for prevention and control of noncommunicable diseases

Dr Shanthi Mendis, Coordinator, Chronic Diseases, WHO/headquarters introduced the prioritized research agenda for prevention and control of noncommunicable diseases which was developed during 2009–2010 through extensive reviews, surveys, and consultations with experts from the Member States. Prioritization was based on feasibility, scalability, applicability, and public health impact. Key areas of research were identified which are likely to improve understanding about implementation – barriers and facilitators, and impact of policies and programmes for prevention and control of noncommunicable diseases especially in low- and middle-income countries. The focus has been on four major NCDs – cardiovascular disease, cancer, chronic respiratory disease, and diabetes and their four shared risk factors and determinants within and outside the health sector. In each of these diseases the review focused on: what is known and what aspects require further research?

The main aim of the research agenda is to ensure that policy-and programme-related decisions are informed by evidence. In the prioritization process, the policies and programmes that have led to a decline of NCDs in developing countries have been given special attention. The top 20 priority areas for NCD research were grouped in four areas: research for placing NCDs in the global development agenda and for monitoring NCDs and NCD risk factors; intersectoral and multidisciplinary research to understand and influence the macroeconomic and social determinants of NCDs and exposure to NCD risk factors; and translational research; health system research for global application of proven cost-effective strategies; and research to enable expensive but effective
interventions to become accessible and used appropriately in resource-constrained settings. Key elements required for strengthening research capacity are also outlined in the prioritized research agenda.

5.1 Group work

Following the plenary presentation, participants in two groups discussed the ways for enhancing research capacity and Region or country-specific research areas. Political commitment, enhanced funding, strengthening research councils in medical and nonmedical fields, optimization of the use of WHO collaborating centres, dissemination and review of the prioritized research agenda by key stakeholders in countries, encouraging research networks for multidisciplinary research, and increased opportunities for publication and utilization of research findings were identified as major areas requiring attention for building research capacity. Research areas that require increased focus in NCD research include epidemiology, intervention models, implementation and evaluation, economic implication, integrated approaches, and effects of indoor air pollution on NCD.

Participants drafted one-page fact sheets for advocating the prioritized research agenda for prevention and control of NCDs to convince policy makers to invest in NCD research. Each of the four groups developed fact sheets using one of the following argument: economic; disease burden; poverty; and research. In a role play each group presented the fact sheet to a politician (session chair) and tried to make a case for investment in NCD research. Lively discussions followed each presentation.

5.2 Research proposals

Outlines of 18 research project proposals were presented by Member States. The relevance, strengths and weaknesses of each proposal was discussed. Several suggestions were made for improving the quality of the proposals.

Participants from Bangladesh proposed to conduct a ‘risk reduction intervention for NCD through primary health centres (PHC)’ using a before and after quasi-experimental study design in three PHCs where 4752
subjects would be enrolled in three months to receive lifestyle modification and medical interventions. A 6% absolute reduction in risks was postulated (from 15% to 9%) for sample size calculation. Changes in blood pressure, blood sugar, lipids, body weight, tobacco use, salt consumption, fruit and vegetable consumption, and adherence to prescribed medication were proposed as outcome measures. To improve the proposal, a cluster randomization approach for selection of PHC, specification of the site of intervention (home or hospital), type of follow-up (active or passive) and a listing of specific risk factors for lifestyle modification and primary medical care were suggested.

A ‘community-clinic-based intervention study on knowledge about occurrence and self care role for prevention and control of major NCDs’ was also proposed to be conducted in Bangladesh where 18 000 community clinics (CC) have been established – each serving 6000 rural population. These clinics are managed by community health care providers, health assistants and family welfare assistants. In a quasi-experimental design (before and after), a representative sample of 250 individuals above 15 years from each of the 900 CCs (5% sample of 18 000 CC) would receive lifestyle behavior-change intervention by a three-member intervention team. Lifestyle changes from baseline to endline would form the outcome analysis. Participants commented that a short list of the knowledge areas and self care roles be chosen for the intervention; a smaller number of intervention sites, a sampling and analysis plan, and a description of the study by a flow chart should also be included in the proposal.

Participants from Bhutan presented a research proposal to study the ‘burden and trend of NCDs’ by utilizing the Bhutan Health Management Information System (BHMIS). Descriptive analysis of NCD morbidity and mortality would be carried out from 2002 to 2011 by age, gender and districts to identify population groups at higher rates of NCDs. Participants felt that as BHMIS is based on hospital-based data, it may not capture all cases and deaths due to NCD for estimation of rates. However, the study would be able to determine the trend of NCD burden on the health system for advocating health system interventions.

Participants from Democratic People’s Republic of Korea proposed ‘screening and early detection of some cancers (lung, liver and stomach) in
pilot areas of Pyongyang’. In a cross-sectional multistage sample design, people above 35 years would be administered a questionnaire by household doctors in the pilot areas (10,000 population). Based on a questionnaire score, high-risk cases would be referred to hospital for further examination including clinical, imaging and biopsy for final diagnosis. The number of cancers detected early would be the outcome indicator for the study. The major limitation, pointed out by the participant, was lower cost–effectiveness of interventions for lung, liver and stomach cancer. Hence, the proposed study should focus on oral, cervical, breast, prostate, and colorectal cancers which are easier to detect and manage and are also more prevalent.

Participants from India discussed the outline of a research proposal – ‘quick STEPS – development of a rapid tool for NCD risk factor surveillance’. The STEPS questionnaire version 2.2 has 110 questions in the core and expanded sections. A shorter version of STEPS is needed as some countries would like to integrate STEPS in their national surveys. The study proposed reduction in the number of STEPS questionnaire items by discussion with all stakeholders so that about 50 items are selected for those in the 45–64 years age group with questions added on heart attack, stroke and salt intake. The sample size will be calculated to measure changes over a period of time. A pilot test using personal digital assistant (PDA) on a representative sample will be conducted before proposing the incorporation of quick STEPS in national surveys. Workshop participants suggested that a comparison with standard STEPS should also be incorporated in the proposal.

