Report of Short Course on Neglected Infectious Diseases in the Tropics and International Public Health
Radboud University Medical Centre

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Forewords

God Almighty, Alhamdulillah!

After four years of waiting, I was finally given the chance to represent my medical school as an exchange medical student to study in Faculty of Medical Sciences Radboud University, Nijmegen, The Netherlands. This opportunity is a scheduled exchange program between Radboud University Medical Centre (Radboudumc) and Faculty of Medicine Diponegoro University Dr. Kariadi Hospital (FMDU).

The medical students from Semarang are involved in the learning and studying process of the medical students in Radboudumc. I have known about this program since the first time I entered the medical school, and I really wished to have the chance to be elected. In the end of 2013, department of internal medicine opened the selection process. As I had struggled during my obstetrics and gynecology rotation to prepare all the documents, I dared myself to apply for the selection. I passed both the document and interview selection and I joined the course on Neglected Infectious Diseases in the Tropics (NTDs) and International Public Health. NTDs course discussed mostly infectious diseases in the tropics, which are related to both geographical location and poverty. International public health discussed the public health aspects of diseases and health systems in the developed and developing countries. Both the courses are very important to me, as I plan myself to be an infectious diseases specialist.

I would personally thank dr M Hussein Gasem PhD and dr Monique Keuter PhD for their innovation in arranging this program. I found this program gives a lot of positive things for Indonesian medical students. They can experience the atmosphere of studying abroad, particularly in Radboudumc the Netherlands. In this report I will discuss anything related to this course program that I joined. Hopefully, this report can motivate the other medical students and giving a brief explanation about what I did during the exchange program.

Semarang, 28 April 2014

Fadel Muhammad Garishah, S.Ked
Radboud University Medical Centre has several elective programs in their curriculum and the major topics for international program are related to the tropical medicine and health care in developing countries. The intention for inviting the international students is to give the Dutch students the new perspectives of diseases in the tropics and about the health systems in developing countries. The three courses include neglected tropical diseases (NTDs), international public health (IPH) and HIV-AIDS course. During the selection process I had expressed my great interest in tropical infectious diseases and public health, and I was mandated to join the NTDs and IPH course.

**Neglected Infectious Diseases in the Tropics**

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Infectious diseases are one of the health challenges for the human species. Their special ability gives huge effect in human’s life. Starting from local epidemics, to the worldwide pandemics, they have been dynamically and successfully affected the development of the nations.¹ The infectious agents-host interaction is also considered as a never-ending interaction. Both human and the microbes evolve through the time. They compete one another to survive as part of the nature. This ever-changing science is very important for medical doctors in the tropics where a lot of cases are found.

Despite the big three infectious diseases such as HIV/AIDS, malaria and tuberculosis, the neglected tropical diseases also contribute to the quality of life of the society in a country. They are disabling conditions with mainly chronic infections in the poor countries.² World Health Organization has defined the 17 neglected tropical diseases caused by viruses, protozoa, helminthes, bacteria, ectoparasites and other causes.³ Tropical medicine is mainly concerned with curative aspects of tropical diseases: diseases which are limited to tropical areas by nature of their mode of transmission (e.g. because its transmission requires a vector which is occurring in the tropics only), or which are more common in the tropics due to favorable prevailing conditions as poverty, poor hygiene and/or poor health care facilities. Medical students are required to understand the tropical diseases, tropical medicine, travel medicine, and to develop an infectious disease research proposal.
Diagnosis, treatment and control of these selected conditions are all covered, including a practical.

International Public Health

Public health is the science and art of preventing disease, prolonging life and promoting physical health and efficiency through organized community efforts for the maintenance of health. It explores the health outcomes and disparities among populations and within populations over time. The Dutch medical students have studied the Dutch health care system, while attention to the health systems and medical practices outside The Netherlands and Europe is limited. Thus the Department of Primary and Community Care/Nijmegen International centre for health systems research and education (NICHE) arranges this international public health course in Radboudumc. The international students from developing countries such as Indonesia, Tanzania, Nicaragua and previously also Viet Nam are also invited in this course. Their presence becomes an important role to present the resources of information regarding the public health aspects in their home countries.

References:
Studying in Radboudumc

Radboud University Medical Centre has applied the block system for their medical education. Since student-centered learning process properly functions here, the students are actively studying, looking for studies resources, and working in their workgroup to give the best. The learning-teaching processes involve lectures, practical work, tutorial (interactive lecture), self-study assignment, group work, and forum written test, symposia, and evaluation of block.

1. Lectures
Lecture is an educational talk to university students. The purpose of the lecture is not to teach. Indeed, it intends to give the students overview of what they have to learn in further. After being given the lecture, students are expected to be able to look for information for the subject and to deeply learn the material themselves. Lecturers who give the lectures are all experienced with researches in country and even abroad. Thus, they are not only teaching but also inspiring the students. This is how a lecturer should be.

2. Self-study assignment
Self-study assignments are studying-hours given by the curriculum to give the students self-time to study the materials. To guide the students, the lecturers sometimes give references list and also questions for the medical students to discover. Example:

**Literature**
Teixeira MG, Barreto ML. Diagnosis and management of dengue. BMJ 2009;339:b4338. [http://www.bmj.com/content/339/bmj.b4338.full](http://www.bmj.com/content/339/bmj.b4338.full)

A 10 year old Vietnamese child presents to a local health post in a medium sized town. Her main complaints are fever since one day, myalgia, headache and nausea. Physical examination shows no abnormalities, especially no rash. Three similar cases have been seen in the previous week.

I. What is your differential diagnosis?
II. Imagine, you work in this health centre; would you do any additional tests? If yes, which tests and what are the consequences?
III. You consider the diagnosis dengue. Does this child fulfill the 2009 WHO criteria for probable dengue? Would it be useful to determine IgG antibodies against dengue at this time point? Consider especially the possible role in diagnosis and the impact on follow up or treatment.
IV. Dengue serology is unavailable at this health centre. How do you proceed, knowing that this child may be at risk for DHF/DSS? Include in your answer the following issues: treatment/observation in hospital or at home? How do you monitor the development of complications? Any specific treatment?
V. At day 7 of illness, the child is rushed to hospital. You see a severely ill child with no measurable blood pressure and a petechial rash. Make a treatment plan.

