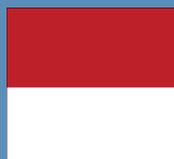




# Second Workshop

## **WHO Package of Essential Non-Communicable Disease Interventions Economic Evaluation**

January 5 - 9, 2015  
WHO Kuningan Office and the Parklane Hotel,  
Jakarta, Indonesia



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## Abstract

In response to the request from Indonesia's Ministry of Health (MOH), WHO and HITAP provided support for the Package of Essential Non-communicable (PEN) disease intervention evaluation. This report summarizes the results of the five-day workshop in Jakarta from January 5-9, 2015. It was agreed that the evaluation will include qualitative analysis on technical competency of staff, public acceptance, and current barriers of introducing PEN program and reporting of the healthcare profile (patient statistics, etc.) as well as a qualitative analysis, which will be a health and economic assessment of the current PEN compared to 'no screening' in order to inform local stakeholders of the health and economic impact of introducing PEN in Indonesia. The evaluation will also explore the outcomes of modifying the current PEN program by changing the target population and method for diabetes screening. Local data will be collected at the end of January and early February in 4 provinces. Data analysis will be performed in March or April in Jakarta. A stakeholder consultation meeting is planned to be included in the data analysis visit to Jakarta to verify and validate evaluation results as well as to fine-tune policy recommendations. The results of the qualitative and quantitative study are expected to inform future development of the non-communicable disease (NCD) prevention and control program in Indonesia as well as to provide a case example of applying health technology assessment in public health programs in low- and middle-income countries.

## Workshop Context and Summary

According to the previous scoping visits of HITAP and PATH, there is a considerable demand for evidence-based policy development on prevention and control of NCDs in Indonesia. The increasingly aging population and unhealthy lifestyles, coupled with an increased investment in healthcare by the government of Indonesia's new commitment to the UHC, have stimulated this demand. As the PEN disease interventions has been recognized as a cost-effective set of interventions for low- and middle-income countries to deal with the high prevalence as well as high morbidity and mortality of NCDs, Indonesia's Ministry of Health (MOH) promptly incorporated the PEN interventions into its public health service at primary care level since 2011.

The PEN interventions were incorporated in the MOH comprehensive NCD program. With the emphasis on community engagement, Posbindu, which is the community-based awareness, monitoring, and screening activity for diabetes and hypertension, has been introduced and implemented by trained village health volunteers called kader. For those with positive screening, they will be referred to the primary health care centre or Puskesmas for diagnosis and proper treatment. This arrangement allows the PEN intervention to be implemented throughout the country where there are large variations of available human resource.

After three years of policy implementation, there are some concerns regarding the effectiveness and impact of the program implementation. The MOH, with the support of the WHO, is planning to evaluate this effort and invited HITAP to be involved to ensure that the evaluation provides a comprehensive result that will improve technical efficiencies and raise political and public awareness of the NCD prevention and control program in Indonesia.

This report informs about the five-day workshop conducted in Jakarta between MOH, WHO, and HITAP, with support from the World Health Organization Representative office (WRO) in Indonesia, WHO South East Asia Regional Office (WHO-SEARO), and international Decision Support Initiative (iDSI). This workshop aimed to provide technical background on health economic evaluations to key local partners who will conduct the PEN program evaluation in Indonesia. Six participants, including those from MOH, LITBANG (National Institute of Health Research and Development or NIHRD), and WHO staff, learned about basic concepts of disease modelling, costing, and economic evaluation (particularly introductory concepts of decision trees, Markov models, and probability sensitivity analysis) as well as the use of systematic literature reviews. In turn, HITAP staff learned about the historical development and context of the PEN interventions in Indonesia as well as the survey design and implementation plans for the qualitative data collection. The workshop encouraged both HITAP staff and participants to discuss and make plans on the PEN evaluation. HITAP also met with the WHO Representative to Indonesia, Dr. Kanchit Limpakarnjanarat, to discuss WHO's areas of work and acquire approval and support from him and the WRO.

## Plan for the PEN Evaluation

During the workshop, the following agreements were reached:

- Model-based health economic evaluation will be conducted in order to compare cost and potential impact in terms of case detected, complications averted, deaths averted, life years gained, and disability-adjusted life years (DALY) gained from the current NCD program, compared with a scenario of 'no screening' and 'a modified policy'. This analysis will be complemented by a qualitative program evaluation conducted by the MOH and WHO.
- Although the NCD program includes diabetes, hypertension, cancer, and chronic pulmonary disease, this evaluation will focus only on diabetes and hypertension because these two diseases have the highest prevalence and are likely to need more resource allocation for the program.
- The evaluation will explore the outcomes of introducing a modified policy that will incorporate more targeted screening of the population, to be changed from screening for diabetes and hypertension in 15 year olds and above to screening from 40 year olds and above. Another modification will be changing the screening method for diabetes from capillary blood test to fasting blood test.
- Although local data is the preferred data for the evaluation, regional and global information will be used in case of no or insufficient local data available with close consultation with local experts and stakeholders. Uncertainty analysis will also be performed to ensure reliable policy recommendations.
- HITAP will be responsible for developing the model and survey questionnaire for the quantitative part, with input from the participants (see [Appendix 2](#)). On the other hand, the MOH will be responsible for development of qualitative data collection and planning. MOH, WHO, and HITAP will take part in the fieldwork in 4 provinces, representing different geographical locations in Indonesia. The fieldwork will be conducted by end of January or early February, to go for one month.
- iDSI through HITAP will also provide financial support to 32 interviewers for primary data collection on the quantitative part (community survey on hypertension and diabetes screening coverage and treatment adherence). Meanwhile, WHO will provide support for qualitative data collection.
- The collected qualitative data will be analysed in an economic evaluation together and a stakeholder consultation meeting will be performed at the end of March or early April 2015 in Jakarta. There will be another five-day workshop between MOH, WHO, and HITAP in which the first three days will be about data analysis and preparation for the stakeholder consultation meeting presentation. The fourth day

will be the stakeholder consultation meeting (only half-day). The last day will be the After Action Review (AAR) and plan for the final report.

- The stakeholders for the stakeholder consultation meeting will include: decision-makers at MOH and BPJS (organization responsible for UHC implementation), representatives from professional associations, academic institutions (such as LITBANG, University of Indonesia, etc.), civil societies, patient groups, industries, WHO and WR as well as international partners (such as the World Bank and Australia's Department of Foreign Affairs and Trade, etc.).
- The report will be made available to all relevant stakeholders in Indonesia (perhaps also translated into the local language) as well as international audiences. It will also be submitted to funders of this evaluation, including WRO in Indonesia, WHO-SEARO, and iDSI.

## Appendix 1: Workshop on the WHO PEN Evaluation in Indonesia

The objectives of this meeting are:

- Learn about the historical context and World Health Organization's (WHO) Package of Essential Non-Communicable (PEN) disease interventions program implementation in Indonesia's primary healthcare centres (Puskesmas)
- Provide training to partners on the economic evaluation (EE) methodology (based on study conducted on the PEN evaluation in Bhutan) proposed to be used in this analysis
- Gather information on available data and data sources for the analysis from the partners
- Plan for the next steps, analysis, and other collaboration (e.g. field work) between HITAP and its partners

Please see [Appendix 1](#) for the full meeting agenda.

**Venue:** WHO Kuningan office, Jakarta

**Date of mission:** January 5<sup>th</sup> - 9<sup>th</sup>, 2015

**Responsible agency:** Health Intervention and Technology Assessment Program (HITAP)

**Counterparts:** WHO, National Institute for Health Research Development (NIHRD) of the Ministry of Health (MoH), NCD Directorate of the MoH

### List of HITAP experts:

	Name	Designation / Title
1	Dr. Yot Teerawattananon	Program Leader
2	Dr. Thunyarata <u>Anothaisintawee</u>	Researcher
3	Ms. Waranya Rattanavipapong	Researcher
5	Ms. Suthasinee Kumluang	Researcher
4	Dr. Kanlaya Teerawattananon	Researcher
6	Ms. Sarocha Chootipongchaivat	Research Assistant
7	Ms. Alia Luz	Project Coordinator

**List of participants:**

	<b>Name</b>	<b>Designation / Title</b>
1	Dr. Lily Banonah Rivai	Head of Sub-directorate of CVD Control, NCD Directorate
2	Dr. Sri Idiani	Researcher (NIHRD)
3	Dr. Cicih Opitasari	Researcher (NIHRD)
4	Ully Adhie	Researcher (NIHRD)
5	Dr. Nunik Kusumawardhani	Researcher (NIHRD)
6	Priska Apsari Primastuti	National Consultant for NCD and Mental Health (WHO)
7	Dr. Dewi Indriani	National Program Officer (WHO)

## Appendix 2: Agenda for the workshop on the PEN disease interventions evaluation in Indonesia

Training Course for PEN evaluation in Indonesia - Venue: WHO Kuningan Office	
Time	Session Activity
<b>5-Jan-15</b>	
12.00	HITAP team arrives Soekarno-Hatta airport
14.00 - 15.30	Presentation of historical development of PEN program in Indonesia (45 min.) <b>By: WHO or MOH staff</b> Q&A and discussion (45 min.)
15.30 - 17.00	Presentation of preliminary results (the field test results in Banten province) of PEN evaluation (45 min.) <b>By: WHO or MOH staff</b> Q&A and discussion (45 min.)
<b>6-Jan-15</b>	
9.00 - 10.00	Conceptual framework of assessing impact and value for money of PEN programs <b>By: HITAP</b> Q&A and discussion (30 min.)
10.00 - 12.00	Training on health economic modeling for PEN evaluation part 1 (Decision tree model), including hands-on exercise <b>By: HITAP and participants</b>
12.00 - 13.00	Lunch
13.00 – 16.00	Training on health economic modeling for PEN evaluation part 2 (Markov model), including hands-on exercise <b>By: HITAP</b> Q&A and discussion for economic modeling (30 min.)
<b>7-Jan-15</b>	
9.00 - 9.30	Wrap up Day 2 <b>By: HITAP</b>
9.30 - 12.00	Planning data analysis for model input parameters for PEN evaluation <b>By: HITAP and participants</b>
12.00 - 13.00	Lunch
13.00 – 14.30	Literature search <b>By: HITAP and participants</b>
14.30-16.00	Study design <b>By: HITAP and participants</b>
<b>8-Jan-15</b>	
9.00 - 9.30	Wrap up Day 3 <b>By: HITAP</b>

**Training Course for PEN evaluation in Indonesia - Venue: WHO Kuningan Office**

<b>Time</b>	<b>Session Activity</b>
<b>9.30 - 10.30</b>	Uncertainty <b>By:</b> HITAP
<b>10.30 – 12.00</b>	Economic evaluation data analysis including uncertainty analysis <b>By:</b> HITAP
<b>12.00 - 13.00</b>	Lunch
<b>13.00 - 16.00</b>	Discussion on the survey design <b>By:</b> participants
<b>9-Jan-15</b>	
<b>9.00 - 9.30</b>	Wrap up Day 4 <b>By:</b> HITAP
<b>9.30 - 12.00</b>	Plan for next step and conclusion <b>By:</b> HITAP and participants
<b>12.00</b>	HITAP team departs for Soekarno-Hatta airport

