

Thailand Laos Melioidosis Network Meeting II

Date and Venue: 17 September 2012, 8th Floor, Tranakchit-Harinasuta Building, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand

Aim: Close meeting among leading scientists in melioidosis research and policy makers in Thailand and Laos. Main purposes are to (1) update information among participants, and (2) discuss the important issues related to the situation of melioidosis in Thailand, including epidemiology, diagnosis, treatment, prevention, public awareness and public engagement.

Participated organizations: Bureau of Emerging Infectious Disease and Bureau of Epidemiology, Ministry of Public Health (MoPH), Thailand; Centers for Disease Control and Prevention (CDC), Thailand; Khon Kaen University; Faculty of Medicine, Siriraj hospital, Mahidol-Oxford Research Unit, and Faculty of Tropical Medicine, Mahidol University

Executive Summary:

Goals and methods to improve the burden of melioidosis in Thailand has been discussed among the participants to propose to MoPH and associated authorities. The highlights are as following,

1st Priority Enhance surveillance system

Current problem: Current surveillance system (Report 506-2 [สำ 506-2]) had led to underreport of the number of melioidosis cases and deaths due to melioidosis

Deliverable aim: Report > 95% culture confirmed positive by Report 506-2

Primary Task:

- 1) Change the definition of melioidosis case to report to be ONLY culture-confirmed melioidosis cases.
- 2) Enforce the report of only, but ALL, culture confirmed melioidosis case by Report 506-2.

2nd Priority Increase public awareness

Current problem: only 28% of Thais heard of melioidosis, and 1% knows how to prevent it

Deliverable aim: > 95% of Thais heard of melioidosis, and > 95% know how to prevent it

Primary task: Launch campaign led by MoPH, Thailand

3rd Priority **Improve diagnosis of melioidosis**

Current problem: Laboratory may misidentify the bacteria due to lack of test kit

Deliverable aim: Every microbiology laboratories in Thailand has Latex Agglutination test for *B. pseudomallei*

Primary task: Contact Department of Medical Sciences, Thailand, to put “Latex Agglutination test for *B. pseudomallei*” as a standard test that should be available by all microbiology laboratories in Thailand

4th Priority **Improve prevention of melioidosis**

Current problem: >80% of Thais are farmers. Most of them work without protective gears, and drink water without treatment. The drinking water was found contaminated with this bacteria.

Deliverable aim:

- 1) Test for *B. pseudomallei* is included in the quality control of village tap water supply (determined by Provincial Waterworks Authority and any responsible authorities).
- 2) Campaign for prevention of melioidosis is launched in the main media

Primary task

- 1) Contact Provincial Waterworks Authority, Thailand, and any responsible authorities to put the screening for *B. pseudomallei* in the quality control of village tap water supply.
- 2) Launch campaign for prevention of melioidosis in the main media

More details could be read on the following pages.

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Agenda of the Meeting

Venue: 8th Floor, Tranakchit Building, Faculty of Medicine, Mahidol University

Date: 17th September 2012

Time	Agenda	Speakers
10.30-11.00	Registration and coffee	
11.00-11.30	Welcome	Dr. Direk Limmathurotsakul
	Update melioidosis work by MORU	
11.30-11.45	Update melioidosis work by Siriraj	Dr. Sunee Korbsrisate
11.45-12.00	Update melioidosis work by KKU	Dr. Surasak Wongratanacheewin
12.00-13.00	Lunch Break	
13.00-13.30	Update melioidosis work by CDC	Dr. Anchalee Jatapai Miss Saithip Bengsri
13.30-14.00	Update melioidosis work by MOPH	Dr. Rungrueng Kitphati
14.00-16.00	Open discussion: 1. National Policy for Melioidosis 2. World Melioidosis Congress 2013	All participants

List of Participants:

Name	Affiliation	E-mail
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Summary of Research Updates:

Update of Melioidosis work by MORU. Dr. Direk Limmathurotsakul (DL) updated the key research activities on melioidosis that are currently undertaken by Mahidol Oxford Research Unit. Those include:

1. MERTH. STATUS: writing and analyzing the database (Dr Wirongrong is working on it)
2. Community acquired bacteremia in NE Thailand. STATUS: submitted
3. Prospective study for TLR5 in melioidosis. STATUS: planned to start Nov 2012 (Dr Direk)
4. *B. pseudomallei* and *B. thailandensis* in soil and its inhibition. STATUS: on going (Dr Narisara)
5. New-in-house isolator hemoculture tube. STATUS: on going (Ms Vanaporn)
6. Melioid Clip Contest (Focus Group Discussion). STATUS: on going (Dr Praveen)
7. Activities of daily living associated with *B. pseudomallei* infection, a case-control study. STATUS: submitted
8. Genetic study of *B. pseudomallei* in water in NE Thailand. STATUS: submitted.
9. Consensus guideline on soil sampling for *B. pseudomallei*. STATUS: submitted.