3. Practical work
Practical work or lab work is intended to introduce the students of using tools in laboratory or even computer program to do something in that particular subject. Laboratory work consists of specimens’ identifications (for biologic organism) or simple lab procedure for biomedical or clinical test. Practical
work using the computer program for example is the use of http://www.promedmail.org to find out the most recent infectious diseases outbreak in the world.

4. Working group
Working group consists of 4-5 students who discuss a particular subject to present it as either informational report or research proposal in both written documents (word file) or presentation. The intention is to stimulate the idea sharing between the students and also transfer of knowledge. In the end the conclusion is a comprehensive mind from the point of views of the students in that working group. In working group, the students are also trained to be actively giving contribution and dealing when the members are involved in a small conflict of ideas. Later in working life this kind of conflict-of-ideas will always appear. The students are also prepared to present the presentation in a good way, because the lecturers and audience are involved in giving suggestion about their presentation and the way they present their contents.

5. Tutorial (interactive lecture)
Interactive lecture or tutorial intends to discuss cases or answers of the self-study assignment. The interactive means, the students are involved in giving their opinion and answer while the tutor facilitates and directs the discussion process. For example during the dengue vaccine-development case, the students explained the difficulties in designing a perfect dengue vaccine also the reasons why and the tutor also expressed their views in this case.

6. Forum and Symposium
Group work results are being presented and also discussed with the lecturer and students. In this symposium, all students in the group must present their part in the working group. In infectious disease subject, the presentation covers geographical area, pathogens and pathogenesis, treatment and prevention. At the end of the presentation, comments and remarks are given to the group, regarding the content, presentation design, and also the way they present the case.

7. Written test
Written test is held at the third or fourth week. The questions are all mostly open questions. These open questions intent to stimulate the students in brainstorming and thinking using their logic rather than memorizing. Analysis of problem is also given in each question. In the future, when they work as a physician, the students work with their logic in managing a patient.
Example of question:
1. What is the impact of falciparum malaria during (first) pregnancy? Mention effects on mother and child.
2. Name 2 protozoan tropical diseases. Why do we call them tropical diseases? Are they also poverty related diseases? If no, why not? If yes, why? Somehow, because they only exist in tropical region specifically,
while poverty related diseases are diseases that also exist in a developed country and associated in poverty.

8. Developing a Research Proposal
The bachelor of medicine student in Radboudumc requires research proposal for their bachelor degree. In this elective course, the tutors facilitate the students to develop a research proposal with the topic of the course. In NTDs course, the topic is related to the neglected infectious diseases in developing countries, related to developing vaccine/therapeutics/point of care diagnosis (simple on spot diagnosis in rural areas) or control of disease. A supervisor who is experience in a particular subject of research will supervise the students.

The last day after the symposium or written test, the students and facilitators gather to discuss whether the block has fulfilled all the objectives and met the students’ expectation in learning and teaching process. The facilitators will re-read all the objectives and the students decide whether the objective is already fulfilled or not. In the end, the students must fill the evaluation form. They have to give number from 1-10 for each criterion. The evaluation form covers all aspects in the block, from the materials, references, learning and studying process, etc.

Studying in Radboudumc is very comfortable. There are 24-30 students in classroom for each block. The lecturer can interact with most of students because their number of students is not that crowded. We have a blackboard where all the materials for the learning and teaching process are put. Students can access the medical journals and even textbook like Harrison’s Principles of Internal Medicine via the Internet. The medical library (Dutch: Medische Bibliotheek) has the set collections of textbooks for the students, and the lecturers always refer their materials to the textbooks in library and also the journal from the PubMed. There are 6 computer rooms where the students can study and access their references. The library is also equipped with computers for the students when they have to look up information for the self-study assignment. All the tutors and facilitators are researchers who are experienced with their subjects, for example if someone teaches a particular disease, he has his PhD research on that disease. The lecturers are not only teaching but they also inspire the students. In the end of the class, they usually search for another student who wants to do a research in his field, later the student will use that research also part of their graduation requisite.

Expressing their opinion and understanding for a particular subject is the goal of their education. Memorizing is not likely their key in the learning and studying process in Radboudumc. Radboudumc trains you to work with your logic, so later when you can manage a patient better because you have the understanding in the subject. Understanding is always being emphasized during their medical education process.
**Student’s Life in Nijmegen (and The Netherlands)**

![Rijstaffel Diner met Dutch Friends and International Students (from left to right Anna, Fadel, Jose, Joey and Brechje)](image)

Nijmegen is a city, which is popular because of many research centers, especially the medical research centers. The city is part of Gelderland Province at the eastern part of the Netherlands. The city is in a cold competition with Maastricht to be the oldest city in the country. There are two higher education services in Nijmegen, the Radboud University and Hogeschool van Anhem en Nijmegen.

The city is a truly academic city, with the peaceful condition and suitable for academic studies. Radboud University is the major attraction for students across the country in gaining higher education in Nijmegen.

Living in Nijmegen means walking down across Radboud’s streets, taking ‘Breng’ bus, buying groceries in Albert Heijn Jacobslaan straat, walking at the side of Waal River, or enjoying a warm sunny day in the centrum of Nijmegen. Every student who experienced of living in Nijmegen will always miss these moments.

Nijmegen centraal station connects the city with the whole cities in the Netherlands. Utrecht is a connector between Nijmegen and Rotterdam, while Amsterdam can be reached with a direct train from Nijmegen. Arnhem, the capital of Gelderland Province can be reached in 15 minutes from the city by train/’Breng’ bus. Netherlands is a relative small-sized country. Amsterdam can be reached in 1 hour, while Rotterdam can be reached in 1.5 hours, and The Hague can be reached in around 1.5 hours too. There are a lot of interesting places such as museums, city parks, zoo, the Afsluitdijk etc. The most popular museum is Rijkmuseum, located in the capital city Amsterdam. The museum just opened in recent years, and it gains a lot of visitors each year. Koekenhoff is a famous Tulip garden which opens during the spring when all the tulips bloom. Afsluitdijk is the causeway that lines across the country to keep the country from being flooded by the North Sea.
Traveling across Europe is also possible. Brussels (Belgium) can be reached within 1 to 2 hours, while Paris (France) can be reached in 7 hours by bus. Eastern part of Germany can be reached from 1 to 3 hours by train.