A proposal on ‘cost of delivering visual inspection with acetic acid (VIA) based cervical cancer screening services in India’ was also presented. A 10 year study in India has found VIA screening by primary health care workers as a feasible and effective option for cervical cancer screening. The programme cost of delivering this service needs to be computed for scaling up. Available data on cancer incidence and mortality among 75,360 women in the cancer education and VIA screening group who have received four screening rounds at a 24-month interval and 76,178 women who received cancer education at the start of the study, will be utilized to calculate cost of VIA screening service delivery per client and the cost of morbidity and mortality reduction. Workshop participants felt that the cost per diagnosed patient and cost of treatment per case should also be estimated as a part of this study.
Participants from **Indonesia** presented a study titled ‘empowering social network as strategy for cancer prevention in Yogyakarta province’. A mix-method-based approach was proposed to test the hypothesis that health promotion by using social networks (Twitter, Facebook, Messenger) is effective for cancer prevention. A qualitative method will be used to explore community perception about cancer prevention and treatment. In-depth interviews will be conducted among community leaders, cancer patients and high-risk subjects. A quantitative approach with pre-test control group design would be conducted to test the effectiveness of social network empowerment on early detection of cancer. Participants suggested that the project should focus on the specific type of cancer or specific risk behaviours such as tobacco use and a sufficient sample size should be selected to work out the cost–effectiveness of this strategy.

The other proposal from Indonesia was on ‘NCD prevention and case management system for the vulnerable population in rural and urban slum area in four districts of West Java and Central Kalimantan in Indonesia’. This project aims to identify NCD service-related issues such as service delivery resources, facilities, medications and technology, information system, access, quality, leadership, patients’ responsiveness and patients’ safety, to describe the relationship between community-based activities and PHC resources, and to assess the gaps between readiness and need from the perspective of providers and clients. The quantitative component would utilize the Facility Based Survey 2011 and primary data of individuals and health facilities in the selected districts. The qualitative component would use the case study approach in four selected PHCs of West Java and Central Kalimantan provinces. In-depth interviews, group discussion, seminars, and observation method will be used. Health staff at PHC, hospital, district, province and local government, patients, community leaders, i.e. all stakeholders, will be involved in the study. Participants rated this project to be good but ambitious and hence suggested that it should focus on specific NCDs and specific aspects of the health system and emphasis should be on its efficiency and responsiveness.

Participants from **Maldives** proposed ‘costing of national epileptic and psychiatric medicines supply under multiple scenarios’. Anti-epileptic and psychiatric medicines are being provided free to registered patients by the government of Maldives for several years now. The cost of these medicines has gone up due to the prescribed procurement procedures. In the absence
of prescription guidelines sometime second-line drugs are prescribed to patients without trying the first-line drugs. It is expected that a costing analysis would show estimates of cost saving in different costing scenarios, i.e. treatment algorithms using first-and second-line drugs in typical and atypical cases. The cost analysis will use the prices from the National Social Protection Agency as reference. The patient database from the Ministry of Health will be utilized to create a costing model in: as excel sheet to calculate the cost of procuring medicines as per; (a) the existing prices; (b) multi-source generic prices; and (c) multi-source generics with rational prescriptions. Suggestions for improvement of the project included considerations for fluctuations in the currency exchange rates, and extension of the project to include additional NCDs.

Participants from Myanmar presented a ‘cluster randomized trial on the use of community volunteers for cardiovascular diseases prevention and control in remote villages of Myanmar’ to test the hypothesis of whether the training of community workers for integrated health education including the diagnosis of hypertension reduces tobacco use among people. Three groups of villages (23 villages in each group) in nine townships where no health staff reside would receive one of the following interventions: (a) training of health staff at subhealth centres and training of volunteers in the villages; (b) training of health staff at subhealth centres with no volunteers in the villages; (c) routine health care with health staff in subhealth centres with no volunteer in the villages. The intervention will include training, using an illustrated module on risk factors and consequences of cardiovascular disease, blood pressure measurement and avoidance of tobacco use. The target population will be villagers in the 15–64 years age group. The primary outcome would be changes in seven-day tobacco quit rate six-months after the intervention, and the secondary outcome would consist of treatment adherence and control of blood pressure levels. Participants suggested that interventions may also include testing of urine for sugar to make it comprehensive.

A proposal on ‘Participation of general practitioners in management of common NCDs in Myanmar’ was presented which aimed to test whether interventions through involvement of private sector doctors will improve disease management due to common NCDs leading to reduced morbidity, complications and mortality. Out of a total of 17 476 medical doctors who provide medical care in Myanmar, 11 145 are private general practitioners
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(GPs) working full-time or part-time at the community level all over the country. In some townships they are involved in the TB control programme. A study area comprising six comparable townships will be chosen in the Mandalay region based on size of population, morbidity and mortality due to NCDs, and the number of general practitioners. Three townships will be randomly assigned to intervention groups. At least 100 general practitioners in the intervention arm of the study will receive training in management of NCDs. Monitoring and evaluation indicators would include knowledge and practices on disease management, number of NCD patients receiving effective treatment, severe and complicated NCD cases referred, use of standard case management guidelines, and utilization of laboratory facilities. A comparison with the control area would indicate the degree of success. Workshop participants suggested that the interventions should focus on a select group of NCDs, and should have objective parameters for measuring the success.

Participants from Nepal presented a plan for a ‘NCD risk factor survey’. An earlier WHO STEP survey had focused only on demographic, behavioural and physical measurements. Recently, a survey in the capital city had also included biochemical risk factors. A national survey on representative population is required to assess the prevalence of NCD risk factors in different strata of population to evolve evidence-based strategies/interventions and to establish a baseline to monitor trend over a period of time. A cross-sectional survey will be carried out using the WHO STEP validated questionnaire. Laboratory tests would include fasting blood sugar, a 2 hour glucose test and lipid profile. A sample of 4600 would be covered from 75 urban and 75 rural wards of Nepal using a cluster sample design with probability disproportionate sampling. At the first stage of sampling, one district will be chosen randomly from the mountain, hilly and Terai regions. Participants suggested expansion of the study to include older age groups, specification of blood pressure measuring instruments, and exploration of the options for making raw data available to researchers.