Special note: If any research group would like to conduct soil sampling, please feel free to contact form information for the consensus guideline on soil sampling from direk@tropmedres.ac or lek@tropmedres.ac

Updated abstract of “Community acquired bacteremia in NE Thailand” (presented at ICID 15th)

Information was obtained from the microbiology and hospital databases of 10 provincial hospitals in northeast Thailand, and compared with the national death registry from the Ministry of Interior, Thailand for the period between 2004 and 2010. A total of 15,251 CAB patients identified, of which 5,722 (37.5%) died within 30 days of admission. The incidence rate of CAB between 2004 and 2010 increased from 16.7 to 38.1 per 100,000 people per year, and the mortality rate associated with CAB increased from 6.9 to 13.7 per 100,000 people per year. In 2010, the mortality rate associated with CAB was lower than that from respiratory tract infection, but higher than HIV disease or tuberculosis. The most common causes of CAB were *Escherichia coli* (23.1%), *Burkholderia pseudomallei* (19.3%), and *Staphylococcus aureus* (8.2%). There was an increase in the proportion of Extended-Spectrum Beta-Lactamases (ESBL) producing *E. coli* and *Klebsiella pneumoniae* over time.

Update of Melioidosis work by Siriraj. Dr. Sunee Korbsrisate (SK) updated the current research on melioidosis that are undertaken by Siriraj in collaboration with colleagues from Singapore and United Kingdom. Those projects are mainly molecular biology based and include:

1. Isolation and characterization of *B. pseudomallei* bacteriophages (Leicester University, UK).
2. Actin-based motility (BimA) of *B. pseudomallei* (Roslin Institute, UK).
3. Characterization of Sigma factor E from *B. pseudomallei* (Singapore & Exeter University, UK).
4. Characterization of intracellular induced *B. pseudomallei*. genes (Exeter University, UK).
5. Characterization of type III effector proteins, e.g. Cif, BopC proteins (Leicester University, Roslin institute, UK)
6. Effect of adrenaline on *B. pseudomallei* infection (Roslin Institute, UK).

Update of Melioidosis work by KKU. Dr Surasakdi Wongratanacheewin (SW) updated the current studies that are undertaken by Melioidosis Research Center, Khon Kaen University which are mainly continuing ongoing projects. Those include the isolation of phages, metagenomic study that is being conducted with collaboration with Texas University, and the study of *Burkholderia* infection by soil samplings at the zoo in Khon Kaen.

Update of Melioidosis work by CDC.

Ms. Saithip Bengsri (SB) updated her current project, which is national surveillance for invasive bacterial infections called Thailand Invasive Bacterial Infection Surveillance (IBIS) – Plus. In this his pathogen-based surveillance, a cases is defined by isolation of one of 9 targeted pathogens from a normally sterile body site. In addition to *Burkholderia pseudomallei*, pathogens under surveillance include *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Neisseria meningitidis*, *Salmonella* spp., *Streptococcus* spp. including *Streptococcus suis*, Group A *Streptococcus* (*S. pyogenes*), Group B *Streptococcus* (*S. agalactiae*), *Listeria monocytogenes*. There are >40 sentinel sites and 2 population-based sites, which allow incidence calculation. There was a higher incidence of melioidosis in NE Thailand (23.4 per 100,000 persons per year) than the previous reported (12.9 and 12.2 per persons per year).

Dr. Anchalee Jatapai (AJ) presented her current project, which is assessing *B. pseudomallei* as a cause of severe childhood pneumonia as part of the PERCH (Pneumonia Etiology Research for Child Health) study: a multi country case-control study of severe pneumonia in children < 5 years old. From the period of August - September 2012, 52 cases of severe pneumonia in children were reported, and no *B. pseudomallei* was identified. It was discussed that melioidosis is less common in children < 5 years old, and the sample size is still low. The study is on going.

Update melioidosis work by MOPH. Dr. Rungrueng Kitphati (RK) summarized the report made by Bureau of Epidemiology about the situation of melioidosis in Thailand. RK reported that Department of Disease Control (DDC), Ministry of Public Health (MoPH), Thailand, initiated the plan to improve the situation of melioidosis in Thailand.

Summary of Open Discussion:

In order to improve the burden of melioidosis in Thailand, the participants have discussed and come up with the suggestion for the goals which should be reach in 5 years time as following,

Problems (Current situation)	Goals	Ways (Methods)
<p>1st Priority</p> <p>Current surveillance system (Report 506-2 [๕๓ 506-2]) leads to underreport of number of melioidosis cases and death due to melioidosis. With the current definition, most case reports are IHA positive patients, who survived. It was reported that there are >3,000 IHA melioidosis cases each year, and <10 died. Diagnosis by IHA is not specific, and misleading. In fact, it is estimated that there are > 2,000 culture confirmed melioidosis case each year, and 1,000 died. This is estimated by concrete and agreeable data from MORU, KKU and CDC from different study sites over Northeast and East Thailand.</p>	<p>Enhance Surveillance System</p> <p>Deliverable Aim: Report > 95% culture confirmed positive by Report 506-2</p>	<p>Primary task:</p> <p>1) Change the definition of melioidosis case to report to be ONLY culture-confirmed melioidosis cases. The definition is culture positive for <i>B. pseudomallei</i> from any clinical specimen.</p> <p>2) Enforce the report of only, but ALL, culture confirmed melioidosis case by Report 506-2.</p> <p>Secondary task:</p> <p>1) Validate the data received by 506-2 [๕๓ 506-2] with the data obtained by sentinel sites set up by MoPH and by research facilities, including MORU, KKU and CDC.</p> <p>2) Improve Laboratory Information System (LIS), such as centralizing Mlab database</p>