## Appendix 3: Questionnaire for quantitative data collection for the PEN evaluation

Interviewer's name:	Participant ID: <input type="text"/> <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<b>PEN study</b>	
Please respond to following question by marking <b>X</b> inside the checkbox <input type="checkbox"/> that applies to answers. For numeric or alphabetic box <input type="text"/> , please write nearly inside the box, one character for each box.	
<b>Demographic data and screening perception</b>	
1. Date of interview	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> dd / mm / yyyy
2. Place of interview (posbindu)	<input type="text"/>
3. Age	<input type="text"/> <input type="text"/> <input type="text"/> Years
4. Gender	<input type="checkbox"/> 1. Male <input type="checkbox"/> 2. Female
5. Have you ever heard about the Posbindu?	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No
<b>Hypertension screening</b>	
6. Have you ever measured blood pressure?	<input type="checkbox"/> 1. Yes (go to 7) <input type="checkbox"/> 2. No (go to 11)
7. When was the last measuring?	<input type="checkbox"/> 1. Recently (2014/2015) <input type="checkbox"/> 2. >1 year, please specify _____ year(s) ago
8. Where was the last measuring done?	<input type="checkbox"/> 1. Posbindu <input type="checkbox"/> 2. Puskesmas <input type="checkbox"/> 3. Public hospital <input type="checkbox"/> 4. Private clinic/laboratory/hospital <input type="checkbox"/> 5. Others, please specify _____
9. What was the result of your measuring (can be various)?	<input type="checkbox"/> 1. Normal <input type="checkbox"/> 2. Abnormal <input type="checkbox"/> 3. Unknown <input type="checkbox"/> 4. Cannot remember (go to 11)
10. What was the level of your last blood pressure?	<input type="checkbox"/> 1. Know, specify _____ mmHg <input type="checkbox"/> 2. Unknown
11. Are you treated hypertension?	<input type="checkbox"/> 1. Yes (go to 12) <input type="checkbox"/> 2. No (go to 13)
12. Where are you treated hypertension?	<input type="checkbox"/> 1. Puskesmas <input type="checkbox"/> 2. Public hospital <input type="checkbox"/> 3. Private clinic/laboratory/hospital <input type="checkbox"/> 4. Pharmacy (self-treatment) <input type="checkbox"/> 5. Traditional healer/medicine <input type="checkbox"/> 6. Others, please specify _____
<b>Diabetic screening</b>	
13. Have you ever tested for blood sugar?	<input type="checkbox"/> 1. Yes (go to 14) <input type="checkbox"/> 2. No (go to 19)
14. When was the last testing?	<input type="checkbox"/> 1. Recently (2014/2015) <input type="checkbox"/> 2. >1 year, please specify _____ year(s) ago
15. Where was the last testing done?	<input type="checkbox"/> 1. Posbindu <input type="checkbox"/> 2. Puskesmas <input type="checkbox"/> 3. Public hospital <input type="checkbox"/> 4. Private clinic/laboratory/hospital <input type="checkbox"/> 5. Others, please specify _____
16. What was the result of your blood sugar (can be various)?	<input type="checkbox"/> 1. Normal <input type="checkbox"/> 2. Abnormal <input type="checkbox"/> 3. Unknown <input type="checkbox"/> 4. Cannot remember (go to 19)

<b>Interviewer's name:</b>	<b>Participant ID:</b> <input type="text"/> <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
17. What was the level of your last blood sugar?	<input type="checkbox"/> 1. Know, specify _____ mg/dL <input type="checkbox"/> 2. Unknown		
18. Are you treated diabetes?	<input type="checkbox"/> 1. Yes (go to 19) <input type="checkbox"/> 2. No (go to 20)		
19. Where are you treated diabetes?	<input type="checkbox"/> 1. Puskesmas <input type="checkbox"/> 2. Public hospital <input type="checkbox"/> 3. Private clinic/laboratory/hospital <input type="checkbox"/> 4. Pharmacy (self-treatment) <input type="checkbox"/> 5. Traditional healer/medicine <input type="checkbox"/> 6. Others, please specify _____		
<b>Preference of service</b>			
<i>How would you rate the service received from the last visit?</i>			
<b>Location</b>		<b>Rating</b>	
20. Posbindu	<input type="checkbox"/> 1. Very poor <input type="checkbox"/> 2. Poor <input type="checkbox"/> 3. Good <input type="checkbox"/> 4. Very good		
21. Puskesmas	<input type="checkbox"/> 1. Very poor <input type="checkbox"/> 2. Poor <input type="checkbox"/> 3. Good <input type="checkbox"/> 4. Very good		
22. Hospital	<input type="checkbox"/> 1. Very poor <input type="checkbox"/> 2. Poor <input type="checkbox"/> 3. Good <input type="checkbox"/> 4. Very good		
<b>Average time and cost</b>			
<i>What is the average time you spent for the whole trip on each visit to?</i>			
<b>Location</b>		<b>Time</b>	
23. Posbindu	<input type="text"/> <input type="text"/>	hours	
24. Puskesmas	<input type="text"/> <input type="text"/>	hours	
25. Hospital	<input type="text"/> <input type="text"/>	hours	
<i>What is the average cost you spent for the whole trip on each visit to?</i>			
<b>Location</b>		<b>Cost ((patient, with relative[s] or caregivers if applicable)</b>	
		<b>Travel</b>	<b>Food</b> <b>Accommodation</b>
26. Posbindu			
27. Puskesmas			
28. Hospital			
29. What do you estimate is the total income for your household in the last month?	_____ rupiah		
30. How many family members in your household?	<input type="text"/> <input type="text"/> persons		

Thank you for your participation!!!!

## Appendix 4: Daily reports

### Day 1: January 5<sup>th</sup>, 2015

- **Historical Development of HTA:**

Dr. Lily Banonah Rivai, NCD Directorate, the Ministry of Health, presented on the development of HTA and the implementation of PEN in Indonesia, as well as the current system of healthcare. The team found out that NCD as the cause of death is rising beginning from 1995. It is 59.5% of all deaths in 2007. The WHO PEN package workshop was conducted in 2011, which introduced the WHO PEN and protocol to stakeholders, policy makers and healthcare workers (this included doctors and nurses from Puskesmas in different provinces). Indonesia now implements health promotion and prevention of NCDs in 34 provinces this year.

Pre-implementation, there was an assessment of health facilities in 2011. The survey covered 40 health public centres, with 34 replies. 14 of these were analysed on key variables. The team found out that the NHSO equivalent is called the BPJS in Indonesia and that there is an essential drug list; however, coverage in health centres is not complete for some drugs. Even before 2011, there was no screening for diabetes and other NCDs; now, however, there is screening for diagnosed cases. Several obstacles still exist, such as lack of proper budget, human resources, etc. She also presented about the Posbindu PTM (Binaan Terpadu Penkayit):

1. It is a community-based initiative, with volunteers called kader (cadre).
2. They are only in communities and have two types: one for adults and another for children.
3. The government support for Posbindu is only to send trained professionals there as well as equipment.
4. In the 'adult' Posbindu, people over 15 can go to the Posbindu for free.
5. The only criterion for any screening in the Posbindu is that the person should be over 15 years old.
6. Current focus on hypertension and diabetes as these are the top diseases according to interviews and surveys.
7. Blood pressure is checked every month. For blood glucose, however, there isn't any certain information but checking is not done every month.
8. The Posbindu main goals are:
  - Awareness and advocacy of important NCDs
  - Screening and referral (post referral, the Puskesmas staff will double check the initial screening results)
  - Monitoring of patient compliance with Puskesmas prescriptions
9. Kader:
  - Chosen by the community (there are no criteria, but the village assigns most industrious members to be kader).
  - Work under the Posbindu's empowerment program.

- Makes reports to the Puskesmas on patients to monitor them, but does not always happen.
- They have a fixed schedule of work every month, and also conduct activities such as prayers.
- There is no payment but incentives include a free uniform and community recognition.
- 1 kader will cover 50-100 people in a community.

10. The Puskesmas is the primary healthcare centre that provides first-line treatment for patients, which means it will address illnesses that require no extensive surgery. The hospital is secondary, and provides hospitalization and surgery services. The Posbindu refers patients to the Puskesmas for treatment of NCDs, and the centre should have a registry of the kader working with the Posbindu under the Puskesmas.

Midwives and healthcare workers trained by or from the Puskesmas do the more technical work (i.e. blood glucose measurement, etc.). Dr. Yot Teerawattananon said that the advantage of the Indonesian current healthcare system could be better compliance but perhaps not so well in terms of accuracy. Some interventions currently in place nationwide include:

- Separating smoking and non-smoking signs.
- Education programs warning against too much salt intake.
- Big businesses and franchises that have more than 250 outlets will need to implement changes in its salt and sugar use.

MoH provides the guidelines and trains 2-3 people per province, who will then train the rest of the healthcare workers in different hospitals and clinics all over the country down to the Puskesmas and the Posbindu.

Dr. Yot suggested that the potential recommendations for the current program include changing the target population from screening over 15 years old to screening over 40 years old for a more targeted approach to healthcare as well as based on other successful programs. The data analysis will be divided into these two stratifications to make it more specific. Others include changing the service delivery model (Posbindu and Puskesmas current arrangement), the focus on important diseases, the methods, and/or implementing other types of interventions (e.g. for smoking and/or drugs). The model can also calculate the cost effectiveness of current and potential interventions. Dr. Dewi Indriani raised some issues, which included the possibility of insufficient data in Indonesia. Dr Yot said that this could be addressed in two ways: use of available data or use parameters from other studies similar to the context. The HITAP team concluded with the following main points:

- Indonesia tried to implement all the PEN recommendations, but in certain ways only as well as having programs that overlap with PEN (i.e. tobacco restrictions means separating smoking and non-smoking areas and programs such as lupus screening).
- Interventions are split between different entities (Puskesmas and Posbindu).

- The Puskesmas and Posbindu are not mutually exclusive.
- Recommendations for potential changes in the implementation of PEN will need to focus on changing the target population and cost-effective ways of implementing the interventions.

Please see [Appendix 5a](#) for the full presentation.

## Day 2: January 6<sup>th</sup>, 2015

- **Meeting with Dr. Kanchit Limpakarnjanarat, WHO Representative to Indonesia**

The HITAP team had a meeting before the beginning of the workshop with Dr. Kanchit Limpakarnjanarat, WHO Representative to Indonesia. First, Dr. Kanchit introduced the WHO's areas of work. It includes communicable diseases, non-communicable diseases, maternal, neonatal and child health (MNCH), health systems development, and emergency preparedness. The WHO's package of essential non-communicable (PEN) disease interventions for primary health care are linked to the non-communicable diseases unit of WHO. After that, Dr. Yot shared the concept of health technology assessment (HTA) and economic evaluation (EE) as well as HITAP's experience of conducting EE of health technologies and public health program in Thailand and other countries in Asia. Those experiences, particularly the economic evaluation of the WHO's PEN interventions for primary health care in Bhutan, would be a very helpful input for conducting the evaluation of PEN interventions in Indonesia.

