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The Consolidated Report on Indonesia Health Sector Review 2018

National Health System Strengthening

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FOREWORD

We thank the Almighty God for the completion of the 2018 Health Sector Review (HSR), which serves as one of the critical inputs for the Background Study of Indonesia's 2020-2024 National Medium-Term Development Plan (RPJMN). This HSR is a compilation of reviews and analyses of current health achievements, future challenges and key issues, and policy options with strategies for achieving them.

The Health Sector Review consists of ten (10) main topics that were reviewed and then summarized in a Consolidated Report with the theme of "Strengthening National Health Systems. The ten topics are:

- Demographic and epidemiological transitions and their implications for the demand for health services;
- Public health functions, including health security issues;
- Strengthening the implementation of reproductive, maternal, neonatal, child and adolescent health (RMNCAH) program;
- Nutrition development in Indonesia;
- Human resources for health;
- Provision of drugs, vaccines and medical equipment;
- Drug and food control, including food safety;
- Health financing, including the effectiveness of the National Health Insurance (JKN) implementation;
- Strengthening the health services delivery, including referral system; and
- Strengthening health governance and health information systems.

The ten topics are strategic issues because they are systemic and have the leverage to achieve health development goals. Topics 1 to 4 relate to health problems to be faced by Indonesia over the next 5 years and essential efforts to overcome them. The six remaining topics relate to the strengthening of health systems, which are essential for addressing health-related challenges.

In general, health development achievements have demonstrated significant progress. Maternal and infant mortality, childhood stunting, and communicable diseases have declined. However, Indonesia is in the midst of accelerated demographic and epidemiological transitions which are shifting in the burden of disease from communicable diseases to non-communicable causes (NCD). This shift has caused Indonesia to experience a double disease burden -where NCD incidence is rising against an unfinished and substantial backdrop of communicable diseases such as tuberculosis and malaria.

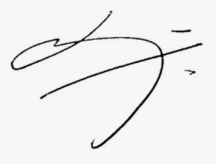
Indonesia is simultaneously experiencing a double burden of malnutrition as undernutrition remain high while the prevalence of obesity is growing both among children and adults. Health inequities remain a major concern, with highly variable health system performance across regions. Health governance is also a challenge in particular because of regional capacity disparities. Adequate and well-administered health financing are central cross-cutting issues. Topics related to the search for new sources of health financing and the efforts to increase financing effectiveness continue to be a concern.

Accordingly, this review offers several recommendations. Efforts to strengthen health services delivery in the face of an aging population and an anticipated demographic dividend; efforts to accelerate the reduction of maternal and neonatal mortality; efforts to strengthen reproductive health services; efforts to accelerate improvements in community nutrition by reducing the double burden of malnutrition; efforts to control communicable diseases, emerging infectious

diseases, and non-communicable diseases; and strategies to improve primary/secondary prevention and risk factor reduction must be the focus of future policies. All these efforts require the strengthening of health system performance, including the filling of human resource vacancies, the provision of pharmaceuticals and medical equipment, the strengthening of drug and food control, evenly distributed quality health services, increasing the effectiveness of health financing and the National Health Insurance program (JKN), and the strengthening of health governance and information systems.

We wish that this document can be used appropriately as a reference for the health sector in an effort to improve the status of public health.