		to one of governmental organization
<p>2nd Priority</p> <p>Based on the large surveillance conducted by MORU, only 28% of Thai people heard of melioidosis, and only 1% of Thai people know how to prevent melioidosis. Although melioidosis is preventable, the high incidence and burden of melioidosis in Thailand, is largely because Thai people is not aware of the existence of this disease and how to prevent it.</p>	<p>Increase public attention</p> <p>Deliverable aim:</p> <ol style="list-style-type: none"> 1) >95% of Thai people heard of melioidosis 2) >95% of Thai people know how to prevent melioidosis 	<p>Primary task: Campaign led by DDC, MoPH, Thailand</p> <p>Secondary task:</p> <ol style="list-style-type: none"> 1) Contact key persons in media, including Sorayut and Kitti of Channel 3. Prepare ad for them to use, and this could be modified from video clips obtained from melioidosis clip contest (www.facebook.com/melioid) 2) Contact Ministry of Education to put melioidosis into school curriculum 3) Contact Thai Health Promotion Foundation (สสส) for a support in melioidosis prevention 4) Prepare educational package (ชุดความรู้/ชุดรณรงค์). Now it's available at www.melioidosis.info/th
<p>3rd Priority</p> <p>Melioidosis is easily to be misdiagnosed by doctors and laboratories. The definite diagnosis is based on culture positive of the causative bacteria, <i>B. pseudomallei</i> from clinical specimens obtained from the patients (e.g. blood,</p>	<p>Improve diagnosis of melioidosis</p> <p>Deliverable aim:</p> <ol style="list-style-type: none"> 1) Every microbiology laboratories in Thailand has latex agglutination test to verify the bacteria suspected of <i>B. pseudomallei</i> 	<p>Primary task: Contact Department of Medical Sciences, Thailand, to put “Latex Agglutination test for <i>B. pseudomallei</i>” as a standard test that should be available by all microbiology laboratories in Thailand</p> <p>Secondary task:</p>

<p>urine, sputum, pus, etc). However, <i>B. pseudomallei</i> may be misidentified as contamination and many laboratories stop identification of the bacteria as <i>Pseudomonas spp.</i> This is largely because the latex agglutination test is not widely available and used all over Thailand</p>		<p>1) KKU will prepare to subcontract and outsource the production of Latex Agglutination to private companies. This is to make sure that supply of Latex Agglutination is enough for whole Thailand.</p> <p>2) MORU will run a study to provide small amount of Latex Agglutination to all provincial hospitals in Thailand and collect the data to verify the outcome. This will be set up at the next annual meeting of Medical Science Society. The guideline of how to use Latex Agglutination is also available at www.melioidosis.info/th</p> <p>Less important tasks include doctor training, microbiologist training, guidelines for diagnosis and guidelines for treatment. This is because all of doctors in Thailand are well aware of how to diagnosis and treat melioidosis. The main problem now is at the microbiology facility to confirm the culture sent by the doctors.</p>
<p>4th Priority</p> <p>Prevention is the main key method to reduce the burden of melioidosis in Thailand. Nonetheless, strengthening the 1st to 3rd priority will facilitate the improvement of prevention in Thailand. >80% of Thais are farmers. Most of them work without protective gears, and</p>	<p>Improve prevention of melioidosis</p> <p>Deliverable aim:</p> <p>1) Test for <i>B. pseudomallei</i> is included in the quality control of village tap water supply (determined by Provincial Waterworks Authority and any responsible authorities).</p>	<p>Primary task: Contact Provincial Waterworks Authority, Thailand, and any responsible authorities to put the screening for <i>B. pseudomallei</i> in the quality control of village tap water supply. MORU and KKU is available to be contacted for updated methodology for this.</p>

<p>drink water without treatment. The drinking water was found contaminated with this bacteria. The quality control of village tap water does not include the absence of <i>B. pseudomallei</i>. 10% of village tap water supply is contaminated with this organism. This was shown to be an important cause of melioidosis.</p>	<p>2) Campaign for prevention of melioidosis is launched in the main media</p>	<p>Secondary task:</p> <p>1) Launch campaign for prevention of melioidosis in the main media</p> <p>2) Launch campaign for prevention of melioidosis via village health volunteer systems (๑๑๓) and diabetic clinics countrywide.</p>
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All of these issues will be brought forward to the Ministry of Public Health, Thailand, to ensure that they are made into the national policy.

Summary of Updates on World Melioidosis Congress 2013

Date of the main meeting: 18-20 September 2013

Date for the pre-congress workshop: 16-17 September 2013

No. of participants to pre-congress workshop at UBON for clinical observation will be limited to 25. KKU will consider to open workshop in soil sampling in KK.

The event organizer will be hired to help with the event.

The setup for advisory and scientific committees was discussed.

Next meeting:

March 2013