Dr. Kanchit agreed with the concept of HTA and the evaluation of PEN interventions using economic modelling. However, he mentioned that there are two country-specific issues that should be considered in the evaluation. Firstly, the management and delivery of PEN interventions in Indonesia are under the responsibility of non-communicable diseases (NCD) department of the Ministry of Health. Therefore, the involvement of the NCD department is essential. HITAP should engage the NCD department from the first step of the evaluation. Secondly, a broad view of HTA is preferred. It would be great if HITAP could provide not only the technical support for PEN evaluation, but also the process development; for instance, establishing processes for prioritizing research topics.

Dr. Yot responded that HITAP's plan is in line with his suggestions. In this visit, HITAP aimed to arrange the workshop of the economic evaluation of PEN intervention with the staff of NCD department and WHO offices. Therefore, the NCD department will be involved throughout the research process. In addition, the process of PEN evaluation will demonstrate the HTA life cycle, which will also cover the main components of HTA process, in particular the following: topic selection, gathering relevant data, the method to be used for model analysis, and finally the stakeholder meeting that will be arranged in order to verify the results and bridge the gap between recommendation from HTA evidence and the real situation and capacity.

At the end of the discussion, WHO Indonesia, the NCD department and HITAP agreed to collaborate with the aim to strengthen technical capacity of conducting economic evaluation of PEN interventions and the development of HTA in Indonesia.

- **Wrap up of the first day workshop**

Dr. Yot summarized the key information that Dr. Lily presented the day before related to the delivery of PEN interventions at the community and primary healthcare levels. After that, the participants were asked to clarify the following questions:

1. What are the major features of PEN in Indonesia?

Although there is no specifically major system of development for PEN interventions, the PEN program is in line with the development of universal health coverage (UHC). As a result, it has an impact on clinical practices in the following ways: 1) screening for diabetes and hypertension is free of charge; 2) health professionals have an awareness of screening patients for risk factors of NCD; 3) an increase in the availability of medicines used to treat NCD; and 4) the development of the guideline of treating NCD, including diabetes and hypertension at the primary care level.

2. Are there any different features of PEN in urban areas compared to those in rural areas?

A specialist is often allocated to primary healthcare centres in urban areas. Moreover, it is obvious that kader in urban areas have higher education and get better training than those in rural areas. However, in urban areas, kader may have difficulty reaching some groups of the population, such as high-income households. In the evaluation of PEN intervention, primary healthcare centres in both urban and rural areas will be recruited in the assessment. Therefore, we may use the results from the survey to compare the different features of PEN program implemented in urban compared to those in rural areas.

3. How are the equity and quality of PEN interventions ensured?

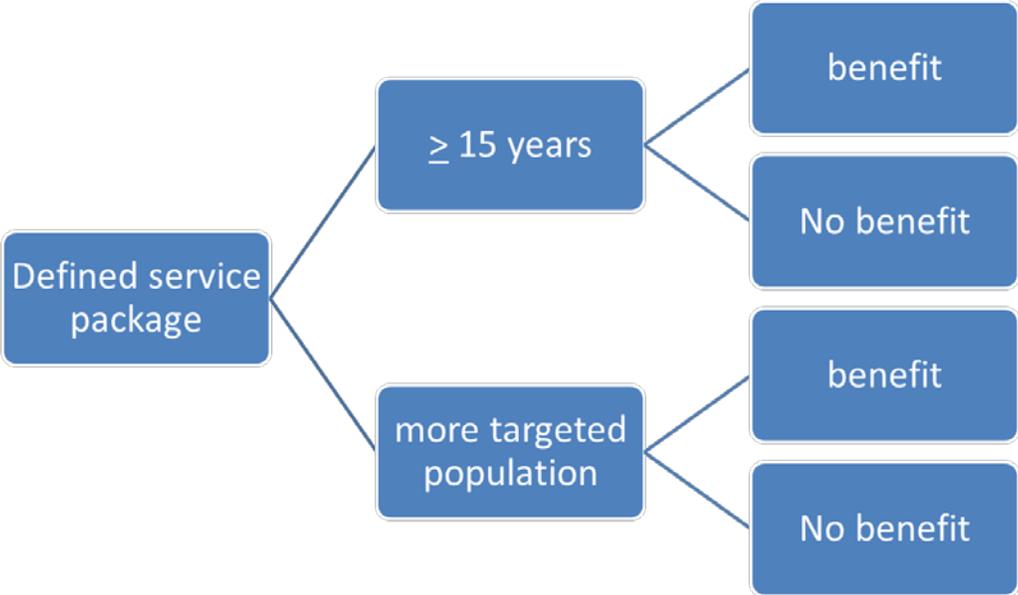
In the WHO guidelines for PEN interventions, the target population is not clearly indicated, though vulnerable groups<sup>1</sup> should be screened. Therefore, adding the criteria of screening vulnerable groups should be considered as well as how to provide PEN interventions to these groups in order to ensure equity and quality of PEN interventions.

HITAP proposed three options of possible policy choices for the assessment as illustrated in Figure 1-3.

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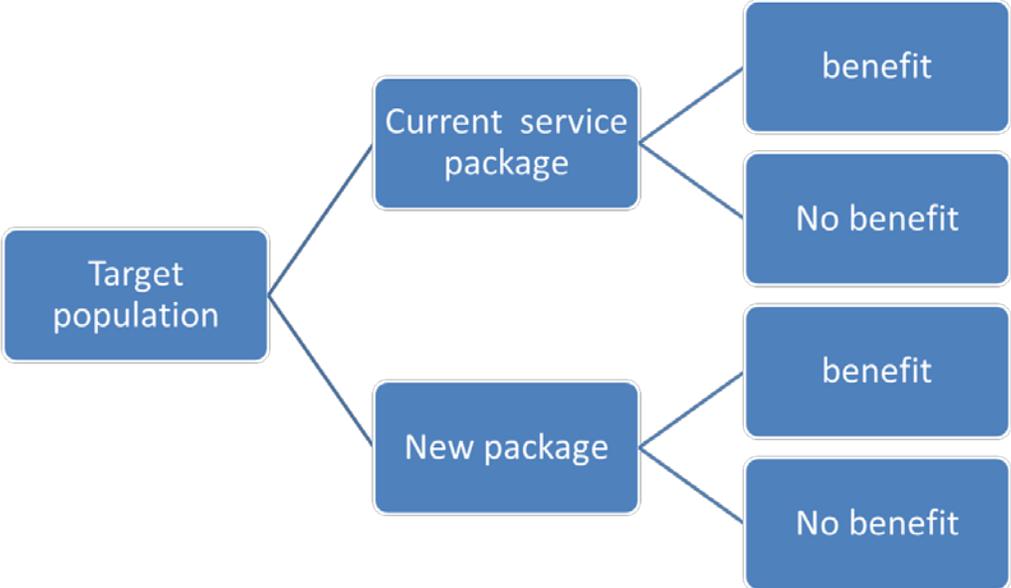
<sup>1</sup> Vulnerability is the degree to which a population, individual or organization is unable to anticipate, cope with, resist and recover from the impacts of disasters. *Environmental health in emergencies and disasters: a practical guide*. (WHO, 2002)

**Figure 1: Policy choices for the assessment option 1**



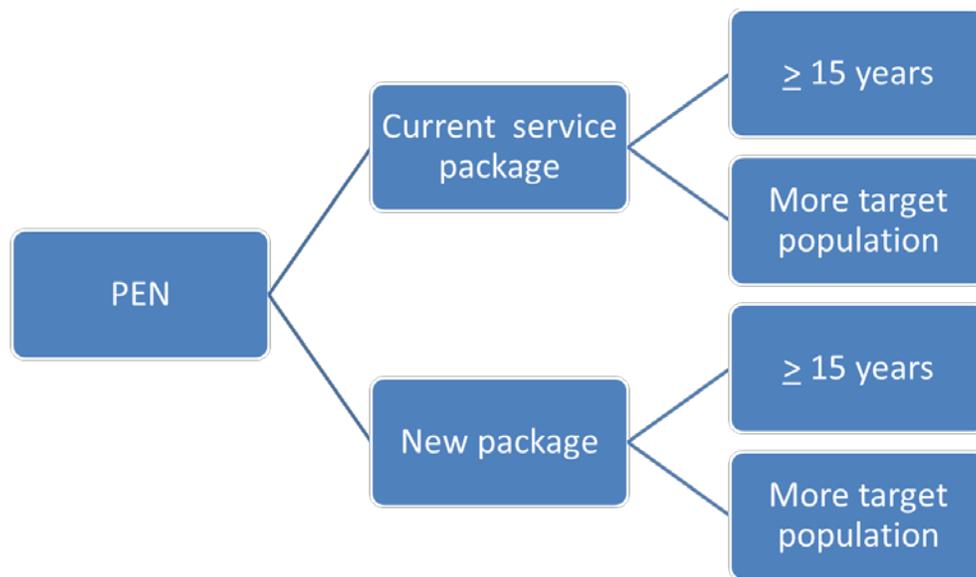
First option (Figure 1) is to compare the delivery of PEN interventions to: 1) all members of the population aged 15 years and above (which is the current policy); and 2) a targeted population such as people who have high risk of NCD.

**Figure 2: Policy choices for the assessment option 2**



The second option is the provision of the PEN intervention to the targeted population only. The analysis will compare the current package of PEN, which covers 10 activities including screening for diabetes and hypertension, with a new package of PEN. The new package will be an additional program that expands on the existing PEN. For example, smoking cessation may be added into the PEN interventions.

**Figure 3: Policy choices for the assessment option 3**



Option 3 is (Figure 3) to compare the current package of PEN with the new package of PEN, in which a new activity will be added. Both packages may be provided to either all members of the population who aged 15 years and above or only to the targeted population.

- **Conceptual framework of assessing impact and value for money of PEN programs**

Dr. Yot gave a presentation on overview of HTA and economic evaluation. The presentation covers the definition, the rationale, the process, and the utilization of HTA. The aim for the participants was to achieve a better understanding of using HTA to inform policy decisions. After the presentation, the participants asked HITAP to explain in more detail the process of prioritization and the threshold in Thailand.

- **Health economic modelling for PEN evaluation part 1 (Decision tree model)**

Sarocho Chootipongchaivat gave this lecture, with the aim of building up local capacity for conducting a decision tree model. The presentation included the definition of an economic evaluation as well as the characteristics and step-by-step guide to conducting a decision tree model. Moreover, all participants practiced a hands-on exercise using Excel®. After this, Dr. Yot explained how to interpret the results of a decision tree model.