Jakarta, March 2019



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ABBREVIATIONS AND ACRONYMS

ABGCM	Academic, Business, Government, Community, and Media
ADB	Asian Development Bank
AFP	Acute Flaccid Paralysis
AMR	Antimicrobial Resistance
AMU	Antimicrobial Use
ANC	Antenatal Care
APBD	Anggaran Pendapatan dan Belanja Daerah (Regional/Local Government Budget)
APBN	Anggaran Pendapatan dan Belanja Nasional (National State Budget)
ART	Anti-Retroviral Therapy
ART	Antiretroviral therapy
ARV	Antiretroviral
ASEAN	Association of Southeast Asian Nations
Askes	Asuransi Kesehatan (Health Insurance for Civil Servants)
Bappenas	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)
BCG	Bacille Calmette Guerin
Binwas	Pembinaan dan Pengawasan (Coaching and Supervision)
BKKBN	Badan Kependudukan dan Keluarga Berencana Nasional (National Population and Family Planning Board)
BKN	Badan Kepegawaian National (National Civil Service Agency)
BLUD	Badan Layanan Umum Daerah (Regional Public Service Agency)
BPJS–K	Badan Penyelenggara Jaminan Sosial Kesehatan (Social Security Administration Body for Health)
BPJS	Badan Penyelenggara Jaminan Sosial (Social Security Administration Body)
BPOM	Indonesia National Agency for Drug and Food Control
CPR	Contraceptive Prevalence Rate
DAK	Dana Alokasi Khusus (Special Allocation Funds)
DALYs	Disability-Adjusted Life Years
DFID	Department for International Development
DHO	District Health Office (Dinas Kesehatan or Dinkes)
DOEN	Daftar Obat Esensial Nasional (National List of Essential Medicines)
DOTs	Direct Observed Treatment Short-course
DPHO	Daftar Plafon Harga Obat (Drugs Price and Standard Price)
DPT	Diphtheria, Pertussis, and Tetanus
DTPK	Daerah Tertinggal, Perbatasan dan Kepulauan Terluar (Undeserved Areas, Borders, and Outermost Islands)
EIDs	Emerging Infectious Diseases
EPHFs	Essential Public Health Functions
EPI	Expanded Program on Immunization
FAO	Food and Agriculture Organization of the United Nations
Farmalkes	Farmasi dan Alat Kesehatan (Pharmaceutical and Medical Devices)
FCTC	Framework Convention on Tobacco Control
FKTL	Fasilitas Kesehatan Tingkat Lanjut (Referral Health Care Facility)
FKTP	Fasilitas Kesehatan Tingkat Pertama (Primary Health Care Facility)
Fornas	Formularium Nasional (National Formulary)
GDP	Gross Domestic Product

GMP	Good Manufacturing Practices
GoI	Government of Indonesia
GSMS	Global Surveillance and Monitoring System
HACCP	Hazard Analysis and Critical Control Point
HIS	Health Information System (Sistem Informasi Kesehatan or SIK)
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HPS	Harga Perkiraan Sendiri (Owner Estimate or OE)
IDHS	Indonesian Demographic and Health Survey (Survei Demografi Kesehatan Indonesia or SDKI)
IHME	Institute for Health Metrics and Evaluation
IHR	International Health Regulations
IMD	Inisiasi Menyusui Dini (Early Breast Feeding)
IMR	Infant Mortality Rate (Angka Kematian Bayi or AKB) or IMR)
INA-CBGs	Indonesia Case Base Groups
IUDs	Intra Uterine Devices
JCI	Joint Commission International
JEE	Joint External Evaluation
JEMM	Joint External TB Monitoring Mission
JKN	Jaminan Kesehatan Nasional (National Health Insurance)
KF	Kunjungan Nifas (Postpartum Visit)
KN	Kunjungan Neonatal (Neonatal Visit)
KPI	Key Performance Indicator
LBW	Low Birth Weight
LKPP	Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah (National Public Procurement Agency)
LLA	Lingkar Lengan Atas (Mid-Upper Arm Circumference or MUAC)
LSL	Laki-laki Sex dengan Laki-laki (Men Who Have Sex with Men or MSM)
LUC	Land Use Change
MCH	Maternal and Child Health (Kesehatan Ibu dan Anak of KIA)
MCV	Measles-Containing-Vaccine
MLCC	Midwife-Led Continuity of Care
MMR	Maternal Mortality Ratio or MMR (Angka Kematian Ibu or AKI)
NCD	Non-Communicable Diseases (Penyakit Tidak Menular or PTM)
NGO	Non-Governmental Organization (Lembaga Swadaya Masyarakat or LSM)
NMP	National Malaria Strategic Plan
NMR	Neonatal Mortality Rate or NMR (Angka Kematian Neonatal or AKN)
NSPK	Norma, Standar, Prosedur dan Kriteria (Norms, Standards, Procedures, and Criteria)
OOP	Out-of-Pocket expenses for health

