

Invited Editorial

Science, research and technology in primary health care: Covering from neglected tropical diseases to personalized medicine

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Health is a prerequisite, an indicator, and a purpose of a sustainable development. In order to achieve equitable health, global consensus has been held and agreed, such as Alma Ata in 1987, Millennium Development Goals (MDGs) in 2000, and Sustainable Development Goals (SDGs) in 2015, which are intended to fulfill the right to healthy living for all. Although the MDGs have completed in 2015, Indonesia still has many unresolved issues, such as the number of child and maternal mortality, communicable diseases, neglected tropical diseases, and access to sexual and reproductive health services. In addition, Indonesia has to face a new agenda of SDGs, such as mortality due to non-communicable diseases and diseases caused by cigarettes, negative effects of drugs and alcohol consumption, traffic accidents deaths, Universal Health Coverage, air, soil, and water pollution, and international health regulations.

Primary health care

To be able to achieve health for all, we need a health system which is able to solve current problems and to respond to the future challenges and the increasing expectations of the society. Therefore, based on evidences gained in many countries, in 2008 WHO has pointed out the importance of undertaking four mandatory reformations in the health service system:

1. **The implementation of universal health coverage¹ to give social and financial protection for patients, so that they will not fall into poverty or become poorer.** This reformation has been implemented through a national health insurance (JKN) which is organized by the Social Security Insurance Agency (BPJS).
2. **The changes in public policy.¹** It becomes urgent considering that disease prevention is not solely determined by health institutions, but also by institutions outside health institutions, such as the procurement of

clean water, adequate housing, limitation of salt, fat, and sugar consumption, and smoking behavior. Related to the second reformation, the government has launched and soon will launch *Gerakan Masyarakat Hidup Sehat*. This movement is an attempt to mobilize all ministries to engage in disease prevention or at least make health impacts as a consideration in making public policy. Along with this, a massive health promotion is done to enable the public to behave clean and healthy.

3. **The reformation in the field of leadership and governance.¹** The harmony between the policies directed by the central government and its implementation in the region in the era of decentralization/ regional autonomy becomes absolute; on the other hand, community participation remains an important determinant. Local government law No. 23 of 2014 is helpful because it provides clarity on the role and the function of central, provincial, and district/ city governments. In addition, the existence of Minimum Service Standards in the health sector that becomes the benchmark of the performance of regents/ mayors will be a compressive strength for local governments to create programs that are align with national planning.
4. **The reformation in health services** is commonly referred to as primary care in order to respond to the needs and the expectations of the community and to succeed.¹ It is absolutely necessary that disease preventions, treatments, and most public health problems are addressed in this service stratum. The challenges faced by primary care will be increasingly complex given the unfinished reproduction health and nutrition problems, as well as infectious diseases, such as AIDS, tuberculosis, and

malaria. In addition, it is exacerbated by the increasing prevalence of non-communicable diseases and the proportion of elderly patients.

Furthermore, countries with limited resources often interpret the primary service as simple as those of our experienced and thought for so long. This simple interpretation can be seen in the right column.

Therefore, creating a good primary service takes political policy and government budget, accompanied by consistent implementation. Experience in many countries demonstrates that strengthening primary services took a long period of time because it demands a change of mindset and perspective from all parties, both local governments, doctors, and other health professionals, also society as the most crucial stakeholders.

The primary services should be provided by a team of various medical workers. It cannot be denied that the role of medical workers' competency is one of the determinant success factors in primary care, including the doctors' competency. WHO has been reported that a lot of studies showed that the success of primary care cannot be separated from the empowerment of doctors with additional post-graduate education, such as family physicians or general practitioners.¹ In Indonesia, this has been facilitated by the presence of primary care physicians who have the basic competence of family medical, supported by community medical science and public health. This profession has the same level of Indonesian National Qualification Framework as specialist doctors.