Enjoying Dutch food is also an interesting challenge. If you can stand of living with bread, cheese, smoked chicken or jam, you can try a new way of living as a Dutch. But if you cannot stand with living all your life with bread, you can try cooking or heating Asian food. Cooking is preferable because you can always measure the taste, while buying food and heating it are not recommended if you expect it with the real Indonesian taste.

Radboudumc coffee machine is the best part of living in Nijmegen. If you walk across the corner of hospital, you can easily find the coffee machine. You can make cappuccino, hot chocolate or tea with no charge.

Figure 002. International Students Dinner

An unforgettable international office dinner with all the international students, Dutch students, Mevr dr Monique Keuter PhD, Mevr Mieke Daalderop, Loes Vaessen, we have a great rijstaffel food with cozy place and sweet talks about various topic, including a Dutch quiz to measure knowledge of Netherlands. I am happy to be part of this new family and I hope this will be an everlasting friendship, not limited by border of nations and countries.
Activities Report: Neglected Infectious Diseases in the Tropics (5KVZ12)

Main learning objective
The student understands how major Neglected Tropical Diseases promote poverty and threaten development in the tropics and non-tropical developing countries. The student can indicate appropriate disease and case management strategies under prevailing material and human resource constraints. The student has knowledge of historical developments and current international initiatives for NTDs, and their relevance in achieving the Millennium Development Goals. Particular attention is given to new avenues in research for these conditions: “Best Science for the Most Neglected”. The student will be able to formulate requirements for the development of new diagnostic tools and therapeutics as well as new approaches in disease control.

Specific objectives

a. The student can indicate which major risks threaten the health of populations in the tropics and in developing countries, in particular Neglected Tropical Diseases (NTDs) and emerging infectious diseases.

b. The student understands how Neglected Tropical Diseases (NTDs) promote poverty and threaten development and achievement of the Millennium Development Goals.

c. The student has an understanding of limitations in material and human resources for health in the design and implementation of NTD control activities.

d. The student gets an impression of the geographical distribution of NTDs, can explain various factors underlying this distribution and develop scenarios for future threats to health by (re-) emerging infectious diseases.

e. The student can apply an ecological approach (host, agent, environment) to reach an understanding of conditions favoring the spread of infectious disease and the occurrence of epidemics and disease outbreaks.

f. The student can indicate how a selected number of NTDs present themselves in the tropics, and explain preventive, diagnostic and therapeutic options for use at the individual and population level.

g. The student can perform selected laboratory methods.

h. On the basis of current constraints in the control of NTDs, the student can define needs for new avenues in research for these conditions, from understanding pathogenesis to the development of new diagnostic tools and therapeutics as well as new approaches in disease control.

i. The student has an insight in international initiatives for NTDs such as the TDR (Tropical Disease Research) program of WHO/World Bank and the Drugs for Neglected Diseases initiative (DNDi), and their relevance in achieving the Millennium Development Goals.

j. To practice presentation skills in English.
Report of Activities (NTDs)

Introduction Lecture (Wednesday, 05-03-2014, 08.45-10.45)
Lecture of Neglected People Neglected Diseases is an opening lecture to introduce about the neglected tropical diseases (NTDs) which are defined as the poverty-promoting chronic infectious diseases, primarily occur in rural areas and poor urban areas of low-income and middle-income countries. It consists of various infectious diseases caused by bacteria, viruses, fungi, protozoa, helminthes, and ectoparasites. Burden of NTDs is ranked 2\textsuperscript{nd} after the HIV-AIDS burden. The mean of control of NTDs is important to lessen the burden of these diseases. Tools for control of NTDs include development of vaccine, screening diagnostics, and mass drug administration/therapeutics. Vaccine development is somehow difficult because it takes longer time, although the longer and more sustainable control can be established. Screening diagnostic is approached via the point of care test development. Sensitivity and specificity of the test is very important for the better diagnostic. This approach may reduce the severe complication of NTDs, and lessen the burden of the society, as the screening acts as the primary prevention. Mass drug administration is the last option to treat the patients and also in order to cut the transmission chain of infection. Given to the fact that most these diseases occur in the countries with poverty, thus cost effectiveness is also included in choosing the right action.

Practical Health Resource Allocation Game (Wednesday, 05-03-2014, 10.45-15.30)
This practical game is developed at the Royal Tropical Institute Amsterdam and adapted by Radboudumc. This game is about allocating various health resources in a certain area by the mean to experience planning of health services. Students were divided into groups. Each group is given health budget and they had to spend the budget by placing dispensaries, health centers, small rural hospital, rural hospital, regional hospital, Landover-ambulance, motorcycle, radio, and community health workers.

Once the health services were located, the students were given 200 cards with patients who were coming from that region. The location was also available in each card and it had to be matched with the location in the area map. The categories of cases include life threatening, potentially dangerous, self-limiting and other symptoms cases. Students had to check the location and level care. If the patient with life threatening and potentially dangerous categories cannot receive the appropriate level of care/can not receive any treatment, they will be classified as care failure or cure failure. Patients with self-limiting and other symptoms categories receive treatment higher than necessity, classified as over treated.

The game was full of discussions between the Dutch students and the international students. The international students live in developing countries with low resources availability and they understand the condition of rural area outside Europe. They gave a lot of opinions during the health reallocation game.
Self Study Assignment 2.1 Burden of Disease (Thursday, 06-03-2014, 09.45 – 12.45)

This self-study assignment consists of 5 questions regarding the measure of burden of disease. Burden of disease can be measured by several measures such as mortality, and daily-adjusted life years lost (DALYs). Mortality describes the burden of disease based on the lethality of the disease. While NTDs cause mostly morbidity rather than mortality, thus DALY can be the other option to express the burden of NTDs. DALY can be thought as one lost year of “healthy” life.