P2KT	Perencanaan dan Penganggaran Kesehatan Terpadu (Integrated Health Planning and Budgeting)
PAD	Pendapatan Asli Daerah (Local Government's Revenue)
PIS-PK	Program Indonesia Sehat dengan Pendekatan Keluarga (Family Approach Healthy Indonesia)
PKRT	Perbekalan Kesehatan Rumah Tangga (Household Health Supplies)
PLHIV	People Living with HIV
PLKB	Petugas Lapangan KB (Social Workers for Family Planning Program)
Polindes	Pos Persalinan Desa (Village Delivery Posts)
Poskesdes	Pos Kesehatan Desa (Village Health Posts)
Posyandu	Pos Pelayanan Terpadu (Integrated Health Post)
PP	Peraturan Pemerintah (Government Regulation)
Prolanis	Program Pengelolaan Penyakit Kronis (Chronic Diseases Management Program)
Puskesmas	Pusat Kesehatan Masyarakat (Community Health Center)
RDA	Recommended Dietary Allowances (Angka Kecukupan Gizi or AKG)
Riskesdas	Riset Kesehatan Dasar (Basic Health Survey)
Risnakes	Riset Tenaga Kesehatan (Health Workforce Survey)
RKO	Rencana Kebutuhan Obat (Drugs Plan Form)
RMNCAH	Reproductive, Maternal, Newborn, Child, and Adolescent Health
RPJMN	Rencana Pembangunan Jangka Menengah Nasional (National Mid-Term Development Plan)
RPJPN	Rencana Pembangunan Jangka Panjang Nasional (National Long-Term Development Plan)
SDGs	Sustainable Development Goals
SDM-K	Sumber Daya Manusia Kesehatan (Human Resources for Health or HRH)
Sirkesnas	Survei Indikator Kesehatan Nasional (National Health Indicators Survey)
SUPAS	Survei Penduduk Antar-Sensus (Intercensal Population Survey)
TB	Tuberkulosis
TFR	Total Fertility Rate
TNP2K	Tim Nasional Percepatan Penanggulangan Kemiskinan (National Team for the Acceleration of Poverty Reduction)
UHC	Universal Health Coverage
UKM	Upaya Kesehatan Masyarakat (Community Public Health EffortsServices)
UKP	Upaya Kesehatan Perseorangan (Personal Individual Health EffortsServices)
UNAIDS	The Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
US FDA	United States of America Food and Drug Administration
USAID	United States Agency for International Development
VPDs	Vaccine-Preventable Diseases
WHO	World Health Organization
YLDs	Years of Life Lived with Disability
YLLs	Years of Life Lost


APRIL
MEI
JUNI
JULI
AGUSTUS
SEPTEMBER
OKTOBER
NOVEMBER
DESEMBER

EXECUTIVE SUMMARY

The 2018 Consolidated Report of Health Sector Review (HSR), employing the theme of Strengthening the National Health System, provides a concise overview of the priority health development issues discussed within the HSR thematic reports to generate an overall health sector profile. This report includes the analysis of current situation within reflection on gains achieved and persistent challenges over the previous few years as well as the identification of the strategic issues and policy alternatives for the 2020-2024 health development period.

Six main strategic issues were assessed in an attempt to examine national health system performance. These include population aging and demographic dividend; maternal and neonatal mortality and reproductive health; the double burden of malnutrition; communicable diseases and Emerging Infectious Diseases (EIDs); Non-Communicable Diseases (NCDs) and their risk factors; and health system strengthening comprising Human Resources for Health (HRH); pharmaceuticals and medical equipment; food and drug control; health services strengthening; healthcare cost effectiveness; JKN; and health information management system. The recommendations generated in this report will serve as an input to develop the Background Study for 2020-2024 RPJMN for the health sector.

Indonesia has made notable progress in improving the country's health and nutritional status. Maternal Mortality Rate (MMR) and Infant Mortality rate (IMR), under-five children stunting, and the burden of communicable disease have all decreased. MMR had dropped from 346 deaths per 100,000 live births in 2010 (2010 Population Census) to 305 deaths per 100,000 in 2015 (2015 SUPAS).
IMR had dropped from 32 deaths per 1,000 livebirths in 2012 to 24 deaths per 1,000 live births in 2017 Indonesia Demographic Health Survey (IDHS). Furthermore, the results of Riskesdas shows a declining prevalence of stunting in under-five children from 37.2 percent (2013) to 30.8 percent (2018). Alongside these gains, the prevalence of tuberculosis (TB) has decreased from 263 per 100,000 people in 2015 to 250 per 100,000 people in 2018 (Ministry of Health/MoH). Such improvements were achieved through a range of efforts to improve equal access to health services throughout the country by improving the national health system (HRH, pharmaceuticals and medical equipment as well as drug and food control) and securing financial protection to improve access and reduce catastrophic health expenditure.