A lot of evidence also showed positive contributions of a strong primary service to a country's health indicators. One of the study, aimed at assessing the contribution of primary health care to health parameters in 18 countries, incorporated with the Organization for Economic Co-operation and Development (OECD), showed that the strength of the primary service system of a country is inversely related to: all-cause mortality, all-cause premature mortality, early mortality due to asthma and bronchitis, emphysema and pneumonia, and heart disease. This inverse relationship is significant although it has controlled determinant factors on the

health of a population at the macro level (gross domestic product per capita, number of doctors per 1,000 of population, and percentage of the elderly population) and at the micro level (average number of outpatient visits, income per capita, alcohol consumption, and smoking).² This evidence is not only shown in developed countries, but also in low- and middle-income countries. Based on a systematic review encompassing the implementation of primary service initiation in low- and middle-income countries in the past 30 years and on 16 national primary service programs, the initiation of primary service in low- and middle-income countries has increased access to health care, including the poor, at a relatively low cost. In addition, the primary care program is able to decrease the mortality rate in children and able to effectively strengthen the health system.³

Based on the description above, it is clear that primary care plays an important role in providing quality and equitable services to the wider community. Furthermore, it should be observed how the role of primary services in the field of medical science development and innovation.

Although there are less numbers than secondary or specialist medical research, a lot of primary care research from college has a good quality. It appears that the existence of primary care department in hospitals, not just in the Faculty of Medicine, can be a first step to increase research in the scope of primary care. In this way, collaboration and resource sharing with specialists are easier to happen. This can be realized by the Government Regulation which enables the existence of primary care carried out as one of the main education hospital.

The development of cutting edge medical science and technology in primary health care
Since the early stages of the Human Genome Project, progress in sequencing has led to the genome revolution. This revolution leads to the advances in computing power and database storage, developing and cost reduction in overall genome and exome sequencing have made genome-based treatment a clinical setting reality within the next couple of years.⁴

David et al. lays out an interesting thought of the Institute of Medicine about genomic medicine and

primary care. Philosophically, genomic medicine is rooted in primary care, which strongly supports the importance of long-term relationships and a thorough patient's knowledge. In addition, personalized medicine will have the greatest impact when integrated with primary care where most services occur. In Indonesia, 80% of services in the social security system occurs in primary care.⁵

The description of the primary care characteristics (focus on patient, comprehensive, coordinative) is a picture of the complexity of challenges in personalized medicine practice. Personalized medicine includes a wide range of applications, from pre- and neonatal examinations to germ line checks and tumor diagnosis, pharmacogenomics, as well as results interpretation guidelines that include family history and subspecialty collaboration.

Every attempt to redesign a comprehensive primary service should include a strategy to integrate personal medicine with primary care for both primary and non-primary education services. In addition, it requires the involvement of personal medicine experts in developing a clinical implementation strategy.

Implementation of personalized medicine is close to the clinical setting. Many studies have been conducted, such as a study by Bottinger et al. about genomic medicine to guide the health care of African-American race for hypertensive patients through genomic information.⁶ In addition, University of Oxford through the Nuffield Department of Primary Care Health Science has used big data to formulate a new outlook in primary services, such as through an open prescribing project where raw data from the National Health Service (NHS) on medicines prescribed by general practitioners is converted into an easy-to-read data that can help patients or health service decision makers to provide more efficient prescriptions.⁷

Some of the examples above show how primary care can play a role in cutting-edge medical research even in the need for large amounts of clinical, family and environmental data. Over a long term, the role of physicians working in primary care becomes very strategic. It suggests that primary care physicians can contribute

much in the development of basic medical science. The amount of contributions depends on the motivation and desire of the doctors to get involved; whether just participate in data collection or involve in the research from the beginning until the end.

In conclusion, the government should open the widest possible opportunity for interested doctors, so that primary care becomes more attractive and head-to-head with secondary and tertiary services. For instance by providing the necessary facilities and rewards that are appropriate for them.

This can be started from a primary service incorporated in the Academic Health System that forms a unified system of primary until tertiary services affiliated to a university. Traffic data that occurs in one AHS can be arranged in a way that it can be the beginning of the availability of big data which can then be analyzed for various research purposes. Since 2014, the Ministerial Regulation as a legal basis for some AHS is already available. The keywords are motivation, collaboration and consistency.

Finally, the government is expected to accommodate the need of developing primary services, so that in the future the primary services will no longer be a work place of the forced or temporary health worker.

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