

Current Condition and Prospective Role of the TDC
(Tropical Disease Center) Airlangga University
in the Application of Health Science and Technology
for Accelerating the Tropical Infectious
Disease Elimination

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ABSTRACT: Critical situation resulted from the main combined factors as poverty, uneducation, ecological transformation problems alleged such as developing country to confront their own health problems. The problems consisted of high maternal and infant mortality, disease of considerable communicable and tropical, non-communicable and at last back to new re-emerging infectious diseases.

It was needless to say the existence of TDC Project as an answer to serve the challenge for struggling to overcome the problems. Now the savage combative strategy is being arranged by TDC directing on development of human resources, links with other center/institution in joint research and training, and attempting primary health care.

Attainment on target was exerted by accomplishing actual research and training programs accompanied by the thought of formidable list of future concepts. It was organized by TDC with their both soft and hard wares, including staffing, laboratory facilities, library etc. and base on the TDC policy that always to develop cooperation with other excellent center as joint project of any health program.

TDC (Tropical Disease Center) project of Airlangga University has been stated their own existence in Surabaya for having strong and clear background as current situation of which problems to be solved. So far the background can be detailed as (1) The goal of the Indonesia Second Long-term Development Program (1994 to 2019) will be on human resources development towards a better quality of life. (2) The main triad of the health problems in Indonesia consists of: high rate of population growth, nutritional problems, and high mortality and morbidity due to infectious diseases. (3) In the National Development plans science and technology play an important role. Through appropriate science and technology equipped programs, several studies by various discipline had been run widely within the universities. It was expected, the results must be either accepted or available to the people who suffered from diseases. Specially to accelerate the development of the Eastern Region of Indonesia, the better and well-developed methods of which the centers and universities obliged to produce was needed. (4) For decades Airlangga University has col-

laborative activities with the Ministry of Health over especially the East Java local government (Provincial/Health Department and Regional Development Board). Mutual benefits are the base of our joint activities, which directed by focussing on the eradication of the infection diseases.

The General Guidelines of the state 1993 stated that the high priority is on to the issues of poverty, under developed community, morbidity and mortality of vulnerable groups. This problem is most prominent in the Eastern Region of Indonesia.

The morbidity and mortality of main tropical disease especially in the young and productive age group in Indonesia are considerable.

It was attributable by the high overall Crude Death Rate (7.5 per 1000 populations), Infant Mortality Rate of 76 per 1000 live births and Maternal Mortality Rate of 450 per 100,000 deliveries. Morbidity of diarrhea diseases in under fives was 62.8–137.1 per 1000 age group, prevalence of Malaria outside Java Bali was 4.33%, Dengue Hemorrhage Fever 11.56 per 100,000 persons.

Structure and Organization

TDC is directly controlled by the Rector of Airlangga University and an Advisory Board, which arranged together by Rector and director of TDC to provide advice for its operation and activity. While the Finance, Marketing and Executive Secretaries are settled in the administration division of TDC. It was contributed by organizational structure and governance patterns of TDC covering directorates.

The Directorates are settled to functionate the five main activities of TDC in the tropical disease research field, as follows: (1) Development of management capabilities in the field of finance, training/enlightenment, human resources and marketing of center's products. (2) Training activities for medical doctors, researchers and technicians. (3) Enlightenment activities for local community to have better scientific understanding of tropical diseases. (4) Information services in the form of computer system, library and museum for tropical diseases. (5) Applied and basic resarches to support the programs.

Programs

Programs has already been completely considered based on both the most prominent existed problems as morbidity and mortality of vulnerable groups and the medium and long terms objectives as strengthening of human resources capabilities.

Over this problems and objectives oriented programs it would be expected finally the ultimate goal of project as improved health and welfare throughout the motion was gained. The programs consist of: Research Programs Management, Enlightenment Programs, and Training Programs

On Going Research and Funding

*WHO funded projects and multicentre trials

Dengue Group: The cooperation of DHF team works with WHO, through Department of

Health Program research especially in sero epidemiology project during the outbreak event. The researcher collected the blood of DHF sample from patient who admitted in Dr. Soetomo General Hospital. For instance during April-May 1998, there were 200 DHF samples in which will be arranged by Drh.Haryono Wuryandi (staff Department of Health), to know the serotype of Dengue virus that occur in the outbreak.

*Project funded from other sources

Guided Research of Science of Medicine Technology

Hepatitis (1996-1998): (1) Detection of Hepatitis C Virus RNA Among Chronic Hepatitis Patients with Anti-HCV positive, by using Polymerase Chain Reaction Based on 5'UTR Genome. (2) Detection and Quantitation of HCV RNA from Various Genotype among Healthy Blood Donors. (3) Detection of Hepatitis C Virus among Patients with Hepatocellular Carcinoma by PCR based on NS5 Region Sequences.