Despite the improvements, Indonesia's demographic and epidemiological transition has resulted in a shift in the burden of disease, namely from communicable disease to NCD. NCDs have increased significantly, placing them as the root cause for death in Indonesia. Unhealthy lifestyles driving these changes include imbalanced diets, physical inactivity, and smoking. Additionally, significant efforts to reduce the prevalence of communicable diseases such as HIV/ AIDS, TB, and malaria are still required. This situation of emerging NCD in the face of persisting communicable causes is known as the double burden of disease. Indonesia also experiences double burden of malnutrition reflected in prevalence of obesity alongside high rates ofundernutrition.

The HSR identified a number of strategic issues the influence Indonesia's health development trajectory. First is **population aging and the demographic dividend**. Indonesia is currently entering an initial process of population aging – with increasing life expectancy and an increasing number of the elderly (aged >60). The elderly has a higher level of health vulnerability as well as deteriorating physical ability and well-being. A major concern is the growing burden of degenerative diseases. Degenerative diseases

expose those affected to diverse levels of dependency ranging from mild to total. The elderly who experience stroke will face total dependency compared to those having heart disease, diabetes, rheumatic conditions, or injuries. For those with Alzheimer's, cognitive functions such as memory, thinking capacity, communication and learning abilities will progressively deteriorate. Data from IHME indicate a spike in Alzheimer's prevalence from 939,214 to 1,111,081 cases in 2010-2016. Estimates suggest this alone has come at a cost of USD 1.8 billion in 2015 alone.

Additionally, the demographic transition is increasing the number of productive adults (>60 percent of the total population). This enables Indonesia to realize a demographic dividend generated from a decreasing dependency ratio of productive-age 15-65-year old relative to the non-productive population (0-14 and 65+ years old). The shift of dependency ratio provides Indonesia the opportunity to experience a demographic bonus twice. The first demographic bonus occurs when the per capita income increases due to the rise in the productive population– which is temporary or transitional in nature. A second demographic bonus is predicted to be achieved during the increase of (the current) working age population's disposable assets to finance future consumption. This increase is obtained from the private saving and public saving. The policies and strategies to optimize the demographic dividend require cross-sectoral efforts, particularly within the health sector. Importantly, health sector investments should be diverse, multidimensional and cross-generational – addressing the health risks and challenges of youth and elderly simultaneously.

The second strategic issue is a **decreasing rate of maternal and neonatal mortality and reproductive health**. MMR was identified as a priority issue given the modest pace of decline between 1990 (446 per 100,000) and today (305 per 100,000) (SUPAS, 2015); and the slow pace of decline in the newborn mortality rate (NMR), which while largely stagnant for two decades and has shown some recent signs of progress. Various measures have been taken to decrease MMR and IMR such as by ensuring that all childbirths were conducted at the health facility and assisted by trained health professionals. Despite the increase of access to antenatal services from 63% to 79% and childbirth assistance by trained HRH from 83% to 91% between 2012-2017, MMR and IMR are still high. This indicates that the quality of maternal and neonatal health services remains of major concern issues.

Challenges related to health workforce capacity and distribution underpin this issue, alongside systems-related challenges of timely access, rationalization of referral patterns, and compliance with basic and emergency obstetric and newborn care standards remain. High levels of maternal and newborn mortality are also underpinned by more upstream determinants. These include low birth weight (LBW) which is a major risk factor for NMR and closely linked to the mother's nutritional status (including anemia) during and prior to pregnancy; and early and unintended pregnancies alongside short birth intervals are well-documented drivers of preventable maternal and newborn deaths.

Third is the, **double burden of malnutrition.** Indonesia is currently experiencing a double burden of malnutrition (DBM) characterized by the coexistence of macro and micro nutrients deficiency along with obesity. Stunting and wasting on children aged below five, anemia among women of productive age, low birth weight, and poor infant and young child feeding practices have become common occurrences. Meanwhile, children and adults are experiencing a growing prevalence of overweight and obesity. In the long run, the co- existence of undernutrition, obesity and micro- nutrient deficiencies in the same households and individuals is well documented and DBM extracts a huge toll on lives, health, development and the economy of Indonesia.