Tutorial 2.2. Burden of Disease (Thursday, 06-03-2014, 12.45 – 13.45)

In then end of the discussion, dr. Henry van Asten explained about the role of health systems to control the NTDs. The good governance resulted in a good health system, with policies related to the actions to overcome the burden of NTDs.

Lecture 4.1. Overview of Neglected Tropical Diseases (Thursday, 06-03-2014, 13.00 – 14.30)

Dr. Monique Keuter, an infectious disease specialist and tropical doctor lectured this lecture. Tropical infectious diseases are diseases caused by various infectious agents that are climate and vector bound. Poverty related diseases that also occur in the tropics are not tropical diseases, since it is more linked to hygiene and sanitation, though tropical medicine also covers tropical diseases and hygiene. In this lecture, dr. Keuter discussed about several examples of NTDs, such as Chikungunya, murine typhus, leishmaniasis, and filariasis. She also stressed to the young doctors that to diagnose an infection, it is important to show the agent or determine it by the host reactions against the agent. Clinical view only acts as a guide to constitute the diagnosis along with diagnostic test.

Practical 2.3. Information Technology and Tropical – Geographical Medicine (Friday, 07-06-2014, 09.45 – 12.15)

In this practical work, the students were trained to use the internet in accessing various information related to infectious diseases. Organizational websites such as WHO, CDC, and UNAIDS, search engine like pubmed, prestigious journals like The New England Journal of Medicine and also outbreak daily info in Promed. Students were ordered to look up the recent outbreak and the result used for the groupwork task of disease control strategies. My group consisted of Charlotte, Michelle, Aernoud and myself. We found an outbreak in Uttar Pradesh and it was about Acute Encephalitis Syndrome (AES). And we described the disease also presented the control strategies in the group presentation.

SSA 2.4 Group Work Disease Control Strategies (Monday, 10-03-2014, 08.45 – 17.45)

Our group discussed the outbreak in Uttar Pradesh India, which happened in 2013. 3008 encephalitis patients had been admitted to the government hospital and 640 patients died. The province is located in north India, and the climate is subtropical. It is endemic for other disease such as Japanese encephalitis virus (JEV). At first, local government believed that JEV caused it. The location is endemic of JEV with the evidences of inadequate mosquito surveillance, while there are a lot of rice fields for the mosquitos breeding site and also pig farming which is an effective host for the
viral amplification. But then they also figured out the human lice outbreak. Human lice (*Pediculus humanus corporis*) are also vector of *Rickettsia prowazekii* which causes AES. The cold climate of Uttar Pradesh is also a predisposition for the habit of the people to not taking bath everyday, which causes the longevity existence of human lice. Poverty and overcrowding were also another contributing factors.

Disease control strategies for JE include vaccination, mosquito larva control and pig control. Rickettsial disease control strategies include delousing with permethrin, doxycycline for prophylaxis, hygiene education to local people and not to share bed among patients in the hospital. Further researches have to cover vaccine, mode of transmission in every seasons, point of care test and predisposition factors in children.

**Forum 2.5 International Disease Surveillance (Tuesday, 11-03-2014, 08.45 – 16.45)**

The students presented their outbreak cases and control strategies for the outbreak. The outbreaks were acute encephalitis syndrome, cholera, polio, dengue, zika virus and rabies.

**Lecture 3.1. Best science for the most neglected (Wednesday, 12-03-2014, 08.45 – 09.45)**

Drs. Henry van Asten gave this lecture as the following information from the previous lecture of neglected tropical diseases. He explained various research approaches to combat the NTDs. In this lecture, the NTDs were specified to three diseases, Schistosomiasis, Human African Trypanosomiasis, and Dengue. Schistosomiasis can be controlled with mass drug administration to cut the life cycle of the helminthes, while researches on vaccine development is a long time and hard step to take. Dengue researches were about point of care test, vaccine development, and possibly antiviral drug. Human African Trypanosomiasis researches were about developing the new drug and the nontoxic one.

**Lecture, Self Study Assignment and Tutorial: Search for effective control for Schistosomiasis (Wednesday, 12-03-2014 08.45 – 17.00)**

Schistosomiasis is a parasitic disease caused by the blood helminthes called *Schistosoma spp*. Dr Foekje Stelma is a medical microbiologist who is working a lot on this subject. She did her PhD on Schistosomiasis control in Senegal. In the Schistosomiasis lecture, she focused on the effective control of Schistosomiasis. According to the references, mass drug administration can cut the transmission and also controls the morbidity. This can be done by providing health access to local people and also combined with giving education about the transmission to local people. Snail and vegetation control couldn’t last longer and was difficult to be done sustainably. Educating people to avoid direct contact with water bodies is also can be done along by providing them boots. Vaccination is still not effective since the ability of the parasites to disguise them from the immune cells attack. Mass drug administration is the best control strategy and for cost-effective purpose, it should be given to those with high risk of being infected such as children and people who is working in water bodies.
Lecture, Self-study Assignment, and Tutorial: The search for new therapeutics for Trypanosomiasis (Thursday, 13-03-2014 08.45 – 16.00)

Trypanosomiasis is a parasitic disease caused by protozoa called *Trypanosoma* spp. There are two medically important species of *Trypanosoma* in the world, *Trypanosoma cruzi* causes the Chagas’ disease in South America and *Trypanosoma brucei* causes the Human African Sleeping Sickness. This lecture was about therapeutics for Human African Sleeping Sickness. *Trypanosoma brucei gambiense* that causes chronic sleeping sickness is found in West Africa, Congo and Zaire, while *T. brucei rhodesiense*, which causes acute sleeping sickness, is found in Zimbabwe, Tanzania, Zambia and Angola. The therapeutics or drug of choice for stage 2 or central nervous system involvement is melarsoprol. The side effect of melarsoprol is encephalopathic syndrome, includes convulsions, progressive coma, and psychotic/abnormal behaviors. This relative old and very toxic drug is still the only option to cure the disease. Eflornithine is another option with less toxic effects, but it is difficult to administer it in low-resource setting. Nifurtimox is the drug for Chagas’ disease, although it has been observed for being effective in treating HAT patients. Current researches are working on the efficacy of Nifurtimox-Eflornithine Combination Therapy to treat HAT. Point of care test, which is sensitive and can be used in rapid also another research issue to recognize the disease before the CNS involvement appears.