- **Health economic modelling for PEN evaluation part 2 (Markov model)**

The objectives for the afternoon were to understand the principles of doing an economic evaluation using the Markov model, the steps to build and analyse Markov models, and introduction to conducting an economic evaluation of PEN interventions using a Markov model. The meeting began with Dr. Yot summarizing the decision tree model that they had learned in the morning, and then described some studies that used a decision tree model and were ultimately included into Thailand UHC benefit package. He emphasized the importance of using a Markov model due to its property of taking into account various health states that the patient can cycle into from period to period.

For health economic modelling of the PEN evaluation, Waranya RattanaVIPapong lectured on the principle of the Markov model and steps to construct and analyse the Markov model. These steps are the following: defining states and allowable transitions; identify the starting probabilities; determine transition probabilities; determine the cycle length; set the stopping rule; determine the rewards; analysis and evaluation of the Markov model. After the lecture, the participants and HITAP research team discussed in detail some questions about the Markov model. These included:

- In the intervention arm, the analysis will use relative risk (RR) to take into account probability changes because the patients receive treatment, thus affecting the entire population.
- Dr. Dewi asked about whether to use the RR in the death state. Dr. Yot replied that the death state analysis would not use RR, as this particular intervention has no known effect on reduction of mortality rate. If the intervention does have an effect, then an RR for death would also be included.
- The Markov model will need to consider a certain time called 'cycle', a period of time the patient stays in disease, health, or absorbing (e.g. death) state.

At the end of the second day, five issues were discussed and deserved further considerations for the PEN program evaluation. These included:

- In PEN model, both Decision tree and Markov model will be included and will compare three possible strategies: 'no screening,' 'current PEN program,' and 'universal screening' (100% coverage, to be segregated into two groups, the 15-39 year olds and 40 above screening). The result will be reported in terms of Indonesian rupiah per DALY gained (healthy life-year).
- Another consideration was how to apply the model in Indonesia's country context because the practice and method for screening the population are different from the Bhutan model. In Indonesia, blood glucose monitoring used capillary blood glucose while Bhutan used fasting blood sugar to determine blood glucose level. The HITAP research team suggested conducting a literature review on what is the best choice for Indonesia, and Dr. Yot suggested that fasting blood sugar testing might be a viable option.
- Dr. Yot also suggested testing 40 year olds and above for the targeted population instead of 15 year olds and above (the current program) to be part of the new scenario.
- He also suggested addition of two other modifications, if resource permits, particularly COPD and cervical cancer screening. However, these could be planned for the next phase as well.

For the third day, the participants were encouraged to identify the parameters in the model. These included: what kind of parameters should be used in the model; which parameters should use local data; how to collect the data; and which parameters should be selected carefully. On Thursday, January 8, 2015, the focal point person, Dr. Nunik, will present the survey conduct and design.

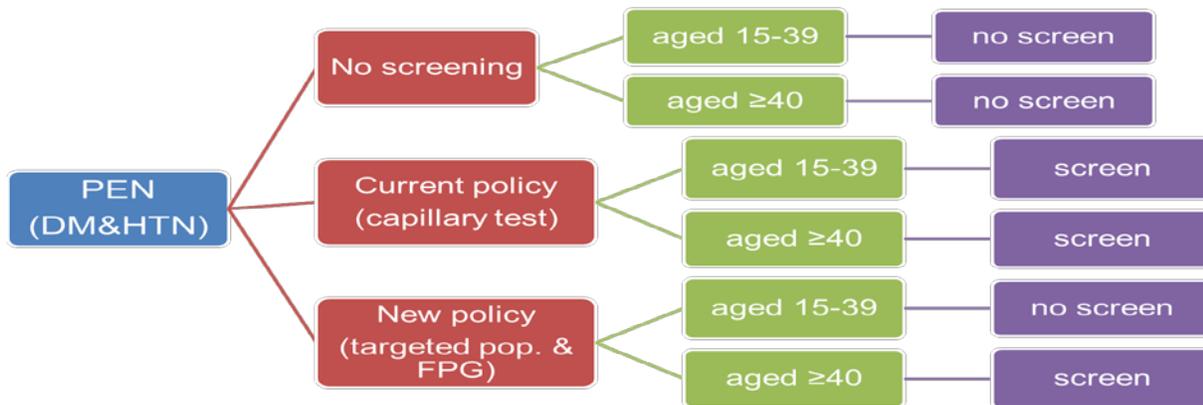
### Day 3: January 7<sup>th</sup>, 2015

- **Wrap-up of the second day of the workshop**

Before starting with the third day of the workshop, a recap of the decision tree and the Markov model was given in order to guarantee the participants' full understanding of the concepts.

A decision tree was shown for the PEN evaluation on diabetes and hypertension (Figure 4). Three policy choices are: 'no screening,' current policy (capillary test), and the new policy (screening from 40 year olds and above and using fasting blood glucose testing for glucose level). Screening can be done in different age groups: 15-39 years and  $\geq 40$  years. The decision tree emphasized the different policy choices. It is important to present three policy choices instead of two (current policy versus new policy) in order to understand the effect of the current policy vs. 'no screening.' When presented with just two policy options, misinterpretations can occur. For instance, if the results show that the current policy is inefficient compared to the new policy, policy makers may not want to proceed with the current policy. However, it is important to realize that the current policy is effective compared to a 'no screening' policy. Therefore, the policy choice of 'no screening' has been incorporated into the model.

**Figure 4** Decision tree of economic evaluation of PEN interventions in Indonesia



This model will also take into account social and ethical perspectives, mainly to be incorporated through the qualitative study to be conducted by the MOH. From a social perspective, it is essential to incorporate the willingness of providers to perform the services for PEN, which can be obtained by conducting a focus group discussion or an in-depth interview. This will create a better understanding of social barriers. For ethical issues, the most important point is equal accessibility, which should be discussed with data collectors who will conduct the survey in the field.

Another advantage of this model is that it compares cost of screening and potential treatment spent in each age group. The results will show for different age groups how much money will be saved or lost. Other important result that will come from the economic evaluation is the number of cases that are detected, missed, and what the financial benefits are (e.g. how much money has been saved by implementing certain policy choices).

After the discussion, all participants agreed on the model that was provided by HITAP. As the current budget for the NCD program is underfunded, the results from this analysis can strongly convince the government to increase the budget for this program. It will become clear how much the policies will cost and how much the budget needs to be in order to prevent underfunding.

During the discussion, the question of the appropriate threshold for accepting or rejecting an intervention (based on cost alone) was raised by the MOH/WHO. In Thailand, the threshold has been set as 1.2 times the GNI per capita, which is 160,000 baht. Every intervention with the ICER below this threshold is considered to be a cost effective intervention. For Indonesia, this threshold would be approximately \$US 9000.

The plan is to modify the Bhutan model to fit the Indonesian context. Therefore it is important to gather all the essential data requested, such as the data for the Training of Trainers (ToT) and the training of health care officers and kader. The data will be collected in January-February 2015. Data collection will be done on the following provinces: South Sumatra, Central Kalimantan, South Sulawesi and West Java. There will be a total of about 4 people, two people per team. Priska and Dewi will go to the field and join data collection for one province; two HITAPers will also join during this expedition.

There are three major components for a successful project:

- A model with a good design
- Data collection for good quality data
- Conduct a very good stakeholder consultation meeting

The project will be presented in the WHO-SEARO regional meeting.

After the recap, the team continued on the workshop. In order to perform an economic evaluation of the PEN program, data on diabetes mellitus and hypertension risk factors as well as complications are required. The main objectives of the meeting on the third day were as follows:

- Providing an overview and establishing a better understanding of the parameters that will be used in the economic evaluation.
- Providing training for performing a good literature review.
- Providing knowledge about probabilities and rates.
- **Parameters**

The proposed parameters were discussed in this meeting. There are 4 main categories of parameters: epidemiological data, screening coverage and frequency, screening costs

(Indonesian Rupiah per patient each time) and training costs. Each category was discussed in terms of the data availability, data resources and data collection. An overview of the parameters is given in the Day 4 summary. Each parameter is discussed in more detail hereafter.

### 1. Epidemiological data

Collecting epidemiological data will be done based on the national survey in Indonesia, called Sensus. The most recent version of the Sensus is from 2010. Another approach is to collect epidemiological data from the NCD risk factor cohort study. With regard to the epidemiological data that is related to prevalence, collection of data from hospitals was suggested. However, a possible disadvantage would be that only 26% of the hospitals report their data. Another solution is to establish prevalence based on the prevalence of other low- and middle-income countries.

### 2. Screening coverage and frequency

Data on screening coverage can be collected on a national level. If the screening coverage is not available on a national level, data on screening coverage should be collected on a local level. In other words, data collection on the primary health care level should be conducted. It is assumed that primary health care centres have data on the number of people screened. Data collectors should go to a number of primary health care centres in order to calculate the average amount of community members that have been screened. The frequency of screening of the same community members on NCD is unknown. However, the Posbindu provides opportunities to all community members to screen NCD on a monthly basis.

### 3. Screening cost

Costs of the PEN program were discussed during the meeting regarding the availability of the data and whether it is feasible to gather this data. According to Dr. Dewi, there is data on a provincial and district level regarding the trainings that are given. Based on the schedule of the training, the costs for training on diabetes and hypertension can be calculated. An extra column needs to be developed in the template of the costs of the PEN program. However, there are trainings on provincial level, district level and community level; only two are trained on the provincial level, which then train the next level and so on and so forth until training reaches the Puskesmas and subsequently the Posbindu.

The source for collecting data for the screening costs will be the medical associations. The kader can be put in the 'other' category in the PEN program. Furthermore, it was advised during the meeting that a minimum wage rate should be used for kader. The rationale for this is that the costs of kader productivity (if, for example, working) should be taken into account, as their time is valuable. They also pay for their own transportation, and this data will also be collected.

Another issue is the training costs. Every Puskesmas implements a HT and DM screening. There are in total 9500 Puskesmas and the human capacity varies. For instance, some Puskesmas might have 2 doctors (more urban areas, like Jakarta) whereas other

Puskesmas might have 5 and other places might have 5 nurses and no doctors (more rural areas). The variation of available resources therefore may not be properly captured in this model.

Variances in infrastructure and resources across Puskesmas in the country will be captured through the quantitative data collection. Focus groups can provide information on the human capital, for instance, asking whether someone has ever worked in rural areas for a Puskesmas and what the human capital was. Another category is the costs of communication materials. During the discussion, it was made clear that the data is available through Dr. Lily.

#### 4. Treatment costs

There are two types of direct costs: direct non-medical costs and direct medical costs. Direct non-medical costs are those not directly related to medical transactions such as travel costs. Direct medical costs are costs that are part of the treatment or intervention, such as drugs and medical tests. Please see [Table 1](#) in the Day 4 report for more information.