Fourth are **Communicable Diseases and EIDs**. Indonesia ranks fourth in the world in terms of the largest number of unimmunized children. Despite the increase of comprehensive vaccination coverage from 52% to 70% (IDHS 2002, 2017), outbreaks of vaccine-preventable diseases (VPDs) take place far too frequently. Furthermore, Indonesia is witnessing an increase in new HIV infections among adults and children, unlike most countries in the Asia-Pacific region. Indonesia has the second highest national TB burden in the world, with profoundly low rates of case-detection (32 per cent in 2015). For malaria, while there has been a steady decline in malaria cases over the past decade – with half of

the country's districts declared malaria free during 2018, much work remains. Declines in malaria prevalence are plateauing, and renewed focus is critical particularly in five eastern provinces (Papua in particular) which contribute 70 per cent of the national malaria caseload. Despite significant increases in funding for treatment of these three diseases, weak health systems and supply chains, inadequate human resources and poor laboratory services continue to be major obstacles. Additionally, issues such as Antimicrobial Resistance (AMR) and rational Antimicrobial Use (AMU); zoonotic diseases; food security threats; as well as biological, chemical, and radio-nuclear threats of any sources are new challenges for Indonesia. Roughly 70% of Emerging Infectious Diseases (EIDs) contracted by humans are zoonotic (from animals) in origin. AMR is related to long-term use of antibiotics and poor drug prescribing habits for humans and animals.

Fifth are **NCDs and their risk factors**. The second health outcome, Non- communicable Diseases (NCDs), relates to Indonesia's epidemiologic transition and growing burden of NCD. NCDs are threatening Indonesia in two ways. First, the reduction of mortality has led to an aging society. Second, economic growth, rapid urbanization, climate change and the transition to occupations requiring

less physical activity has led to a steady increase in the prevalence of modifiable NCD risk factors such as poor diet and sedentary lifestyles, tobacco use and exposure to pollutants. As of 2016, NCDs contribute to 73 per cent of total mortality. Cerebrovascular disease (stroke) leads to the greatest number of Disability-Adjusted Life Years (DALYs) lost in 2017. Early identification and management of risk factors including hypertension and diabetes, are central to prevention; as is tobacco control and mitigating the impacts of pollution. Additionally, issues linked to mental health need to be addressed.

Sixth, **strengthening the health system.** The result of the 2017 Risnakes survey showed that substantial gaps remain in the availability of HRH in Indonesia. Lack of physicians, especially public health personnel, occurs at many puskesmas particularly those in the eastern regions of the country. Lack of HRH, especially specialists, also occurs at advanced healthcare facilities (hospitals). The rapid growth of private healthcare facilities in the big cities and inadequate incentives for service in underserved and remote areas have resulted in major HRH disparities, with eastern regions of the country most adversely affected. The lack of skilled professionals at the healthcare facilities results in multitasking and task- shifting both at puskesmas and hospitals,

which eventually affect the health service quality. Simultaneously, Indonesia is facing challenges in the quality of its medical professionals and higher education institutions.

The availability of pharmaceuticals and medical equipment is also a major challenge, especially in underserved areas, borders, and outermost islands (DTPK) areas. Poor management and procurement systems as well as food and drug control performance contribute to an uneven distribution of pharmaceuticals and medical equipment. Additionally, rational use of medicine continues to be a concern. Fulfillment of products for pharmaceuticals and medical equipment has yet to be realized due to the lack of in-country independent production for many commodities and medical equipment. In terms of health services, there are still a lot of health facilities and hospitals that have yet to meet agreed upon standards. There are still gaps in the number and distribution of secondary and tertiary health facilities, and concerns regarding service quality. Referral systems have yet to be optimized to ensure access to appropriate levels of care.

In terms of funding, currently the medical expense is still biased towards curative care, or individual health services (UKP) spending. Funding for public health services (UKM) spending on promotive and preventive efforts, is not yet optimum. The local fiscal capacity to fund medical services remain limited. Assuring the financial sustainability of the national health insurance program (JKN) is essential for ensuring universal health coverage and accelerating progress towards SDG3.