Malaria (1997-1999): (1) *P. falciparum* multidrug resistance gene 1 (Pfmdr1) mutation of Chloroquine resistance isolates in West Nusa Tenggara. (2) Genetic variation of *P. falciparum* in malaria endemic area in Flores.

Perinatal (1995-1998): (1) Antenatal Early Detection of Toxoplasmosis in Pregnancy. (2) Amniotic Fluid Inoculation & Culture in Early Detection of Toxoplasmosis in Pregnancy.

Dengue (1997): Antibody monoclonal for dengue virus Indonesia strain

Anemia (1997-1998): (1) Detection of alpha-thalassemia 1 & Hb constant spring in pregnancy by PCR technique and DOT Blot Hybrid. (2) G6PD Deficiency in Malaria Endemic Region

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Entomology (1997-1998): (1) Dengue Haemorrhagic Vector Survey in Surabaya Municipality.

Malaria (1998-1999): (1) Genetic variation of MSP1 *P. falciparum* in Halmahera

JSPS

Hepatitis: (1) Detection of Hepatitis G Virus (GBV-C) in Healthy Blood Donors, Chronic Hepatitis Patients, Liver Cirrhosis Patients, and Patients with Hepatocellular Carcinoma in Surabaya, Indonesia. (2) Detection of Anti-HDV in Hepatitis B Healthy Carrier, and Chronic Hepatitis B Patients. (3) Detection Hepatitis TT Virus in Healthy Blood Donors, Patients on Maintenance Hemodialysis, and Patients with Hepatocellular Carcinoma in Surabaya, Indonesia.

Diarrhea (1) Treatment of Invasive Diarrhea with Erythromycin.

Malaria (1) Malaria epidemiological survey in Sumbawa Island, West Nusa Tenggara Province. (2) Molecular genetic, serologic, diagnostic studies on malaria parasite and Anopheline vectors in Halmahera Island.

DHF: (1) Dynamic transmission of DHF in Surabaya Regency.

Perinatal: (2) Expression of Angiotensin Gene in Pre-Eclampsia.

Anaemia: (1) Anaemia with possible causing factor in malaria endemic region

Entomology: (1) Malaria vector survey in Sumbawa Island, Indonesia. (2). *Anopheline* Fauna in Tulungagung Regency, East Java, Indonesia

Links

In an effort to implement the research activities well provided links that already been attempted. TDC has established several type links: National Health Activities, National Research Council, and Insitutional Abroad (ICMR, Research Institute, and Nijmegen Catholique University). They are programs:

Malaria: (West Nusa Tenggara Province): Parasitological index, Spleen index, Clinical aspects, Serological index, Bionomics of Anopheline vectors. (Maluku Province): Parasitological index, Spleen index, Clinical aspects, The application of Acridine Orange and PCR methods, Serological index.

Anemia: (East Java Province): Study on anemic features of possible causes as: Pregnancy, Parasite infection, Entomological situation, and Red blood cell abnormalities

Hepatitis: (Dr. Soetomo General Hospital): Prevalence of HCV, Detection of TT virus, and The prevalence of HDV. (Surabaya Red Cross Blood Transfusion Center): The prevalence of positive anti-HCV and The prevalence of HCV-RNA

Diarrhea: (Dr. Soetomo General Hospital): Laboratory diagnostic in gastroenteritis

Dengue Haemorrhagic Fever: (Collaborating study with Ministry of Health) Conduct Multi Center Study about plasma leakage in DHF cases by using Iodine Radioactive. (Collaborating study with Municipal Health Office of Surabaya, together with the team from Japan) Study about Dynamic Transmission of Dengue Hemorrhage Fever in Surabaya. (Collaborating study with Center of Health Research & Development, Ministry of Health) Study the strain of dengue virus during outbreak times.

Enlightenment Programs

One of the important aspects for the Primary Health Care approach is to educate the local community to have better scientific understandings of tropical diseases. In this regard, the Center provide four types of enlightenment activities:

Individual	for individuals including patients
Communities	for NGO's
Government officials	for relevant government officials
Health personnel	for personal working for health care

Training Programs

- In-house Staff Training Programs
- Formal Undergraduate Training
- Formal Level Training (M.Sc. and Ph.D.)
- Short Group-Learning Activities (Short Courses, Workshops and Seminars)
- Individual Trainees from other Institution

Laboratory Facilities

Tropical Disease Center laboratory supported by laboratory for conventional and biomolecular levels.