Another project proposal titled ‘Prevalence and determining factors of type 2 diabetes mellitus and hypertension in Kathmandu’ was also presented by Nepal. Workshop participants felt that the analysis of the NCD risk factor survey would address the issues proposed in this project.
Participants from Sri Lanka proposed ‘evaluation of selected aspects of implementation of WHO/ISH (International Society of Hypertension) risk prediction charts in managing NCD in primary health care institutions of Kurunagala district’. The Ministry of Health initiated multiple risk factor approach assessment and management of NCD in primary health care institutions in 2008 as a pilot project which has been extended to cover the entire Kurunagala district in 2011. In order to consider expansion of this approach to the entire country, an evaluation in Kurunagala district needs to be carried out to assess the implementation status of the multiple risk factor approach especially to identify the compliance level of medical officers and the outcome among screened population over a one-year period. A cross-sectional survey would be carried out among randomly selected primary health care institutions to assess implementation of risk prediction charts by the personnel deployed in these institutions. A self-administered questionnaire will be posed to medical officers to study their compliance to multiple risk factor approach in addition to a focus group discussion. Data from the registers will be retrieved for assessment of the outcome. Exit interviews of randomly selected clients will be done to assess satisfaction level. Workshop participants suggested that observations may also be done to see whether or not multiple risk factor protocols are properly used. The follow-up rate should be one of the outcomes, and a cost evaluation should also be done. A major limitation of the study is lack of comparison data before implementation of the risk approach.

‘Does consumption of a low glycaemic index rice variety delay onset of type 2 diabetes mellitus in individuals with increased risk for diabetes’ was the study question of another project presented from Sri Lanka. The glycaemic index of rice varies from 32 to 74%. The traditional variety of red/brown rice has a low glycaemic index but it is currently not consumed widely. Consumption of red/brown rice could delay the development of diabetes among those who are at increased risk of diabetes. In a prospective controlled observational design, patients in the 40–60 years age group, who have a fasting glucose of 100–125 mg% or have blood glucose between 140–200 mg% after intake of 75 g glucose meal and willing to continue to consume red or white rice for a period of two years and also have one of the criteria of metabolic syndrome or have at least one cardiac risk factor but do not have diabetes, would be enrolled. A trained field assistant will administer a questionnaire on meal pattern, seeking to establish the current pattern and quantity of staple rice. Those fulfilling the
inclusion criteria will be required to adhere to a rice-based meal of specific variety (white or brown) – at least two out of three meals per day. Dietary assessment would be done every month, and fasting plasma glucose, HbA1C, lipid profile, and CRP would be monitored every three months. Development of diabetes mellitus would be the primary end point and development of stable angina or TIA or cerebrovascular disease would be the secondary end-point for this study.

‘Comparison of stroke risk factors in a multicentre study across four ancestral populations’ was proposed to identify preventable risk factors for stroke for the Sri Lankan population. This study would investigate epidemiology, risk factors and genetics of stroke in India, Sri Lanka, United Kingdom and Qatar. In this ongoing case–control study, 1500 cases and 1500 controls are to be recruited in each of the study countries. In addition to the sociodemographic and behavioural risk factors, biochemical investigations, brain imaging and association with single nucleotide polymorphism, folate reductase, prothrombin, factor V Leiden, and angiotensin-converting enzyme polymorphism will be tested. Genome-wide scanning and next generation sequencing are also planned. This study is expected to find common epidemiological variants associated with risk of stroke proving insights into the underlying biological mechanisms of stroke.

Participants from Thailand outlined a proposal titled ‘Thailand Healthy Lifestyle NCD Comprehensive Multi level Participatory Programme’. The project hypothesized that patient education guidelines based on an ecological approach can lead to increase in medicine adherence and behaviour change and self-care promotion among patients and high-risk groups. A quasi-experimental design at 5–6 sites chosen from various regions with 120–150 patients and 100 high-risk groups from each site would be recruited using specific inclusion and exclusion criteria. Ecological intervention would have a list of activities with reference to changes in at least three of the following levels – intrapersonal, interpersonal, community and networks, organization and social. Guidelines of the ecological approach for patient education intervention would address exercise, diet, smoking, and alcohol risk behaviors. Skills, relevant to the behaviour changes as indicated in the guidelines, of professionals involved would be strengthened before providing services to the experimental group. Process and outcome evaluations would include measurement of changes at different levels – patient, family and community
participants’ behaviour change will also be assessed in terms of compliance to practice guidelines, skills in delivering service, and innovations in applying the guidelines in various cultural contexts. Suggestions for improvement of the proposal included bringing more clarity on the intervention elements – risk behaviours and treatment adherence etc. and on sampling – individuals or community.

Participants from Timor-Leste proposed ‘national survey on key risk factors of NCDs using WHO STEPS’. NCDs such as cardiovascular disease and chronic pulmonary diseases are among the top causes of death in Timor-Leste accounting for 663 deaths per 100,000 population. Hence, data on NCD risk factors are required for developing the national NCD control programme. The purpose of the survey would be to establish a baseline for measuring progress at regular intervals. Standard methodology of WHO STEPS would be used among 25–64 year-olds to estimate behavioural, physical and physiological risks. Some questions from the global adult tobacco survey will also be included. Using a cluster sampling method, 18 enumeration areas will be chosen to enroll 5,760 individuals in the survey. One hundred interviewers will be trained to conduct the survey. Data will be analysed using EpiInfo and the report will be disseminated to all stakeholders. Participants suggested that the number of investigators can be reduced to maintain the quality of survey and that socioeconomic status of subjects should also be measured in the survey.