Impressive recent strides have been made with 215 million people (81 per cent of the population) already participating in JKN - making it currently the largest single payer system in the world. However, the programs run major annual deficits and financial sustainability is uncertain. Working towards universal enrolment will require increases in public health expenditure with greater efforts to generate revenue, improve budget allocations, and manage expenditure.

Based on these issues, the policy recommendations for the year of 2020-2024 are as follows:

Strengthening health services to manage population aging and the demographic dividend through: (1) an even distribution in access and quality of health services as well as HRH for antenatal care (ANC), childbirth and postnatal care; drugs and essential medical equipment; and sanitation and drinking water for mothers and young children (0-4 years old); (2) commitment to reproductive health of adolescents, Information Education and Communication (IEC) efforts on reproductive health and road traffic safety for children and adolescents aged 5-14; (3) health promotion and disease prevention (healthy diets, smoking cessation, and physical activities) as well as ensuring early disease treatment, both for communicable diseases and NCDs among people of productive age (15-64 years old); and (4) promotion of health and early prevention to reduce morbidity and disability for the elderly, and improvement of the availability and quality of HRH (geriatric specialists) to address their needs.

Reducing maternal and neonatal mortality rate and strengthening the reproductive health services, covering the strengthening of health promotion including the access to family planning; continuous high- quality midwifery services supported by HRH improvements; strengthening referral systems for maternal and neonatal care; improving service quality such as strengthening effective monitoring, feedback, and capacity development which will require improving cross-sectoral coordination, partnership, and engagement; as well as strengthening the information system.

Accelerating nutritional interventions to decrease the double burden of malnutrition, conducted by setting out a strong legislative framework to improve the commitment and fund allocation for nutrition at the national and sub-national level; improving the provision of high quality nutritional services for communities; improving the campaign, advocacy, and communication on behavioral changes to improve nutritional status using innovative methods and communication channels; building an information system and nutrition related evidence as a credible and timely data source to assist planning, budgeting and decision-making; as well as extending multi-sectoral engagement to accelerate nutritional gains.

Communicable disease and EIDs control conducted by improving surveillance and monitoring; applying a tailored approach to control malaria; enhancing community engagement; improving services for HIV/ AIDS prevention, care and support including stigma reduction; strengthening the capacity for the surveillance, management and control of EIDs; as well as implementing a comprehensive approach to the prevention and management of AMR.

NCDs and their risk factors control should be addressed by strengthening the People's Healthy Lifestyle Movement (GERMAS), strengthening the early detection as a preventive measure against NCDs, providing supports in the form of guidance promoting healthy lifestyles, implementing health-centered development (urban planning, outdoor space), and increasing surveillance for NCDs.

Strengthening the health system performance through the following. *First*, **fulfillment of HRH need** conducted by strengthening the regulations and management on the development and empowerment of HRH, developing affirmative policies for HRH especially for remote or underserved areas(DTPK)areas, improving the quality of HRH planning, optimizing the HRH quality to meet competence and excellence standards, as well as strengthening the HRH information system.

Second, **provision of pharmaceuticals and medical equipment as well as improving food and drug** conducted by harmonizing the laws and regulations to enhance the access, availability, and even distribution of drugs, vaccines, and medical equipment as well as improving the in-country manufacturing sector; building the capacity of human resource facilities and infrastructure;

improving the drug pricing system; optimizing the use of the health information system; strengthening stakeholder coordination for supply chain management of to improve the even distribution of pharmaceuticals and medical equipment; improving the cross-sectoral collaboration to encourage independent in-country production, improving the institutional capacity and effectiveness of food and drug control; ; as well as strengthening public health protection and promotion through effective risk communication.

Third, **fair distribution of quality health services** conducted by strengthening the active involvement of the community through community-based health services (UKBM) by improving the quantity and quality of health cadres and use of digital technology; revitalizing village health posts (posyandus) to become more responsive towards health issues; strengthening the school health unit (UKS); improving health facility management for the effective implementation of public health services (UKM); developing the healthcare facilities as necessary; assessing and strengthening referral systems through the regional networks of healthcare facilities; as well as improving the quality of healthcare facilities through the acceleration of accreditation and clinical pathways.