- **Lecture on Literature review by Dr. Thunyarat Anothaisintawee**

For the rest of the day, Dr. Thunyarat showed the participants how to perform a good literature review. There are different databases that can be used when doing a literature review. Two databases is the minimum recommendation for a good quality systematic review. PubMed was used as a sample database to find literature related to some sample subjects and research questions. Dr. Thunyarat also explained the hierarchy of evidence. A systematic review of randomized control trials is the most valid study design compared to other study designs. In order to be able to perform a literature review, the PICO method was used in order to identify search terms.

- **Hands-on exercises**

Two hands-on exercises were given after the lecture in order to let the participants practice literature searching. These exercises gave the participants a basic understanding of performing an effective literature review.

- **Lecture on rates and probabilities by Dr. Thunyarata**

Dr. Thunyarat gave a lecture about the use of rates and probabilities in order to provide the participants a basic understanding of study results. Formulas and examples were given for a better understanding.

- **Hands on exercises on rates and probabilities by Dr. Thunyarat**

In order to be able to apply the learned theories on rates and probabilities, Dr. Thunyarat provided the participants with probability and rate calculation exercises.

#### Day 4: January 8<sup>th</sup>, 2015

- **Wrap up of the third day workshop**

In the morning session, Suthasinee Kumluang gave a recap of the previous day's workshop. She summarized the discussion on data that is required for the economic evaluation of PEN intervention. A decision tree and Markov models that were used in the economic evaluation of the PEN intervention in Bhutan will be modified and applied for the analysis in Indonesia. However, most of the parameters in the model should be changed to match with the Indonesia context. As discussed, WHO and the NCD department staff will provide information about the availability and sources of the data. Thus, this session was aimed to confirm the given information on parameters. Table 1 presents a summary of a list of model input parameters for economic evaluation of PEN in Indonesia and its sources of data. At the end of workshop, HITAP will send the summary and WHO and the NCD department staff, who will help to find the data.

**Table 1.** Parameters for economic evaluation of PEN in Indonesia (with focus on screening of diabetes mellitus and hypertension)

Type of data and details	Data availability		Sources of data
	Local data	Literature	
<b>Epidemiological data</b>			
Life expectancy	√		(See table 2)
Age-specific total population	√		<b>Source A: National survey</b> <ul style="list-style-type: none"> <li>• Census survey</li> <li>• Indonesian demographic survey</li> <li>• Indonesian national basic health research</li> <li>• Indonesian health profile</li> </ul> <b>Source B: NCD risk factors cohort study in 2011 (1 sub-district survey, 5000 cases)</b> <ul style="list-style-type: none"> <li>• Contact person: Dr. Nunik</li> </ul>
Age-specific prevalence of diabetes	√		
Age-specific prevalence of hypertension	√		
Age-specific prevalence of DM and hypertension	√		
Age-adjusted mortality rate of general population	√		
Age-adjusted mortality rate of DM	√		
Prevalence of diabetic retinopathy (in DM patients)	√	√	<b>Source A: Hospital-based data</b>
Prevalence of diabetic nephropathy (in DM patients)	√	√	<b>Source B: Literature review from LMICs (Database = Medline)</b>
Prevalence of foot ulcer (in DM patients)	√	√	
Prevalence of stroke (in DM)	√	√	

Type of data and details	Data availability		Sources of data
	Local data	Literature	
patients)			
Prevalence of amputation (in DM patients)	√	√	
Prevalence of coronary artery (in DM patients)	√	√	
Proportion of hypertension in DM patients	√	√	
Proportion of patients who were lately diagnosed with DM	√	√	
Proportion of patients who were lately diagnosed with hypertension	√	√	
Proportion of patients who were lately diagnosed with DM and hypertension	√	√	
Proportion of controlled hypertension	√	√	
<b>Screening</b>			
Screening coverage	√		(See table 3) <b>Primary data at PHC level</b> • <b>Contact person: Dr. Lily and Dr. Nunik</b>
Frequency of screening per person per year		√	<b>Need to be confirm: at community or PHC levels</b>
<b>Screening costs (Indonesian Rupiah per patient per time)</b>			
Screening cost of DM (lab test of capillary blood glucose and/or fasting blood sugar depending on screening protocol)	√		(See table 4) <b>Source: MoH</b>
PEN programme	√		<b>Questions to be clarified:</b> - For the cost of PEN start-up, %contribution of subsidized costs paid by the medical association - Who provided the medical devices for screening - The cost or quota of the screening test that are provided to PHC - Other materials such as brochures

Type of data and details	Data availability		Sources of data
	Local data	Literature	
			<ul style="list-style-type: none"> <li>Contact person: Dr. Lily</li> </ul>
<b>Treatment costs (Indonesian Rupiah per patient per year)</b>			
*if treatment costs are not available, hospital charges/fee can be used.			
Direct medical cost of treating DM and follow-up	√		(See table 5) <b>Source A: Primary data at PHCs</b>  <b>Source B: use the reference cost from Indonesian INA CBG</b>
Direct medical costs of treating hypertension and follow-up	√		
Direct medical costs of treating DM with retinopathy	√		
Direct medical costs of treating DM with nephropathy	√		
Direct medical costs of treating DM with neuropathy	√		
Direct medical costs of treating DM with stroke	√		
Direct medical costs of treating DM with coronary artery disease	√		
Direct non-medical costs of treating DM	√		(See table 6 and 7) <b>Source A: Interview patients at PHC (4 provinces/1 district/2 PHCs = 8 PHCs)</b>  <b>Source B: Interview patients at community level (see details on Community Survey for NCD Program)</b>  <b>Source C: National Statistics Bureau (BPS) <a href="http://www.bps.go.id">www.bps.go.id</a> (Not age-specific)</b>
Direct non-medical costs of treating hypertension	√		
Average travelling costs to primary healthcare centre (Round trip)	√		(See table 8) <b>Source: Interview patient at PHC</b>
Frequency of DM (without complications) follow-up per year	√		<b>Source: National guideline (to be confirmed)</b>  <ul style="list-style-type: none"> <li>Contact person: Nunik</li> </ul>
Frequency of DM (with complications) follow-up per year	√		
Frequency of hypertension follow-up per year	√		

Type of data and details	Data availability		Sources of data
	Local data	Literature	
Frequency of DM and hypertension follow-up per year	√		

- **A lecture on uncertainty**

Alia Luz gave a lecture on uncertainty. The aim of this session is to provide a fundamental understanding of uncertainty, how uncertainty affects the results of economic evaluation, and the ways to handle this issue. Next, Waranya demonstrated the model that was used in Bhutan for the purpose of understanding the model that will be used. It is important for the participants to understand the model structure, components, how to do the analysis and present the results. This then should help them understand and be able to use the results of economic evaluation to inform decision-making. Overall, the participants understood well how the model is operated, but they raised questions about the probabilistic sensitivity analysis (PSA) and Monte Carlo Simulation, such as the sufficient numbers of simulation that should be done, the distribution of the parameters, and the interpretation of cost-effectiveness plane. These questions could be better clarified by later visits because HITAP plans for the involvement of these participants in the analysis and will then explain in-depth details on how to conduct a PSA.

- **Qualitative Research Survey Design and Timeline**

In the afternoon session, Dr. Nunik Kusumawardhani presented the survey design, entitled “Assessment of Implementation of Integrated NCD prevention and control in Primary Health Care.” The specific objectives of this survey were: (1) to assess the implementation of PEN programme within the system of NCDs prevention and control in Primary Health Centers (PHCs) services; (2) to identify the development or changes of health workers’ knowledge and skills; (3) to identify the adequacy of the facilities and infrastructures on NCDs prevention and control in PHCs; (4) to identify the obstacles on implementation of NCDs prevention and control in PHCs; and (5) to identify gaps and future needs on strengthening NCDs prevention and control in PHCs. This survey was a facility based, cross-sectional study and will be conducted with a quantitative and qualitative design. Quantitative data will include compiling data from the recording and reporting of NCD patients and health facilities, and qualitative data will be collected through in-depth interviews with trained health providers and NCD patients. The current plan is to collect data in 4 provinces. These are (1) West Java and South Sumatra in West region (2) Central Kalimantan province in Central region and (3) South Sulawesi province in East region. Then, the 2 PHCs from selected provinces – 1 Urban Health Centre from trained municipality and 1 Rural Health Center from trained district – will be selected for review of their medical records and interviews will be conducted with NCD patients and health worker. The survey instrument for data collection had partially been drafted as follows:

**Table 2.** Survey Instruments and objectives

No	Specific Objective	Instruments
1	to assess the implementation of PEN programme within the system of NCDs prevention and control in Primary Health Centers (PHCs) services	- PEN used checklist
2	identify the development or changes of health workers' knowledge and skills	- Pre-post training questioner - Observation form on Case management
3	identify the adequacy of the facilities and infrastructures on NCDs prevention and control in PHCs	- Medicine; Laboratory and HE material check list
4	identify the obstacles on implementation of NCDs prevention and control in PHCs	- In-depth Interview - Questionnaire
5	identify gaps and future needs on strengthening NCDs prevention and control in PHCs	- In-depth Interview - Questionnaire

Data collection is planned as follows. The PEN evaluation team from the MOH plans to spend one week per province for data collection. On the first day, they will visit the provincial head officers. On second day, they will visit and interview district health officers. On the third day, they will visit the Puskesmas. The head of the Puskesmas, personnel responsible for NCD project (e.g. nurse, midwife), and diabetic and hypertensive patients will be interviewed. In addition, age, sex, and diagnosis of the patients will be gathered from the medical record. They will also gather information on the number of patient visit/day and per month. On the fourth day, they will visit Posbindu and interview the community volunteers. They plan to utilize four additional enumerators (nursing or medical students to be hired through HITAP's financial support) for each province to interview 'healthy' community members. The next day will be visits to the hospital and the government offices as well as other relevant parties and/or organizations. There is no sampling method as they are targeting those Puskesmas with the least resource availability. Please see [Appendix 3b](#) for the full presentation.

After Dr. Nunik's presentation, HITAP gave some suggestions:

- Dr. Yot suggested that data collectors should not inform the district health officers before visit to prevent modifying the current situation to reflect a "better" and more compliant one, i.e. providing the full range of medicines required by law when it was previously not the case.
- The PEN evaluation team should inform the district health officer, health care providers, and the patients that their personal information (such as names or

- hospital name) will be kept confidential and will not be reported in the documents or shared with third parties.
- They should add a new questionnaire in order to know the coverage of the PEN program in the community and the adherence to the NCD guideline.
  - The interview should be conducted in a crowded place, such as the market or a bus station, to simulate a diverse group of people that can be selected from.
  - The enumerators (nursing or medical students) should not inform the interviewees that they come from the PEN program and should wear informal dress to prevent reporting bias from the interviewees.
  - HITAP expects that one interviewer can interview 10 people per day and will employ 8 interviewers per province. Therefore, 80 people will be interviewed per day per province.