6. Research capacity-building

Dr Shanthi Mendis, Coordinator, Chronic Diseases, WHO headquarters presented a discussion paper on ‘Updated NCD Action Plan 2013–2020’. WHO’s NCD action plan 2008–2013 had aimed at raising the priority accorded to NCDs and integrating action into policies across all government departments; establishing and strengthening national policies/programmes; reducing and preventing risk factors; prioritizing research on prevention and health care; strengthening partnerships, and monitoring NCD trends and assessing progress. The UN High-Level Meeting placed NCDs as a priority within the development agenda; advocated a whole-of-government approach to implement WHO’s best buys on NCDs; emphasized the leading role of WHO in coordinating global action on NCDs; directed WHO to strengthen internal capacity to support Member States; and to
deliver global monitoring. Hence, discussions have been initiated to accelerate national response, define the role of WHO, and to work out the cost of NCD interventions – the best buys.

The price tag for a combined set of ‘best buy’ NCD interventions identified as priority actions by WHO has been estimated. An amount of US$ 11.4 billion is the average yearly cost to scale up action for all low- and middle-income countries and US$ 500 billion per year is the output loss due to NCDs. The updated NCD action plan 2013–2020 aims to create political and public awareness of NCDs as a health and development issue; place NCDs in the post-MDG development agenda; establish and monitor multisectoral action for prevention and control of NCDs; strengthen international cooperation and results-oriented partnerships to raise revenue and strengthen national capacity; reduce risk factors and create health-promoting environments; reorient health systems to address NCDs and provide universal coverage; implement the prioritized NCD research agenda; establish NCD surveillance systems and monitor the NCD epidemic; accelerate progress of country action; create interconnections with all relevant health and development issues and jointly mitigate risks and repercussions. Informal consultations with Member States are ongoing for finalization of the action plan.

Professor Amala de Silva presented ‘research into costing of health services’. Case-studies of alternative screening procedures being piloted in the North Western Province of Sri Lanka were used to determine: how much each of these screening procedures costs per person; whether the screening process is cost effective; and whether it is feasible to expand the screening process to the national level. A scenario building approach was used for costing capital costs and operational costs using available data and expert opinion. The analysis indicates that an NCD screening programme such as WHO PEN can be conducted at reasonably low costs, and clearly such screening programmes are cost-effective. More work regarding the effectiveness of these alternative programmes in terms of risk detection would allow for selection among screening programmes. Likewise, attention would have to be paid as to how responsive the programmes are to community preferences, for example, for ease of access. The session was particularly relevant for improving the proposals on costing of national epileptic and psychiatric medicines supply under multiple scenarios in
Maldives, cost of delivering VIA-based cervical cancer screening in India, and the cost of NCD screening at PHC level in Sri Lanka.

Professor P. V. R. Kumarasiri presented an overview of statistical methods in health research. He emphasized that one should not be afraid of statistics as statistics are essential for research. Statistics is the science of collection, classification, description, analysis, interpretation and presentation of data. Health research deals with categorical and quantitative variables which are classified as independent or dependent variables. Dependent variables (outcome) change as a consequence to changes in independent variables. Studies are conducted on a sample of population using various sampling methods. A summary of the variables needs to be done for data presentation in tabular and graphical form. Quantitative data, if normally distributed, can be summarized as mean and standard deviations or if not normally distributed, then median and interquartile ranges should be used. The confidence interval should be presented along with exact p values. Suitable statistical tests need to be used for hypothesis testing. While exploring the association between independent and dependent variables, confounding by other variables should be considered. In research studies, confounding can be controlled at the design or analysis stages. At the design stage, strategies of randomization (clinical trials), restriction, or matching can be used whereas at analysis stage stratification and statistical modelling can be used. Expert advice of a statistician at the design and analysis stage is very useful in improving the quality of a research study. This presentation was useful to all the participants for planning data collection and analysis.

General principles of evidence synthesis and meta-analysis were presented with examples by Dr Anne Tharner. Mainly, systematic reviews and meta-analyses are tools to systematically summarize current evidence from multiple studies. A review is a qualitative summary; it can be narrative or systematic. For quantitative summary, a meta-analysis is to be conducted. Meta-analyses are widely used in different fields such as social sciences, medical sciences, genetics, political sciences, communication science, agricultural science and biology. By pooling data of smaller individual studies, power and precision are increased, which means that even smaller effect sizes can be detected. Meta-analysis is conducted in seven stages: problem formulation and hypothesis; determining types of studies to be included; searching literature; deciding inclusion criteria;
exclusion criteria; analyses and interpretation and reporting. One can use a checklist for selecting good quality studies for meta-analysis. However, a well thought out strategy should be chalked out to include all published and unpublished studies in all languages over an extended time frame. One has to decide whether it is sensible to pool the data of the studies included. This depends on the level of heterogeneity. If the studies differ too much in their methodology, exposures, outcomes, measurements used, age, etc. it makes no sense to combine the data. In that case, it is best is to do a systematic review. If pooling data is possible, specialized computer programmes can be used to do the computation. Besides the calculation of the effect size, a measure of the variance of an effect size should be calculated. Finally, comments on causality of the association should also be included in the meta-analysis. None of the proposals presented in the workshop used this approach. However, the participants got sensitized to its methodology and evinced interest in doing some studies in future.

Dr Shanthi Mendis presented issues related to health policy and systems research. Health systems research addresses questions such as—what can be done to change structures/components and to influence the behaviour/practices of the actors to generate performance gains/outcomes/social and financial risk protection/improve equity? Health system research can be conducted to: describe and assess particular health system building blocks (decentralization, health financing); describe particular experiences of policy change in particular settings; explain the influence over aspects of particular policy actors’ decision making (health seeking behaviour, health worker motivation); assess whether new interventions and approaches improve efficiency and cost effectiveness; understand stakeholder power/positions around new policies and actions; understand and explain variations between settings in the experience of implementing a particular policy; and explain overall health system performance impacts and their variation across health systems.