Lecture: Health risks in the Tropics (Thursday, 13-03-2014 16.00-17.00)

Dr. Keuter lectured this lecture to give the medical students insight in the risk of traveling or residing in tropical countries, also medical problems that might be encountered during the stay and after returning from the tropics. When a patient who is coming to the clinic with the history of traveling to the tropic and he has a fever, there are several things that a tropical doctor should consider. The considerations include possibility of malaria, what kind of infectious diseases exist in that region, the incubation period, preventive measures he had taken during the trip or risks factor, skin symptoms, and his WBC (white blood count). The first rule is to always rule out malaria from the diagnosis. After that, geographical epidemiology of infectious diseases in that region has to be considered to give differential diagnoses. Long incubation period (> 3 weeks) includes HIV, HBV, HCV, Tuberculosis, Malaria tertian, HAT, leishmaniasis and helminthiasis. Short incubation period (1 week) includes dengue, rickettsia, typhoid fever, and falciparum Malaria. WBC counts also can be used to interpret infection cases. Normal WBC to low and no granulocytosis can be due to dengue, rickettsia, typhoid, and malaria. Granulocytosis high WBC is often due to pyogenic infection, dysentery, leptospirosis, amebic abscess, and trypanosomiasis. Again dr. Keuter underlined about the definition and the example of tropical diseases and poverty-related diseases. Tropical diseases are climate and vector-bound such as yellow fever, dengue, African tick-borne fever, malaria, leishmaniasis, strongyloidiasis, and Schistosomiasis. While poverty related disease are bad hygiene and sanitation related diseases such as HVA, measles, murine typhus, diarrhea, typhoid fever, tuberculosis, dermatomycosis, giardiasis, ascariosis, echinoccosis, and scabies.
Practical and Tutorial: Parasitology and imported neglected diseases (Friday, 14-03-2014 08.45-17.00)
This practical work was about microscopic and macroscopic identification of various parasites and also neglected infectious diseases agents. The first term, the students were given slide of fecal specimens, and they had to identify what ova, trophozoite or cyst in those fecal slide specimens. I was working with Tiara, a medical student from Bandung. We got our slide with *Giardia cyst, Entamoeba cyst* and also *Ascaris* egg. The second term, dr. Keuter, dr. Stellma, and Theo had put parasites specimens in a row of microscopes. Cases and the specimens had to be matched. The cases were hydatid cyst, trypanosomiasis, malaria, leishmaniasis, taeniasis, amoebiasis, and strongyloidiasis.

In the evening, dr. Keuter and dr. Stelma gave a tutorial cases of infectious disease in the tropics. The cases were leishmaniasis, strongyloidiasis, ascariasis, Schistosomiasis, giardiasis, malaria, hydatid cyst, amebiasis, and Human African Trypanosomiasis.

Lecture, Self-study Assignment, and Tutorial: The search for new diagnostics of dengue (Monday, 17-03-2014 09.45 – 16.00)
Dr. Quirijn de Mast is an infectious disease specialist and researcher who works a lot on platelets and dengue. In the beginning of the lecture, he restated that a fever case in the tropic was malaria until ruled out. But based on an article in New England Journal of Medicine, in Caribbean, South America, South Central Asia and Southeast Asia, dengue is the first rank of fever case, while in Sub-Saharan Africa, and Central America; malaria is the first ranked case. Although by all number of cases, malaria is ranked as the first cause of fever. Transmitted by a vector, *Aedes*, dengue virus that has 4 serotypes DENV-1 up to 4, it is estimated 250,000 – 500,000 DHF case/ year with CFR of 5 %. Dengue is also found in Europe recently due to climate change and car tire trading which brought the larva of the infected *Aedes* mosquito. Dengue rapid (sensitive and specific) point of care test is very important to diagnose the case in low-resource setting. Complication of dengue hemorrhagic fever is dengue shock syndrome that is lethal. Antigen detection is the best method since antibody test can only be used in 4-5 days after infection. The current antigen detection test NS1 is valuable for the traveler but less useful in highly endemic areas. Thus, he explained the importance to develop another rapid diagnostic test in endemic areas.

Lecture, Self-study Assignment, and Tutorial: Pre-travel advises cases (Tuesday, 18-03-2014 09.45 – 16.00)
Before giving the lecture, dr. Monique Keuter distributed a review article from NEJM about health advice and immunizations for travelers. This article discussed about risk assessment, personal precautions and travel-related illnesses, and pre-travel immunizations. She also showed a quote that stated traveling broadens the mind and loosens the bowels. Vaccinations and malaria prophylaxis for the travelers are intended to reduce the burden of getting infected after traveling abroad. Several considerations that have to be considered are destination (geographical epidemiology of the diseases), purpose of travel (specific professions require specific vaccinations), age (children) and sex (pregnancy), current diseases (immunocompromized or medication).
Written test (Wednesday, 19-03-2014 13.00 – 17.00)
The test covered all the materials given during the blocks. It consisted of open questions related to burden of diseases, dengue, trypanosomiasis, neglected tropical diseases cases and schistosomiasis.

Research Proposal Week (Wednesday, 19-03-2014 – Wednesday, 26-03-2014)
In this week, I got an assignment to develop a research proposal. The group consisted of Kristofoor, Lineke, Claudia and myself. The theme of our paper was HPV infection and cervical cancer, and our supervisor is an OB/GYN specialist, dr Ruud Bekkers PhD. His expertise is oncologic gynecology and he works a lot with OB/GYN specialists across the world. In the first day, we found an article about visual inspection acetic acid as a screening method in Indonesia. But the weakness of this test is it resulted in many patients with positive VIA test had to undergo the cryotherapy. The side effect of the cryotherapy includes cervical incompetence during pregnancy. Thus, our group in agreement with our supervisor wanted to reduce 25% the number of cases with overtreatment from 3.2% of population to 2.4% of population.