Fourth, **improving the effectiveness of health financing** conducted by finding new financing sources for health; improving the effectiveness and efficiency of the government health expenditure; improving the effectiveness of fund transfers for local health development especially operational funds for community health services (UKM), as well as strengthening the implementation and financing of JKN.

Fifth, **strengthening the information management and system** conducted by building HRH capacity in managing the local health systems; strengthening relevant regulations to inform local health management; strengthening the data and information systems to guide local decision making; and local mentorship for effective implementation.

1. INTRODUCTION

The aims of health development is to raise all individuals' awareness, willingness, and ability to live healthy andproductive lives. The mandate for strengthening health development systems is outlined within Indonesia's Long-Term Development Plan 2005-2025 (RPJPN).

Such an effort is conducted by enhancing medical care, financing, human resources, commodities, and equipment as well as improving supervision, community empowerment, and health management. In essence, health system strengthening is the key attempt to achieve health development.

The 2015-2019 Medium Term Development Plan (RPJMN) contains the description of the 3rd stage of RPJPN. Therefore, the Government of Indonesia through the Ministry of National Development Planning/Bappenas will redesign various development policies and programs and determine the direction of the future development priorities.

Development planning must be evidence-based and informed by current situation analysis which reflects upon lessons learned, development milestones of the previous period, potential obstacles and challenges in the future, as well as the overall development trajectory.

The existing results of assessments or studies are still relevant for the current context and condition. However, there are substantial new challenges which must be used as the basis for future planning.

Policy planning requires several situation analyses indicating the answers to the new challenges experienced in the health development in Indonesia such as the implementation of Sustainable Development Goal/SDG commitments.

As a part of this process, Bappenas has generated the 2018 HSR. The HSR will review the current policies and analyze the existing

health system performance. From this evaluation, strategic issues and challenges as well as alternative policies regarding health development will then be identified to accelerate health sector transformation to promote equity and inclusivity, quality improvement, sustainable financing, and risk protection for all people.

The HSR examines 10 key topics which are summarized in this consolidated report. These ten topics reflect strategic issues that are systemic in nature and which can accelerate progress to achieve the health development goals.

Topics 1 to 4 include the health challenges experiences presently and anticipated in the coming 5 years alongside essential efforts to address them. Topics 5 to 10 include the essential health system strengthening measures which can address these challenges.

The topics of 2018 HSR are as follows:

Demographic and epidemiological transition: the demand of health services in Indonesia

Public health functions and health security;

Reproductive, maternal, neonatal, children, and adolescent health (RMNCAH);

Nutrition development in Indonesia;

Human resources for health;

Provision of drugs, vaccines, and medical equipment;

Drugs and food control, including food safety;

Health financing and efficiency of JKN;

Strengthening the health services;

Strengthening health governance, including the information system

2. DEMOGRAPHIC AND EPIDEMIOLOGICAL TRANSITION IN INDONESIA

2.1 Demographic Transition

Indonesia is entering a period of demographic transition whereby birth rates, mortality rates, and growth rates are decreasing. According to the 2015 SUPAS, the population growth rate decreased from 1.49% (2000-2010) to 1.38% (2010-2015) and is expected to decline further to 0.93 % between 2020 and 2025. Life expectancy at birth increased from 69.2 years to 72 years between 2005 and 2015. Overall, the Indonesian total population was 266 million in 2015 and is projected to approach 300 million by 2045 (1). The total fertility rate (TFR) decreased rapidly between 1971 and 1997 from 5.6 to 2.8 children per woman of reproductive age (WUS), decreasing further from 2.8 to 2.3 between 1997 and 2015 (2). Consequently, the structure of the population is shifting.