Several study designs can be used including: (a) exploratory design to find out what is happening especially in a little understood situation (generate insight and ideas for future research); (b) descriptive design to get an accurate profile of people, risk factors, events etc; (c) explanatory design to explain a problem and identify relationships between various aspects of the problem; (d) critical research to focus on those traditionally marginalized, analysing how and why inequities are reflected in power
imbalances and examine how results can lead to political and social action; and (e) action research to seek improvement in practice and also involves those who can take action. Both qualitative and quantitative methodologies can be used but quality and ethical conduct should be ensured.

Policy analysis research can identify key factors that affect prioritization of NCDs among government policy makers. Methodology of semi-structured interviews and unstructured discussions with high level officials, programme managers, foundations, bilateral and multilateral donor agencies, international NGOs and academia can be employed to understand policy contexts. Triangulation of data from different key informants with written resources can be used to assess the validity of the findings, and to mitigate the impact of biased and partial testimony. The case-study method can be used to assess the policy space i.e. policy context (barriers/opportunities), decision-making circumstances (constraining and supportive factors), and policy characteristics (support/opposition).

In a plenary session, Dr Gunawan Setiadi, Regional Adviser, Research Policy and Cooperation, WHO-SEARO talked about conducting research to inform policy issues. Evidence-informed health policy-making is an approach to policy decisions that aims to ensure that decision making is well informed by the best available research evidence. The overall process of policy making is not assumed to be systematic and transparent. However, within the overall process of policy making, systematic processes are used to ensure that relevant research is identified, appraised and used appropriately. A common understanding is that evidence concerns facts that are to be used in support of a conclusion. Expert opinion is more than just evidence. It is the combination of facts, the interpretation of those facts, and conclusions. Judgements about how much confidence can be placed in different types of evidence are made either implicitly or explicitly.

Systematic reviews are summaries of research evidence that address a clearly formulated question using systematic and explicit methods to identify, select, and appraise critically relevant research, and to collect and analyse data from the studies that are included in the review. Like any other tool, tools used to support the use of evidence to inform policy making can also be misused. Local evidence may be obtained from routine health information systems, from larger surveys or studies that can be
disaggregated, or from specific studies that have collected or analysed data at a local level.

After a policy decision has been made, the next key challenge is transforming the stated policy position into practical actions. What strategies, for instance, are available to facilitate effective implementation, and what is known about the effectiveness of such strategies? Policy briefs are a relatively new approach to packaging research evidence for policy makers. The first step in a policy brief is to prioritize a policy issue and then to focus on mobilizing the full range of research evidence drawing on available systematic reviews.

7. Concluding session

In view of the rising burden of NCDs in the SEA Region and available interventions including the best buys, workshop participants concluded that health system/implementation research is the need of the hour in the Region. The workshop provided an opportunity for discussion of 18 research proposals enhancing the capacity of participants to further improve them. The plenary sessions provided ideas and enthused the participants for improving their research proposals.

Dr Shanthi Mendis observed that although time was short, everyone benefitted from the workshop in one way or another. She hoped that the research proposals discussed will be refined and supported by the Member States and results would be published in peer reviewed journals.

In his closing remarks, Dr Athula Kahandaliyanage, appreciated the participatory nature of the workshop. Analysis of participants’ feedback indicated that the workshop was well appreciated and would result in improving research capacity. He thanked all participants, especially representatives of Member States who responded by sending research proposals.

Dr Gamini Buthpitiya, Dean, Faculty of Medicine, University of Peradeniya, thanked the university staff for maintaining an environment conducive for learning.
Annex 1

Address by Dr Samlee Plianbangchang, Regional Director, WHO South-East Asia

Distinguished participants, honourable guests, ladies and gentlemen,

It is my pleasure to extend a warm welcome to all of you to this Regional Workshop on “Prioritized Research Agenda for Prevention and Control of Noncommunicable Diseases through a Primary Health Care Approach.

In the recent past, many positive developments have occurred globally and regionally to push the NCD agenda forward. Today, there is unprecedented support for efforts for prevention and control of noncommunicable diseases, which was not present a few years back. While WHO should take the initiative to advocate, guide and coordinate global efforts for NCD prevention and control, it should be remembered that one of WHO’s mandates is to generate and disseminate evidence.

In this context, the Global Strategy for the Prevention and Control of Noncommunicable Diseases states that: “WHO, in close collaboration with other partners, will promote and support research in priority areas of prevention and control, including analytical, operational and behavioural research to facilitate programme implementation and evaluation.” Objective 4 of the Global Strategy Action Plan calls for a coordinated agenda for NCD research to strengthen the evidence base for cost-effective NCD prevention and control. Research should not only generate more knowledge but also help to translate knowledge into action through innovative approaches. By implementing the Global Strategy we aim to generate knowledge and help to translate knowledge into action through innovative approaches in the context of low- and middle-income countries. We also aim to support low- and middle-income countries in building capacity for epidemiological and health-systems research, including the analytical and operational research required for programme implementation and evaluation in the area of non communicable diseases.

Based on consultation with an extensive network of experts from Member States, WHO Collaborating Centres, research and public health
Institutions and other partners involved in prioritizing, implementing and funding research projects, WHO developed “A Prioritized Research Agenda for Prevention and Control of Noncommunicable Diseases”. The contents of this document serve as a useful guide to those implementing and funding research on noncommunicable diseases and their risk factors and determinants. The term, “prioritized research agenda”, refers to key areas of research that seek to understand and impact policies, programmes and processes for preventing and mitigating the NCD epidemic.

The overall goal of the WHO NCD Research Agenda is to ensure that decisions and actions for addressing NCDs are grounded in evidence from research. Three areas have been prioritized. Firstly, intersectoral and multidisciplinary research to understand and influence the macroeconomic and social determinants of NCDs and exposure to NCD risk factors. Secondly, translational research and health system research for global application of proven cost-effective strategies. And thirdly, research to enable expensive but effective interventions to become accessible and used appropriately in resource-constrained settings.