Research Proposal Symposia (Thursday, 27-03-2014 – Wednesday, 28-03-2014)

These two days all the student groups presented their research proposal. In my group, Kristofoor and I presented the introduction chapter, while Claudia and Lineke presented the aims, materials and methods. Dr. Keuter and Drs. van Asten questioned why our group didn’t utilize the puskesmas to gather the people, a point that I already discussed during the research proposal meeting, but since the decision was group decision, so we chose the mobile clinic instead of puskesmas. But the presentation ended well, and we got 7.9 for it.
6. Activities Report: International Public Health (5KVZ2)

Main objectives
The student can identify the main determinants of major public health problems, and evaluate efforts made within health systems and within political arena to address public health issues. The student is able to assess the implications of the above for the day-to-day practice of medicine at various levels in a particular health system.

Objectives
1. The student realizes the importance of a country’s socio-economic, political and historical context in understanding its current health status, including the impact of globalization
2. The student understands the basic components of health systems in developing countries, and has the knowledge of advantages and drawbacks of these systems, such as quality of care and the choice of the right interventions
3. The student can assess the options and limitations of recent global initiatives in health
4. The student is familiar with the concept of primary health care and community involvement.
Report of Activities (IPH)

Opening Lecture (Monday, 31-03-2014, 09.45-10.45)
Dr. Ernst Spaan a public health researcher from Nijmegen International Center for Health systems research and Education (NICHE), and he opened this block with introduction of international public health. The purpose of this block is to introduce the medical students with global health problems in low and middle-income countries, how their health systems give solution to those problems, various global health initiatives, and the role of primary health care in giving solution. In the end of the lecture, he assigned us to write papers in a group, with the theme specific disease in a low-income country. Each international student had to be involved in one group.

Lecture: Health and its determinants (Monday, 31-03-2014, 11.45-12.45)
Drs. Henry van Asten a public health specialist with MPH degree from John Hopkins University explained about various determinants of health. He described the determinants of health-included malnutrition, water/sanitation, unsafe sex, alcohol, indoor air pollution and tobacco use. Besides the determinants itself, the underlying factors such as poverty, gender issues, climate, environment and social determinants also gave contribution to the development of diseases. Behavior was also another important determinant of health. In the end of the lecture, he stated about the two tools to write the paper, first is by developing a problem tree and the second is by analyzing the natural history of disease.

Video watching: Health and its determinants (Monday, 31-03-2014, 09.45-10.45)
In this session, the students watched two videos, Witness: Dhaka’s cholera wars and 2013 Cholera: the disaster disease. This video showed the determinants of cholera in low-income countries, treatment, and also global initiatives for cholera. Students were asked to critically analyze the core problem and how the society in a country responded to such problem. Local people leader involvement is a crucial part for the comprehensive management of outbreak, especially in rural area in this case.

Working Group 1.1. Health and its determinants (Tuesday, 01-04-2014, 09.45-11.45)
This working group mainly based on an article about the major determinants of HIV/AIDS in South Africa. In this article, renewed determinants of HIV/AIDS development are being discussed. Social determinants play bigger role in this context. Poverty is a social factor that cannot be separated from the health status of an individual. It is related with access to basic health services (water, sanitation), education (related with hygiene and health behaviors) and access to medical facilities also retrieving medical information. Culture also affects the health outcomes for individual. Certain culture has different reactions in responding a certain disease. Environmental status particularly sanitation is also important. In conclusion, the spread of HIV is more related to various social determinants, and in
the future, by controlling those social factors it is hoped that the HIV spread can be under control.

**Working Group 1.2. Risks to health and Why did Safar Banu die? (Wednesday, 02-04-2014, 09.45 – 11.45)**

Safar Banu was a portrayed pregnant woman in a developing country who faced many social determinants towards her maternal death. She had got her 10th pregnancy, because her husband didn’t allow her to use any contraception. Her husband believed that children are gifts, thus ones should not limit the number of children they have. When she had postpartum bleeding, she didn’t get proper treatment from the healthcare provider. It was because her family didn’t have any insurance to pay the medical treatment. She died eventually.

**Practical Work: Gapminder exploring global health (Thursday, 04-04-2014, 09.45 – 12.45)**

Gapminder is an interactive graph provided by the Sweden government in collaboration with several UN agencies. It helps people to visualize complex trends among countries like the distribution of poverty and the disease burden. We used this application to compare the economic/wealth status of a country and its relation to the health status. And the conclusion was not every wealth country had a great health outcome. The health outcome success was also influenced with other factors, which will be discussed in the next week lecture, the health system.

**Presentation of paper determinants of health (Friday, 03-04-2014, 13.45 – 15.45)**

Wilke Hendriks and I had prepared our paper with Typhoid Fever in Indonesia as the topic. The first week paper discussing about the determinants of development of the disease in this country. According to the WHO, Indonesia is included in the typhoid endemic region along with India, other Southeast Asian countries and Papua New Guinea. The prevalence reached more than 100/100.000 people. The determinants include environmental, socioeconomics and behavioral factor. Environmental
aspects cover the tropical climate, which is suitable for the bacterial growth and spreading. Fecal-oral route and chronic carrier status support this correlation.

Socioeconomic factors include availability of clean drinking water, sanitation, health education and vaccination. Access to clean water is a major issue in Indonesia. With the national coverage 60%, 40% of the populations still have lack access. Sanitation related to the proper housing to live in. Given to the fact that there are 28 millions of people living in poverty, and 17 millions live in rural area, most of them living under proper housing condition. There are no sewage and trash management, thus the housing can be classified as under standard condition. This leads to easier transmission of infectious diseases. Education is more than knowledge in sciences, but furthermore it covers the health knowledge that will be applied in the daily life. Education system in Indonesia still focuses in the purpose of teaching of science. Health knowledge which will affect the people’s behaviors are not deeply being concerned. Thus, there is still lack of awareness in health and diseases preventions. Typhoid vaccination is not likely to work in endemic area setting for adults, but recommended for school children in Indonesia, although the efficacy still in the range of 40-70%. The basic vaccines in Indonesia do not cover the two types of typhoid vaccines, thus it requires personal expense to have it. Many parents still do not considering the importance of typhoid vaccination. All those factors are the main determinants of typhoid fever development in Indonesia.