After the discussion on the additional survey, HITAP and the participants developed the first draft of the additional questionnaire, which will be focused on three issues. These are: (1) assessing the awareness of the PEN program; (2) patient adherence to guidelines of the PEN program; and (3) costs of household payment for the treatment. See [Appendix 2](#) for the full questionnaire.

More suggestions from HITAP were:

- HITAP will support the budget for the quantitative survey, which will be conducted in conjunction with the qualitative research; the TOR will be sent later.
- This additional survey is the collaboration between WHO, MOH of Indonesia, and HITAP.
- The survey should be finished in February.
- Questionnaire should also be translated to Bahasa Indonesia.

HITAP's next visit, in the third week of January, will be to assist in the data collection. In March or early April, the final visit will include data analysis, preparation for the presentation of data results, and the stakeholder consultation. The lists of stakeholder were:

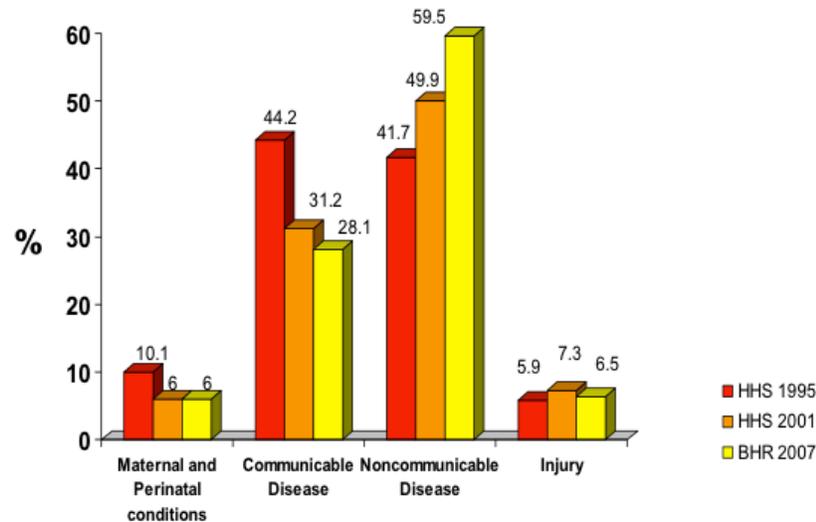
- MOH
- WHO
- International donors
- Professional associations
- Industries
- NGOs in health
- Civil Societies
- Representative in Diabetes
- Local authorities
- Other ministries (i.e. finance, health investment)
- Academic groups (keen on economic evaluation of health interventions)

Given that the workshop finished early, the HITAP team spent the last day refining the model and questionnaire and working on the mission report.

## Appendix 5: Relevant slides from during the Workshop

### a. History of PEN in Indonesia

#### Distribution of Causes of Death, All Ages, Indonesia, 1995, 2001, 2007



HHS=Household Health Survey

BHR=Basic Health Research

## POLICIES IN CONTROLLING NCDs

1. Increase advocacy and dissemination prevention and control of NCDs programs in all provinces
2. Develop and strengthen Monitoring Risk Factors, Early Detection, Prompt treatment, Case Management and Rapid Response
3. Increase the professionalism of Human Resources in the prevention and control of NCDs

## **POLICIES.....cont**

4. **Develop and strengthen-management, equity and quality equipment for early detection of risk factors**
5. **Increase the community's access to service of NCD risk factors early detection throught Primary Health Services for NCDs and Integrated Health Post for NCDs (Posbindu PTM)**
6. **Develop and strengthen the community based prevention and controlling NCDs activities by increasing community awareness**

## **POLICIES.....cont**

7. **Developing and strengthening networks and partnerships in controlling Non Communicable Disease Risk Factors**
8. **Develop and strengthen epidemiological surveillance systems and information systems on prevention and control of NCDs**

# STRATEGIES FOR CONTROLLING NCDs



## HEALTH PROMOTION

1. Strengthening the legal aspect of controlling NCDs
  - Regulation of Tobacco control (PP 109 / 2012)
  - Minister of Health Regulation on Sugar, Salt and Fat Consumption focusing on empowerment of food labelling and health message
2. Socialization of CERDIK behavior
3. Strengthen of NCDs Network and partnership



## Smoke Free Area Policy in Indonesia



- From 27 provinces there are 128 districts / cities already have Smoke Free Area Regulation in form of Provincial Regulation / Governor Regulation Major Regulation / Letter

## Regulation on Sugar, Salt and Fat Consumption



Sugar, salt and fat reduction with public/consumer education through Health Ministry Regulation on Sugar, Salt and Fat Consumption focusing on empowerment of food labelling and health message

## Implementation of CERDIK Behavior

	<b>C</b>	Check health status routine and regularly
	<b>E</b>	Encourage to avoid smoking and other air pollutants
	<b>R</b>	Raising physical activities
	<b>D</b>	Daily consumption with healthy diet (low sugar, salt and fat), increase fruit and vegetable
	<b>I</b>	Implementation of adequate rest
	<b>K</b>	Keep balance between body and mind

## **STRATEGIES FOR CONTROL NCDs ... Cont.**

### **HEALTH SERVICES MANAGEMENT**

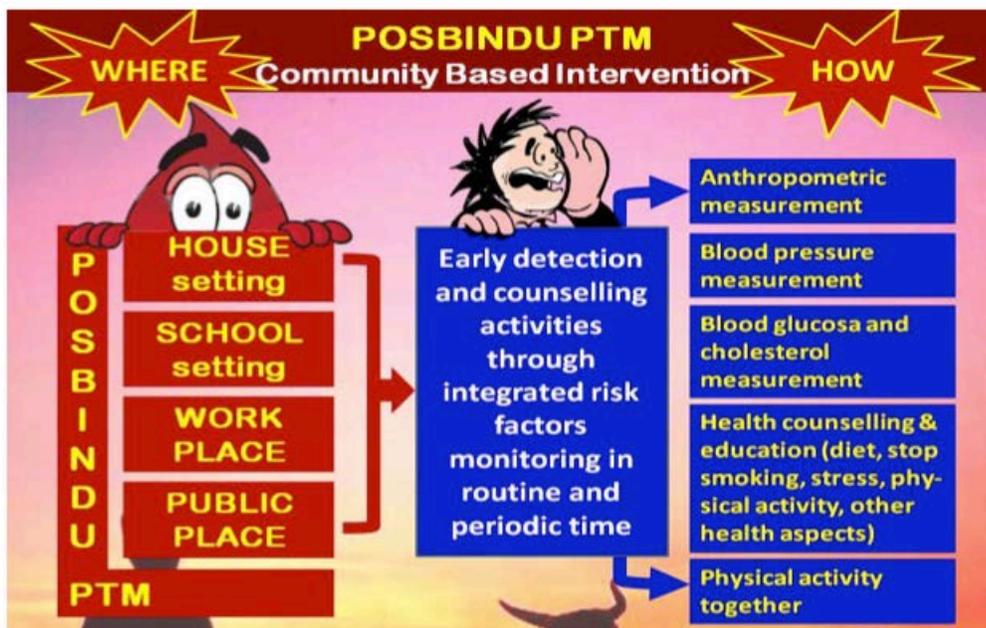
- 1. Monitoring, early detection and prevention of NCDs risk factors, counseling, prompt treatment, and case management at the Primary Health Care**
- 2. Monitoring, early detection and prevention of risk factors, and counseling in Posbindu PTM activities**
- 3. Increasing early detection of Ca Cervix and Ca Mammae with IVA (Inspeksi Visual Asam asetat) or Pap smear and CBE (Clinical Breast Examination)**

## **STRATEGIES FOR CONTROL NCDs ... Cont.**

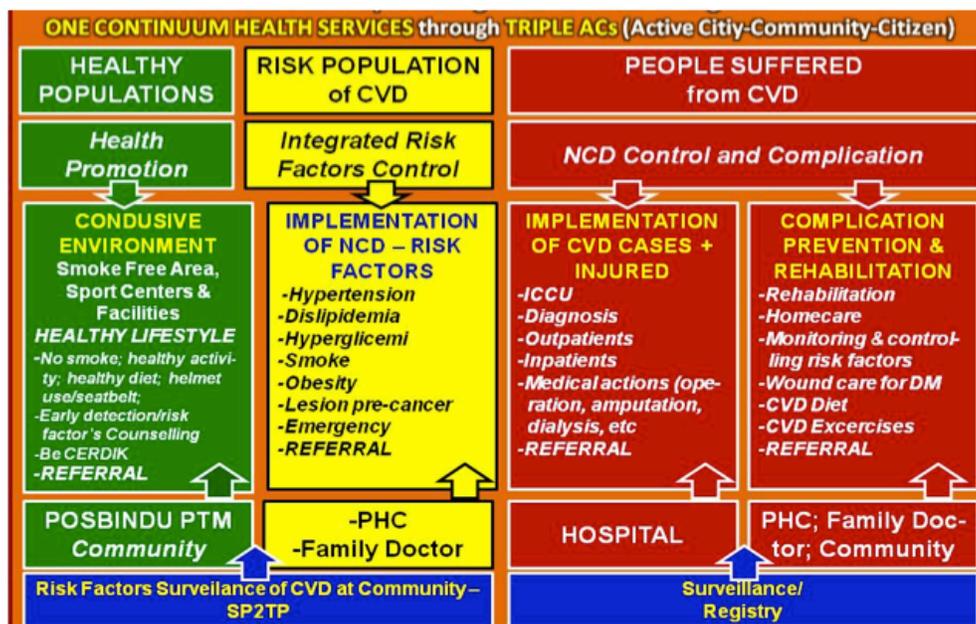
### **HEALTH SERVICES MANAGEMENT**

- 4. Improved Management of NCDs risk factors (Stop smoking Counseling, Hypertension, Dyslipidemia, Obesity, and others) in Posbindu PTM activities and primary care facilities (health centers, family physicians, private practice)**
- 5. Improved referral system to Hospital**
- 6. The development of community-based rehabilitation (Diabetic Foot Care, Neurorestorasi in patients with post-stroke, Respiratory Muscle Strengthening Exercise for Patients with COPD, etc)**

## Developing Integrated Health Post for NCD's (Posbindu PTM) in all villages in Indonesia



## Improve quality of NCDs Management in Primary Health Care



## **STRATEGIES FOR CONTROL NCDs ... Cont**

### **SURVEILLANCE**

**Surveillance activities carried out to determine the magnitude of the problem of NCDs as evidence based planning, implementation, monitoring and evaluation.**

## **STRATEGIES FOR CONTROL NCDs ... Cont**

### **SURVEILLANCE**

- **Surveillance NCDs risk factors (obesity, hypertension, hyperglycemia, hypercholesterolemia, stress, etc.) at the health center**
- **Periodic Health Survey (Riskesnas)**
- **NCDs Registry (Cancer, Stroke, Heart, diabetes, COPD, injury, etc.)**
- **Cause of death registry**