Participants from South-East Asia Region countries reviewed and ratified this Research Agenda in the Regional NCD Network meeting in Chandigarh in 2009. They agreed that the focus should be on operational and translational research as there is a large know–do gap. The issues of social determinants and inequity, of estimating the economic impact of NCDs, of the role of non-physician health workers, and of evaluating policy and legislative interventions, were identified as other research priorities.

Ladies and Gentlemen,

It is not only for WHO to promote research, but Member States also need to have a prioritized research agenda and carry out formative and operational research with a major focus on primary prevention and early diagnosis of NCDs, addressing social and economic determinants, as well as developing and testing multisectoral approaches to NCD prevention and control. Some countries, such as India, have already undertaken this exercise through their Medical Research Council. National medical research councils have an important role to play in improving capacities for research in their countries, as well as for funding in identified key priority areas.

While generating a research agenda is the first step, the real challenges in implementing it. There is presently a serious mismatch
between the rising NCD burden and the research capacity and research output in many low-and middle-income countries. Among the many barriers, one is lack of research capacity in Member States. This is both in quantitative (few people do research) and qualitative (poor research capability of researchers) terms. The basic prerequisites for health research systems include a national research policy, leadership, a competent research workforce, adequate financing, priority-setting mechanisms, regulatory frameworks, ethical oversight mechanisms, adequately equipped research institutions, and effective information and dissemination systems. If support can be provided to build indigenous research capability, then local studies can be undertaken to translate the results of studies carried out elsewhere into individual national settings. Enhanced investment in NCD research remains an urgent need, particularly to address training, retention of research workforces, and the weak research capacity in low- and middle-income countries.

Results of research are also needed by governments to enable them to determine how to spend scarce resources on prevention and control of NCDs. This means that training in research and research methods should be at the forefront of efforts to strengthen capacity for prevention and control of NCDs in low- and middle-income countries. Such training should cover key areas, including writing research proposals, research methods, protocol development, data collection and analysis, reporting, writing and presentation and writing of research results for publication and summaries as policy briefs.

This workshop appropriately aims to address the need to strengthen the competence of researchers and to assist them in identifying priority national problems that need research assistance. I am glad to note that all the participants have already shared a draft of their research ideas, and during this participatory workshop will get feedback from the experts to sharpen the objectives and improve the design and analysis.

Finally, ladies and gentlemen, I wish the meeting all success. I am sure that many of these “revised” proposals will be attractive for funders of research and will successfully receive funds to conduct them.

Thank you.
Annex 2

Speech by Dr Palitha Maheepala, Additional Secretary, Ministry of Health, Sri Lanka

I am deeply honoured to stand before you today to speak a few words at the occasion of the inauguration of the Regional Meeting on Prioritized Research Agenda for prevention and control of Non-Communicable Diseases.

As you are aware, by definition, noncommunicable diseases are non-infectious and non-transmissible diseases between persons. These can be either chronic or acute in nature.

WHO statistics indicate that chronic diseases such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes are by far the leading cause of mortality in the world, representing 63% of all deaths. It should be noted that of the 57 million total deaths that took place in the world in 2008, 36 million people died from chronic diseases. Of the deaths due to NCDs, nine million died before they reached the age of 60 years; and 90% of these premature deaths occurred in low- and middle-income countries. Sadly, we know that 80% of premature heart disease, stroke and diabetes can be prevented by simply controlling the known risk factors.

If we look at Sri Lanka, it is estimated that deaths due to NCDs account for 65% of the total deaths, in which cardiovascular diseases and injuries take the major proportion, that is about 56%.

Noncommunicable diseases are not only causing premature deaths, but they also add to the disabled population in society, increasing the catastrophic expenditure for the family while cutting the productive workforce of the country. Sri Lanka is one of the unique countries in providing healthcare facilities free of charge to its citizens, whether it is preventive approach or palliative care, through the government health care institutions scattered all over the country and within the reach of every citizen making universal coverage possible.
I need not to mention that Sri Lanka has performed extraordinarily well in controlling and preventing communicable diseases by its strong primary health care approach. However, it is facing a double burden of diseases while the country is in demographic transition and economic development phase which led to the transformation of lifestyles more prone to NCDs.

As all of us know, four modifiable health risk behaviours – lack of physical activity, unhealthy diet, tobacco use, and excessive alcohol consumption – are responsible for much of the illness, suffering, and early deaths related to chronic diseases. According to estimates in 2008 in Sri Lanka the prevalence of current daily tobacco smoking was 10.6% and physical inactivity in 26% of the total population. At this point we need to think what are the weaknesses that led to this information not being translated into practice? The same year estimates show the prevalence of raised blood pressure in 39.2%, raised blood glucose in 8.8% and overweight in 21.9% of the total population. How can we monitor the health of this population and add life to the years? We have a national NCD steering committee, technical working group and district NCD coordinating team in place. The issue will be how our resources available in the health sector for health promotion activities can contribute to the successful behavioural change through innovations.

Continuation of personalized care is a key factor for NCD care. Bypassing the health institutions, lack of a robust health information system and referral system not only challenge the continuation of care but also cause high health expenditure to the system and out-of-pocket expenditure to the sufferers. We strongly believe that strengthening of the primary health care approach will address some of the disease burden. However, identifying NCD priority areas such as research on risk factors and protective factors, community-based health promotion models, process management in the health systems, screening approaches, social determinants, and health equality are some of the key research areas in the future to focus on. This will enable us at the decision making table to channel the resources in a evidence-based perspective.
Ladies and gentlemen,

We are gathered here today as Member States sharing a common cultural and social heritage and development challenges to discuss prioritized research agenda and strengthen the research capacity to build competence, gain confidence and initiate change in prevention and control of noncommunicable diseases.

Further, I wish to state that this will open up a unique opportunity for engaging in issues of mutual interest, exchange of knowledge, expertise and intelligence, promote excellence in research, enhance professional relationships and broaden horizons of thinking in relation to foster healthcare interoperability among regional nations. I hope the deliberations during the next two days with your infinite wisdom will focus attention on regional challenges faced by Member States to prepare for the future and formulate innovative and alternative options and strategies to address the issues.