**Lecture 2.1. Health systems in developing countries (Monday, 07-04-2014, 09.45 – 10.45)**

A lecture by Rik Viergever MD PhD, a postdoc from London School of Hygiene and Tropical Medicine. Health systems consist of all organizations, people, actions whose primary intent is to promote, restore or maintain health. Interventions towards determinants of health and also direct health-improving activities included as well. The goals of health systems are improving health, responding people’s expectation also providing financial protection for them. Health systems cover health workforce, information, medical products vaccines & technology, financing and leadership. All these factors influence the outcome, which are improved health, responsiveness, social-financial risk protection and also efficiency. Along with the delivery, access, coverage, quality and safety also take part in achieving the outcomes.

**Working Group 2.1. What makes a good health system? (Tuesday, 08-04-2014, 09.45 – 11.45)**

This working group mainly focused on the World Health Report 2000. It was about health systems and how we measure the effectiveness of health system. During this discussion I was involved a discussion with Rik about private and public health service. Somehow private health service tended to give better service than public because of user fees, but the problem was more poor people couldn’t afford it, only middle income people or higher could afford it. Thus user fees affect health outcome, especially for the poor.
Lecture 2.2. Quality of care and choosing the right interventions (We, 09-04-2014, 09.45 – 10.45)
Evelinn Mikkelsen MSc, a PhD student from Norway gave lecture related with quality of care and choosing the right interventions. The duality perspectives of quality of care were being discussed here. Clients expected the good and reasonable care, while provider wanted to attract clients, which can reduce cost and ensuring the sustainability. Clients were influenced by culture, experiences, perceptions and interaction. Providers in giving qualified care services also considering cost and efficiency also health outcomes after delivering it. It was also important to always reevaluate about the quality of care, although still it might result in bias. The right interventions also had to be cost-effective, efficient, feasible, ethical, affordable and equally distributed. All can be measured with study protocol as evaluation towards it.

Video watching: Sicko (Wednesday, 09-04-2014, 10.45 – 11.45)
Sicko is a documenter video reporting the health finance in several countries. Health insurance is highlighted in this video. United States applies the private health insurance to cover the health of its people. 40% of the Americans are still living without health insurance, and many of the health insurance agencies practicing corruption by limiting the availability of coverage in insurance. A cancer patient might not get proper diagnostic procedure because it is out of the coverage. It’s different from in United Kingdom, while national health system has covered by the government. It is paid by the tax system in UK, people might buy everything in expensive price but they get free healthcare service in return. In the end of the movie, we discussed about the health finance system that is the best in order to achieve the outcome of health system that is financial protection.

Working group 2.2: Quality of care and choosing the right interventions (Thursday, 10-04-2014, 09.45 – 11.45)
The barriers towards quality of care also include religious and cultural aspects in every country. Evelinn explained her experience working in Africa regarding this issue. To promote of not doing free sex, usually we use word “say no to free sex”. In a region in Tanzania, in order to agree of having sex with their men, women have to say no, because if she said yes it means she was a prostitute. And this condition leaded to the difficulty in arranging the prohibition of free sex. Religious example was Bible belt in Netherlands, where people will never let their children get vaccinated because they believe diseases coming from God. The goal of vaccination is to provide herd immunity. Thus, physicians will face those difficulties during their work in medical field, in delivering a good quality of care and choosing the right interventions.

Lecture: Globalization (Thursday, 10-04-2014, 12.00 – 12.45)
This lecture by dr. van Schoor was a brainstorming about globalization and health and diseases. It was about how globalization could change various aspects in health system in the world. Like the mobilization of health workforce, transmission of infectious diseases, how economics affected the health outcome of country due to welfare and poverty status, trends of smoking, and climate change due to the global
industrial drive. One-day health problem should be managed globally, although local action is the joint of the movement.

**Presentation of papers week 2 (Friday, 11-04-2014, 13.45 – 15.45)**
Problems of health systems in Indonesia were being discussed here in the context of the burden of typhoid fever. Leadership represented with Ministry of Health had released a decree to the clinical and public health management for typhoid fever. But the problem is the application still varying among regions, and sometimes the decree works just as a recommendation rather than obligation. It is required further analysis regarding this issue. Health care financing is in the progress for the national health coverage by 2019. Previously, the insurance system only worked for civil servants, military and police members, and small number of poor people covered by people’s health insurance/regional people’s health insurance. In the current situation the government applies the national health coverage with national insurance system, which is shared among people throughout the country with minimum payment of US$2.5 per capita. Health workforce is another problem faced by Indonesia. The ratio of general practitioner and population is 37.2 per 100.000 populations (2013), which almost exceeded the ideal requirement 40 per 100.000 populations. But the problem is with the unequal distribution of GPs throughout the country. The general physicians are concentrated in Java Island, Bali, North Sumatera Province and South Sulawesi Province. Medical products, vaccines and technology problems include availability of blood culture lab as the gold standard diagnostic test for typhoid, and also government-covered typhoid vaccine. Several clinical and public health researches on typhoid have been done, but the results implementation still related to the suggestive efforts. Service delivery problems are being faced in rural areas, mainly due to lack of medical doctors and proper diagnostic lab, thus most of cases are diagnosed by non-MD health workers using syndromic approach/clinical manifestations based diagnosis.

**Lecture 3.1: Global initiatives (Monday, 14-04-2014, 09.45-11.45)**
Global initiatives are international actions done by bilateral donors, private/individual foundations, and corporate sector to implement any health interventions in developing countries. Several famous examples are Usaid, Ausaid, Bill-Melinda Gates Foundation, Rockefeller foundation etc. Their contribution is very important in helping the low and lower-middle-income country to improve their health statuses.

**Video watching: Jeff’s Approach (Monday, 14-04-2014, 11.45 – 12.45)**
Jeffrey Sachs (American economist) believed why all those global interventions still couldn’t help the developing countries from the burden of diseases. He stated that ending of poverty and growing countries’ economic status were also important to promote the health status. Because once the economic growth is good, the welfare improved and so is the health status.
Working group 3.1: Global initiatives (Tuesday, 15-04-2014, 09.45 – 11.45)
In this working group, student mostly discussed about the Global Public Private Partnership. Funding agency, intermediate agency and recipient agency did collaboration in managing a funding in certain country to encounter specific health problems.