## Noncommunicable diseases and PHC

**Detect disease and high risk early  
Diagnose. Treat and follow-up**



**Prevent premature death  
Reduce costs of complications  
(amputations, renal dialysis, bypass surgery, blindness)  
Reduce admissions to hospitals  
(catastrophic health expenditure)**

## HEALTH CARE FACILITY

### Primary Health Care

- **Public Health Centre : 9.599**
- **General Clinic : 28.806**

### Secondary and Tertiary Health Care

- **General Hospital : 1.687**
- **Specialized Hospital: 492**
- **Specialized Clinics : 1.649**

## Scope of– core and expanded cost effective interventions through PHC

1. Tobacco cessation
2. Promotion of healthy diet/ physical activity
3. Diabetes
4. Cardiovascular risk (Hypertension / hypercholesterolemia )
5. Prevention of kidney disease
6. Secondary prevention of heart attacks and strokes
7. Asthma/COPD
8. Early detection of cancer
9. Cancer pain care
10. Rheumatic heart disease

Table 5. Essential technologies and tools for implementing essential NCD interventions in primary care

Technologies	Tools
Thermometer Stethoscope Blood pressure measurement device* Measurement tape Weighing machine Peak flow meter** Spacers for inhalers Glucometer Blood glucose test strips Urine protein test strips Urine ketones test strips	WHO/ISH risk prediction charts Evidence based clinical protocols Flow charts with referral criteria Patient clinical record Medical information register Audit tools
<b>Add when resources permit:</b> Nebulizer Pulse oximeter Blood cholesterol assay Lipid profile Serum creatinine assay Troponin test strips Urine microalbuminuria test strips Tuning fork Electrocardiograph(if training to read and interpret electrocardiograms is available) Defibrillator	
* For facilities with nonphysician health workers a validated blood pressure measurement device with digital reading is preferable for accurate measurement of blood pressure (28, 29)	
** Disposable mouth pieces required. Peak flow meters with one-way flow preferable.	

Table 6. Core list of medicines required for implementing essential NCD interventions in primary care

<b>For Primary Care facilities with Physicians</b> (for PC facilities with only non-physician health workers most of the medicines below are required for refill of prescriptions issued by physicians at a higher level of care)	
Thiazide diuretic Calcium channel blocker (amlodipine) Beta-blocker (atenolol) Angiotensin inhibitor (enalapril) Statin (simvastatin) Insulin Metformin Glibenclamide Isosorbide dinitrate Glyceryl trinitrate Furosemide Spironolactone Salbutamol Prednisolone Beclometasone Aspirin Paracetamol	Ibuprofen Codeine Morphine Penicillin Erythromycin Amoxicillin Hydrocortisone Epinephrine Heparin Diazepam Magnesium sulphate Promethazine Senna Dextrose infusion Glucose injectable solution Sodium chloride infusion Oxygen
Source: WHO model list Essential Medicines 16th edition (March 2009)	

## Tools--How to implement ?

- **Capacity assessment tool**
- **Estimate costs**
- **Requirements (skills, equipment, medicines)**
- **Simple Integrated protocols evidence based interventions**
- **Strict referral criteria**
- **Integrated training materials**
- **Tools for self management /adherence**
- **Community engagement/mobilization tools**
- **Health information system- clinical record**
- **Monitoring and evaluation**

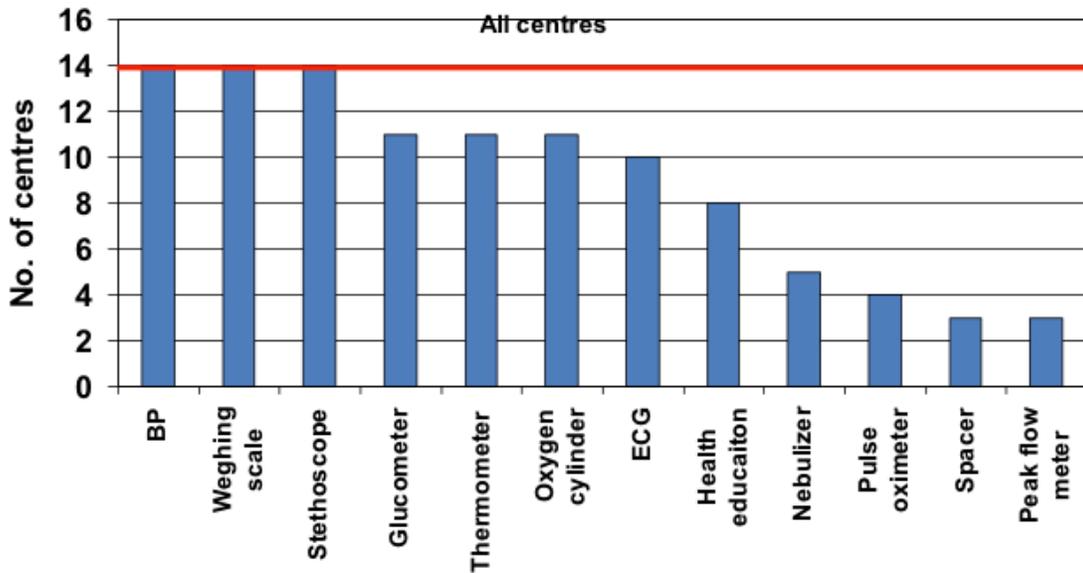
## Assessment of health facilities : Survey Methods

- Structured questionnaire translated from English to Bahasa and sent to 40 health centres
- 35 health centres returned the questionnaire
- 14 forms were analysed on key variables
- All health facilities were public facilities

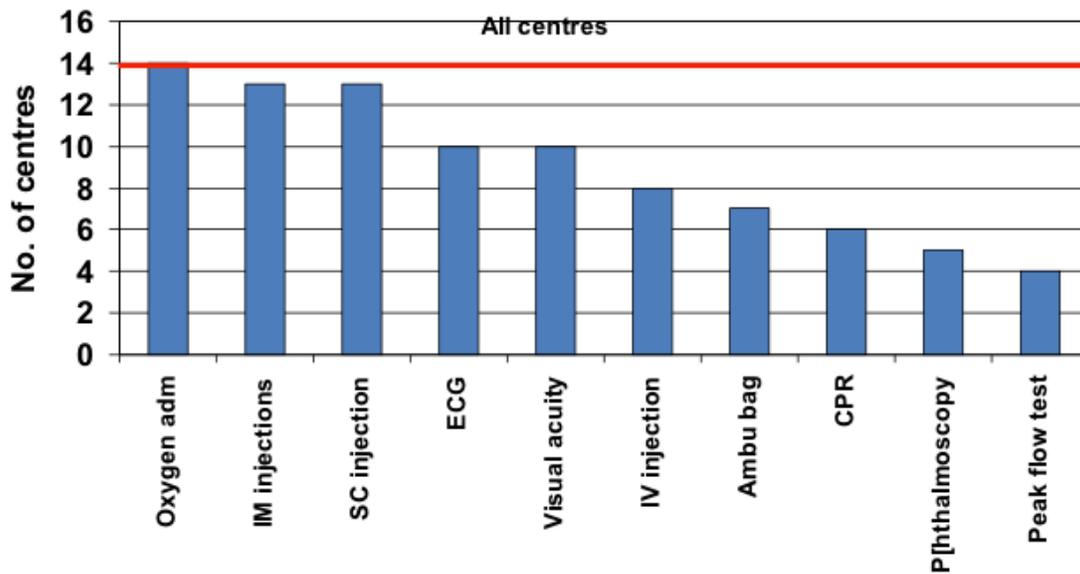
## Daily attendance

- Range:
  - Total daily outpatient attendance  
15-287
  - Hypertension  
2-7
  - Diabetes 0-6
  - COPD 0-5
  - Cancer 0-1
- Human resources
  - Number of doctors (range): 0-13
  - Number of nurses (range): 2-15
  - Number of health centres with staff trained at least once in NCDs
    - Doctors 7/14
    - Nurses 10/14