In conclusion, let me say that the activities conducted by WHO in Sri Lanka and other Member States have been of immense value. I am sure that this will bring the researchers, academia and service providers to a common understanding in preventing and controlling NCDs.

I wish to express my deepest gratitude to Dr Athula Kahandaliyange, Prof. Shanthi Mendis, Dr F.R. Mehta and his team who have worked tirelessly to make this meeting a reality.

Thank you.
Annex 3

Agenda

(1) Prioritized Research Agenda for Prevention and Control of Noncommunicable Diseases
(2) Research project proposals
(3) Research into costing of health services
(4) Statistical methods in health research
(5) Updated NCD Action Plan for implementation of the Global Strategy for NCD prevention and control and the commitments in the political declaration of the UNHLM Research and Development
(6) Evidence synthesis and metaanalyses (with practical example)
(7) Health policy and systems research
(8) Research to inform policy making
Annex 4

List of participants

Bangladesh
Dr Kamrun Nahar Choudhury
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Department of Public Health and Hospital Management
National Institute of Preventive and Social Medicine

Bhutan
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Democratic People’s Republic of Korea
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Pyongyang
Dr Han Sok Yong
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National Institute of Public Health Administration
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Malé
Mr Ubeydulla Thoufeeq
Public Health Programme Coordinator
Centre for Community Health and Disease Control
Malé

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Dr Ohnmar (Ms)
Research Scientist
Epidemiology Research Division
Department of Medical Research (Lower Myanmar)
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Report of the regional workshop

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Kathmandu
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Faculty of Medicine
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Dr Prasad Katulanda
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Prof. Ranil De Silva
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Faculty of Public Health
Mahidol University
Bangkok
Prof. Chanuantong Tanasugarn
Department of Health Education
and Behavioral Sciences.
Faculty of Public Health
Mahidol University
Bangkok

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Head of Department Non CDC
Dili
Dr Maria Do Ceu Sarmento Pina
Faculty of Medicine
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Temporary Advisers
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Netherlands
Dr G Gururaj
Professor and Head
Department of Epidemiology
National Institute of Mental Health and
Neuro Sciences (NIMHANS)
Bangalore
Dr Anand Krishnan
Head
WHO Collaborating Centre for Capacity
Building and Research in Community-Based
NCD Prevention and Control
Centre for Community Medicine
All India Institute of Medical Sciences
New Delhi

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Dr Shanthi P.B. Mendis
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Chronic Diseases Prevention & Management
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Dr Athula Kahandaliyanage  
Director  
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World Health Organization  
Regional Office for South-East Asia  
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Mr T. R. Swaminathan  
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WHO Bangladesh  

Dr Nishirani Lanka Jaysuriya Dissanayake  
National Professional Officer (NCD)  
WHO Sri Lanka  

Dr Chai Kritiyapichatkul  
National Professional Officer  
WHO Thailand  

Mr Leoneto Soares Pinto  
National Professional Officer (NCD)  
WHO Timor-Leste  

*Ms Geraldine Anthony  
Secretary  
WHO Thailand  

Report Writer  
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Professor and Head  
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Post Graduate Institute of Medical Education and Research  
Chandigarh, India  

Observers  
Prof. Samath Dharmaratne  
Associate Professor in Community Medicine and Consultant Community Physician  
Dept of Community Medicine  
Faculty of Medicine  
University of Peradeniya  
Sri Lanka  

*Dr Chandana Prasad  
Medical Officer  
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Dr Shamali Amarasinghe  
Medical Officer  
Non Communicable Diseases-Kurunegala  
Regional Director’s Office  
Kurunegala  
Sri Lanka  

Dr Palitha Abeykoon  
Senior Adviser  
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Senanayake Junction  
Colombo, Sri Lanka  

*Dr Palitha Karunapema  
Deputy Director  
Ragama Rehabilitation Hospital  
Ragama  
Sri Lanka  

* invited but unable to participate
## Annex 5

### List of research proposals discussed in the Workshop

<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
<th>Designation</th>
<th>Title of project outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Bangladesh</td>
<td>Dr Kamrun Nahar Choudhury</td>
<td>Assistant Professor of Epidemiology, Department of Epidemiology, National Centre for Control of Rheumatic Fever and Heart Diseases</td>
<td>Risk reduction intervention for Noncommunicable Diseases through Primary Health Care level in Bangladesh</td>
</tr>
<tr>
<td>2 Bangladesh</td>
<td>Associate Professor Md Amirul Hassan</td>
<td>Professor and head of the department of Public Health and Hospital Administration and department of Biostatistics in the National Institute of Preventive and Social Medicine (NIPSOM)</td>
<td>Knowledge about occurrence and selfcare role for prevention and control of major Noncommunicable diseases : A community clinic-based intervention study</td>
</tr>
<tr>
<td>3 Bhutan</td>
<td>Mr Mongal Singh Gurung</td>
<td>Assistant Research Officer/ Member Secretary of Research Ethics Board of Health Ministry of Health, Bhutan</td>
<td>Burden and trend of NCDs in Bhutan</td>
</tr>
<tr>
<td>4 Democratic People’s Republic of Korea</td>
<td>Dr Han Sok Yong</td>
<td>Section Chief, Section of Anti-epidemic research, National Institute of Public Health Administration, Ministry of Public Health, Pyongyang</td>
<td>Research proposal on screening and early detection of some cancers (liver, lung and stomach) in pilot areas of Pyongyang, Democratic People’s Republic of Korea</td>
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# Prevention and control of NCDs through a primary health care approach