Lecture 3.2: Global initiatives in reproductive health (Tuesday, 15-04-2014, 13.45 – 15.45)
The more specific lecture given by Evert Ketting PhD about the term reproductive health and the starting of family planning program as a shape of maternal and child health program. Given to the fact that world Maternal Mortality Rates still out of the target from Millennium Development Goals 2015 in many countries, it is important to review back the country’s approach for MMR reduction by 2015, what is the main problem in that certain country?

Working group 3.2: Global initiatives in reproductive health (Thursday, 17-04-2014, 09.45 – 11.45)
This working group was about the cause of MMR in developing countries and discussion on US policy toward abortion. Still the high-risk causes of MMR in developing countries are postpartum hemorrhage, preeclampsia and infection. What are the best interventions to improve the maternal health outcome?

Presentation of papers week 3 (Friday, 18-04-2014, 13.45 – 15.45)
There were several global initiatives related typhoid fever and water-borne diseases in Indonesia. Coalition Against Typhoid is a coalition with the members from UN agencies, Bill-Melinda Gates Foundation, US CDC, and many others that had conducted the typhoid vaccine efficacy in several developing countries including Indonesia. The research purposed to determine the importance of typhoid vaccination in endemic countries. And the result was vaccination effective for school-age children for preventive action. Usaids, and Ausaids helped to provide access to clean and safe drinking water. The funding was distributed to several regions in the country with unsafe drinking-water access.
Lecture 4.1: Primary Health Care Basic Principles (Tuesday, 22-04-2014, 09.45 – 10.45)
Primary health care was an approach formulated during the Alma Ata conference where best health-improving action is community based at local level and by involving the society itself in giving such contribution. PHC provides 5 types of care including promotive, preventive, curative, rehabilitative and supportive-palliative care. It has to be universally accessible, involving the public participation, give stress on health promotion, using appropriate technology and utilizing intersectoral collaboration. It is expected that the health status can be improved using this approach.

Working group 4.1: Primary health care (Wednesday, 23-04-2014, 08.45 – 10.45)
We discussed the Alma Ata Conference’s contribution in the formulation of Primary health care. About specific points that will strengthen the Primary Health Care approach of the country and strategies to achieve the involvement of society in improving their health status.


This debate was about a management of lead pollution in a city in South America. The city was an ex-conflict area and currently a growing city. Several important actors were involved in this case. Jose as the city major, Michelle as local people representative, Sander as minister of health, Scott as WHO representative, Floris as World Bank Representative, Me as Rector of a research university and Martijn as the journalist who leaded the debate.
The debate ended with the conclusion of both short term and long term management. Short term management included medical personals aid, food aid, and medicine aid from WHO, while longer term was doing medical education and research in collaboration between university, world bank, ministry of health and local people-government. It was an interesting debate because every representative had to give their best argument in fighting their ideas for the solution.
Presentation of papers week 4 (Thursday, 24-04-2014, 13.45 – 15.45)
In this presentation, various primary health care approaches in different countries were presented to encounter the specific problem. For typhoid fever, the approach was based on the community health center (community clinic) in each district. The promotive and preventive actions including recommendation cooking food, washing and, and using safe drinking water or boil the water before consuming it, also street food surveillance and education for chronic typhoid carrier. Curative action is done in community health center. Management of patient with suspected typhoid fever started from history taking, physical examination, lab workup (serologic mostly) and in hospital it is possible to do blood culture. Empiric antibiotic therapy can be done in community health centers while Antibiotic Sensitivity Test in hospitals. Community involvement including promoting people to defecate in latrines, trash and sewage management, approaching cadres to actively do surveillance to find children or adult with > 3 days fever as it indicated bacterial infection and insist them to see the doctor/health care provider in community health centers.

Examination (Friday, 25-04-2014, 13.45 – 15.45)
There are four questions related with each week’s subject, the determinants of health, health system, global initiatives and primary health care. I tried to elaborate as much as I knew and in the end I got 8 for the result.
7. Evaluation

This exchange program is the best chance I have ever experience during my medical studies. I could get the opportunity to learn new things by studying abroad, practicing using English in daily communications, lectures, and giving presentations. I can also share many things about tropical infectious diseases and public health in developing countries with the Dutch students, while also got a lot of information about how the health system in developed country like the Netherlands works.

8. Conclusions and Suggestion

I hope this exchange program will last forever, and for those who want to join this program, they should have great interest in infectious diseases and public health in developing countries, or even if they never have such interest, they will obtain it after this course. By joining this course it will totally improve they way you think and study, and you will be ready to have an international career one day.

Practice your English and you will be ready speaking it in your daily life, course, and don’t forget to practice to give presentation in the public, it will be very useful. Dr. Keuter always said to me to practice practice and practice!
9. Acknowledgements

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10. Comments

Brechje Brouwer (A Medical Student from Radboudumc)
Fadel is a very nice guy; during the course he was very interested in everything about tropical medicine. He was so interested that he asked me if I had more information about this from my Dutch courses.

During the course he participates with good questions and he can present also very well. As a friend Fadel says that he cannot cook, but when he cooked for us it was very good. He has also a nice sense of humor. I liked it very much that he wants to be on every picture, which was taken ;)

Scott Maurits (A Master of Biomedical Science Student from Radboudumc)
Working with Fadel was a great experience. He proves to be a very flexible person, with the ability to adapt to new situations. Having Fadel on our team really improved the scope of our research, as he provides insight details regarding the health care system in Indonesia. Of course having an Indonesian speaking person in our group really makes seeking literature a lot easier, and even in more detail as he could find documents we would not be able to discover! In addition, Fadel is a very nice guy who you can talk with and have a great laugh about random (sometimes silly) things. He created a relaxed open atmosphere in which, next to hard work, there was also time for small talks and fun. We, together with Wilke (other Dutch student) and Lina (other student from Indonesia) really made a great team which was also notified by the course coordinator at the end of the course. I really enjoyed our corporation and would definitely pick Fadel to be part of our team!