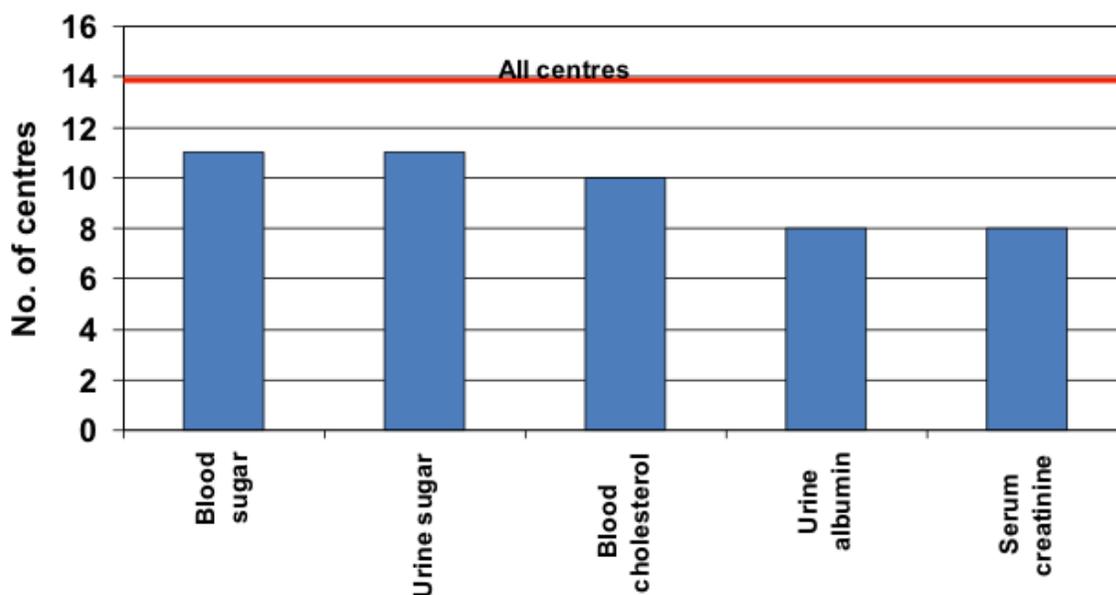
# Equipment



# Infrastructure



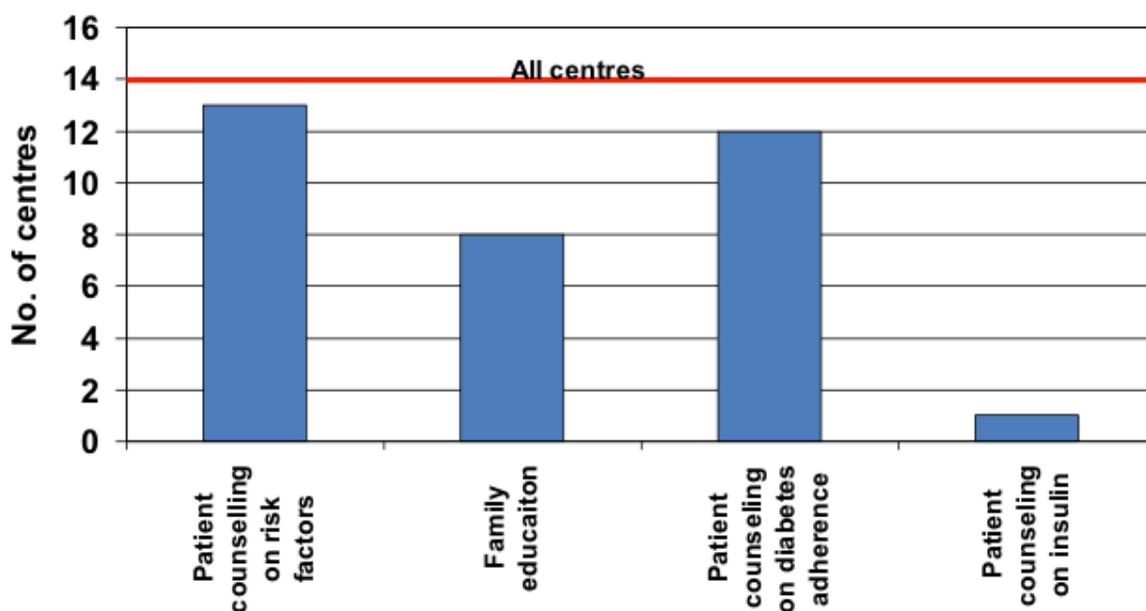
## Lab. Investigations



## Medicines (always available)

<u>Always available</u>		<u>Always available</u>	
• Aspirin	38%	• Metformin	75%
• Atenelol	6%	• Glibenclimide	94%
• Enalapril	13%	• Insulin (long acting)	0
• Furosemide	88%	• Insulin (soluble)	0
• Hydrochlorthaizide	81%	• Beclomethasone inhaler	0
• Isosoride dinitrate	69%	• Hydrocortisone injection	25%
• Ca channel blocker	44%	• Prednisolone	56%
• Statin	56%	• Salbutamol inhaler	6%
• Heparin	0	• Salbutamol injection	6%
• Adrenaline	88%	• Salbutamol tablet	100%
• Morphine (oral)	0		
• Morphine injection	6%		
• Amoxycillin	100%		
• Co-trimoxazole	94%		
• Benzathine penicillin	6%		

# Counselling



## Emergency/Referral facilities

- 12 of 14 centers had a bed to stabilize the patient
- All 14 centres reported having referral facility
- Time for referral (range) 10 mts to 1 hour 20 minutes

## WEAKNESS

- Untrained of HR / no and double duty
- Special budget for NCDs program not available
- Not adequate for Drugs (amount and type)
- Basic laboratory examination is not fully available.
- SOP / protocol is according by the profession (Specialist)
- Lack transportation for referral
- No feedback from the Hospital / Specialist
- Regulation declare that MD should do professional manner in keeping with its competence based guidelines or consensus recognized
- The Government is responsible for the entire infrastructure and training of human resources in accordance PEN

*Workshop WHO Package of Essential Non Communicable Disease Interventions*  
*Hotel Novotel - Bogor, 5 - 7 December 2011*



# Facilitators dan Participants

## Facilitators :

- Dr. Shanthi Mendis - WHO Head Quarter
- Dr. Renu Garg - WHO-SEARO.
- DR. Ekowati Rahajeng, SKM, MKes – Direktur PPTM
- Dr. Zorny Farida – Direktorat Pelayanan Farmasi
- Dr. Muhamad Ilhamy – Direktur Pelayanan Dasar

## Participants

1. Direktorat PPTM Kementerian Kesehatan
2. Direktorat Pelayanan Farmasi Kementerian Kesehatan
3. Direktorat Pelayanan Dasar Kementerian Kesehatan
4. Pengelola PTM di 5 provinsi :
  1. Lampung
  2. Kalimantan Barat,
  3. Sulawesi Selatan,
  4. Jawa Barat
  5. DKI Jakarta
5. Pengelola PTM di 5 kabupaten:
  1. Metro (Lampung),
  2. Pontianak (Kalimantan Barat),
  3. Maros (Sulawesi Selatan),
  4. Karawang (Jawa Barat)
  5. Jakarta Barat

- Kepala Puskesmas dengan satu perawat
- 1. Puskesmas Mulyojati Metro, Lampung
- 2. Puskesmas Padang Panjang, Sumatera Barat
- 3. Puskesmas Pangkalan Lesung, Palembang, Riau
- 4. Puskesmas Klari, Kerawang, Jawa Barat
- 5. Puskesmas Tegal Gundil, Bogor, Jawa Barat
- 6. Puskesmas Depok Jaya, Jawa Barat
- 7. Puskesmas Cilegon, Banten
- 8. Puskesmas Pekalongan Selatan, Jawa Tengah
- 9. Puskesmas Bantimurung, Maros, Sulawesi Selatan
- 10. Puskesmas Waiohuluk, Pontianak, Kalimantan Barat
- 11. Puskesmas Alak Kupang, Nusa Tenggara Timur
- 12. Puskesmas Kembangan, Jakarta Barat
- Perhimpunan Profesi sebagai penvandang kepentingan PTM (8 Associations) :
  1. Ikatan Dokter Indonesia - IDI
  2. Perhimpunan Dokter Keluarga Indonesia- PDKI
  3. Perhimpunan Dokter Spesialis Penyakit Dalam Indonesia – PAPDI
  4. Perhimpunan Dokter Spesialis Kardiovaskuler Indonesia – PERKI
  5. Perhimpunan Dokter Spesialis Saraf Indonesia – PERDOSSI
  6. Perhimpunan Dokter Spesialis Paru Indonesia – PDPI
  7. Perhimpunan Hipertensi Indonesia – PERHI
  8. Perhimpunan Diabetes Indonesia – PERSADIA

b. Qualitative Study design

## Assessment of Implementation of Integrated NCD prevention and control in Primary Health Care

## **Background**

- MOH Indonesia has adapted WHO PEN based on Indonesian situation and integrated as NCD Prevention and Control within the healthcare through Primary Health Care (Puskesmas).
- Since last year PEN guidelines was used for training of health workers at Health centers and their supervisors at districts and provinces.
- Laboratory equipment and health education material had been distributed to Health Center to support the health care management of NCD patient as well as health education to the communities to promote community based interventions.

## **General objective:**

- To assessment the implementation of the Integrated NCD services at Primary Health Centers using PEN

## **Specific objective:**

- Assessment of PEN implementation within the system of NCDs prevention and control in PHCs
- Identifying the development or changes of health workers' knowledge and skills;
- Identifying the adequacy of the facilities and infrastructures on NCDs prevention and control in PHCs
- Identifying the obstacles on implementation of NCDs prevention and control in PHCs
- Identifying gaps and future needs on strengthening NCDs prevention and control in PHCs;

## **Methodology**

### **Design: Facility based cross-sectional study**

- The assessment will be conducted in quantitative and qualitative design.
- The quantitative method will include compiling data from the recording and reporting of NCD patients and health facilities
- The qualitative data will be collected by in-depth interview with trained health providers and NCD patients

## Scope of the study

- (1) Review of NCD Guide line and training material to determine the WHO PEN used
- (2) Review Medical record to verify NCD case management
- (3) Measure Health Provider knowledge using pre-post training Quest
- (4) Interview NCD patients, trained health providers, NCD staff at district and provincial health office, district planning agency (local govt), PHC, hospital.
- (5) *Observation of health providers skill directly or indirectly*
- (6) Observation of HC facilities and infrastructure (adequacy of essential medicine, Laboratory equipment and health education material) to support management of NCD
- (7) Observation of Integrated Services Post

## Location of the study

- 4 provinces (2 in west regional, 1 in central regional and 1 in east regional)
  1. West region: West Java and South Sumatra province
  2. Central region: Central Kalimantan province
  3. East region: South Sulawesi province
- 2 health centers from every selected provinces
  1. Urban Health Center from trained municipality
  2. Rural Health Center from trained district

## **Implementation of the study**

A team of three will visit a selected health center to review all records for a specified period of time. All records and daily lists or reports are reviewed for notations that a NCD case management was made. If the data are available, diagnoses are also examined to determine whether cases requiring referral were referred or not.

When a referral is found, the surveyors collect as much information as possible to identify the case. The team then moves to the site to which the facility “officially” refers. At this second facility, a record review is also conducted.

## **Implementation of the study**

At the OPD of each facility, interviews will be conducted with NCD patients and health worker.

- All trained health workers who regularly see NCD patients will be interviewed for their history of treatment made for quality of care.
- All NCD patients visit HC during assessment day will be interviewed to help to further describe case management patterns made.

## Implementation of the study

At each facility, observations will be conducted to identify the adequacy of:

- *NCD Case Management*
- *NCD Laboratory examination*
- *Essential NCD medicine;*
- *Laboratory equipment and Lab reagent;*
- *Health Education material*
- *Reporting and recording*

## Description of instrument

No	Specific Objective	Instruments	Description and use
1	Assessment of WHO PEN implementation within the system of NCDs program in PHCs	PEN used checklist	To verifying the inclusion of WHO PEN in the guidelines and training material of NCD prevention and control
2	identifying the development or changes of health workers' knowledge and skills	Pre-post training questioner Observation form on Case management	To measuring the development or changes of Knowledge and skill of health worker on NCD case management
3	identifying the adequacy of the facilities and infrastructures on NCDs prevention and control in PHCs	Medicine; Laboratory and HE material check list	To verifying the adequacy of essential medicine; laboratory equipment including reagent and Health education material
4	identifying the obstacles on implementation of NCDs prevention and control in PHCs	In-depth Interview Questionnaire	To identify the obstacles on the implementation of NCD program
5	identifying gaps and future needs on strengthening NCDs prevention and control in PHCs	In-depth Interview Questionnaire	To identify the gaps and future needs on the implementation of NCD program

# Analysis

- Analysis will be conducted to answer the objective of the study including:
  - PEN implementation within the system of NCDs prevention and control in PHCs
  - the development or changes of health workers' knowledge and skills;
  - the adequacy of the facilities and infrastructures on NCDs prevention and control in PHCs
  - the obstacles on implementation of NCDs prevention and control in PHCs
  - the gaps and future needs on strengthening NCDs prevention and control in PHCs

## Time - frame

No	Activity	Time				Output	Resp Person
		oct	nov	dec	Jan 2015		
1.	Review methodology	█				Input from Direct of NCD	
2.	Development of Tools (Quest and checklist)	█				Draft Tools	
3.	Review Tools		█			Input from Direct of NCD	
3.	Finalization of method and tools		█			Final Method and Tools	
4.	Data collection West Java South Sumatra Central Kalimantan South Sulawesi			█	█		
5.	Analysis & Report writing			█	█	Draft report	
6.	Workshop on draft report				█	Input from stakeholders	
7.	Finalization				█	Final report	