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<thead>
<tr>
<th>Country</th>
<th>Name</th>
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<th>Title of project outline</th>
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</thead>
<tbody>
<tr>
<td>India</td>
<td>Dr J.S. Thakur</td>
<td>Additional Professor at School of Public Health, Post-Graduate Institute of Medical Education and Research, Chandigarh</td>
<td>Quick STEPS: Development of a rapid tool for NCD risk factor surveillance</td>
</tr>
<tr>
<td>India</td>
<td>Dr Surendra Shastri</td>
<td>Professor and Head, Department of Preventive Oncology, Head, WHO Collaborating Centre for Cancer Prevention, Screening and Early Detection, Tata Memorial Centre, Mumbai, India</td>
<td>The cost of delivering VIA-based cervical cancer screening services in India</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Ms Supriyati, S.Sos., M.Ke</td>
<td>Center of Health Behavior and Promotion, Faculty of Medicine Universitas Gadjah Mada</td>
<td>Developing Social Network as a strategy for cancer prevention in Yogyakarta Province, Indonesia</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Ms Julianty Pradono</td>
<td>NIHRD</td>
<td>NCD prevention and case management system for the vulnerable population in rural and urban slum areas: Assessing Patient’s Safety, Patient’s Responsiveness and Resources in Primary Health Care.</td>
</tr>
<tr>
<td>Maldives</td>
<td>Mr Ubeydulla Thoufeeq</td>
<td>Public Health Programme Coordinator, Centre for Community Health and Disease Control</td>
<td>Costing of national epileptic and psychiatric medicines supply under multiple scenarios</td>
</tr>
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<tr>
<td>10 Myanmar</td>
<td>Dr Hla Soe Tint</td>
<td>Research Scientist, Epidemiology Research Division, Department of Medical Research (Lower Myanmar)</td>
<td>Participation of general practitioners in Management of Common Non-communicable Diseases in Myanmar</td>
</tr>
<tr>
<td>11 Myanmar</td>
<td>Dr Ohnmar (Ms.)</td>
<td>Research Scientist, Epidemiology Research Division, Department of Medical Research (Lower Myanmar)</td>
<td>Cluster randomized trial on the use of community volunteers for cardiovascular disease prevention and control in remote villages in Myanmar</td>
</tr>
<tr>
<td>12 Thailand</td>
<td>Prof. Chanuantong Tanasugarn</td>
<td>Lecturer at Department of Health education and Behavioral Sciences Faculty of Public Health, Mahidol University</td>
<td>Thailand Healthy Lifestyle-NCD Comprehensive Multi level Participatory Program</td>
</tr>
<tr>
<td>13 *Thailand</td>
<td>Dr Punyarat Lapvongwatana</td>
<td>Assistant Professor Dr Chair of Doctoral Programme of the Department of Public Health Nursing, Faculty of Public Health, Mahidol University</td>
<td>Model Development for Non-Communicable Diseases Prevention in Thai Communities</td>
</tr>
<tr>
<td>14 Timor-Leste</td>
<td>Dr. Maria do Céu Sarmento Pina da Costa</td>
<td>Faculty of Medicine and Health Science, National University of Timor- Lorosa’e</td>
<td>National Survey on key risk factors for Noncommunicable Disease using WHO STEPS in Timor-Leste - 2012</td>
</tr>
<tr>
<td>15 Sri Lanka</td>
<td>Prof. Ranil De Silva</td>
<td>Associate Professor, Dept of Anatomy, Faculty of Medical Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka</td>
<td>Comparison of stroke risk factors in a multicentre study across four ancestral populations leading to the prevention of stroke in Sri Lanka</td>
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## Prevention and control of NCDs through a primary health care approach

<table>
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<tbody>
<tr>
<td>Sri Lanka</td>
<td>Dr Arjuna Medagama</td>
<td>Senior Lecturer at the Department of Medicine, Faculty of Medicine, University of Peradeniya</td>
<td>Does consumption of a low glycaemic index rice variety delay the onset of type 2 diabetes mellitus in individuals with increased risk for diabetes?</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Dr Prasad Katulanda</td>
<td>Senior Lecturer, Department of Clinical Medicine, Faculty of Medicine, Colombo, Sri Lanka</td>
<td>Assessment of implementation and impact of the WHO PEN in the district of Badulla in Sri Lanka</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Dr Thalatha Liyanage</td>
<td>Director, Noncommunicable Diseases, Ministry of Health</td>
<td>Evaluation of selected aspects of implementation of WHO/ISH risk prediction chart in managing NCD in primary health care institutions in Kurunagala district</td>
</tr>
<tr>
<td>Nepal</td>
<td>Prof. Dr Chop Lal Bhusal</td>
<td>Executive Chairman, Nepal Health Research Council (NHRC), Ministry of Health &amp; Population, Kathmandu, Nepal</td>
<td>Non Communicable disease risk factors survey in Nepal</td>
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<td>Prevalence and determining factors of Diabetes Mellitus Type 2 and Hypertension in Kathmandu</td>
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Noncommunicable diseases (NCDs) have emerged as a leading cause of morbidity and mortality in most countries. The Global Strategy for the Prevention and Control of NCDs and its Action Plan have laid out a road map for establishing effective programmes to achieve the global target of a 25% reduction in NCD deaths by 2025. To refine the response to the rising burden of NCDs, WHO has prioritized a research agenda after extensive reviews, surveys, and consultations with experts from the Member States. Its aim is “to generate knowledge and to help translate knowledge into action through innovative approaches in the context of low- and middle-income countries, and to support them in building capacity for epidemiological and health-system research, including analytical and operational research required for programme implementation and evaluation in the area of noncommunicable diseases”. The prioritized research agenda outlines 20 top priority areas under four domains to assist researchers to identify national and regional problems that require research for solutions.

The report, of the “Regional workshop on prioritized research agenda for prevention and control of noncommunicable diseases through primary health care approach” held in Kandy, Sri Lanka during 8–10 August 2012, discussed the adaptation of the research agenda to national contexts. The participants from all 11 Member States of the Region discussed the outlines of 18 research projects, and developed one-page factsheets on prioritized research agenda for prevention and control of noncommunicable diseases to convince policy-makers to invest in NCD research.