While the number of people of productive age remains relatively high, the aging population (65+ years) is expected to triple between 2015 and 2045. Considering the high number of people of productive age (more than 60 percent of the total population), Indonesia has the potential to maximize the economic benefits of its shifting population structure. The demographic 'window of opportunity' or the period of demographic dividend for Indonesia - where the ratio of

Population Projection by Age, Indonesia 2015-2045

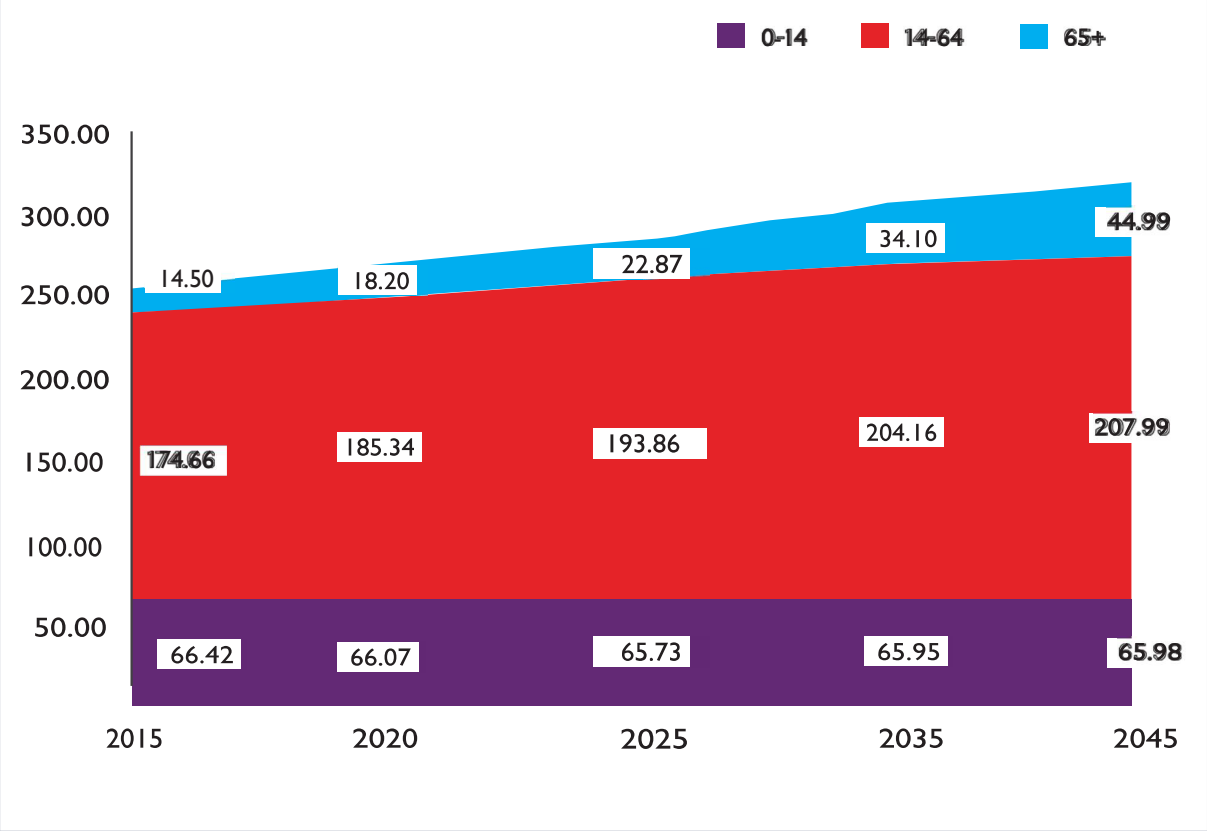


Figure 1

Source: Population projection 2015-2045 based on 2015 SUPAS (BPS, Bappenas and UNFPA), 2018

people of productive age (15-64 years old) is higher than people of non-productive age (0-14and 65+ years old), is estimated to occur in the year of 2025. This period may be extended substantially through strategic human capital investments in health, nutrition, education, labor, and social protection.

2.2 Epidemiological Transition

Alongside the demographic transition, Indonesia is undergoing a rapid epidemiological transition with a shift in the burden of disease from communicable to NCD. This is the result of economic growth and changing population dynamics (age distribution, mortality, fertility, life expectancy, urbanization and dietary changes). Over the past two and a half decades, there has been a significant shift in the burden of disease from communicable to NCD, with NCDs now contributing 70% to overall mortality (Figure 2).

Between 1990 and 2016, communicable diseases, maternal and neonatal mortality, and malnutrition had decreased, from 6 of the 10 leading causes with the greatest DALYs in 1990, to 3 out of 10 in 2016. Despite the

decrease, communicable disease such as TB remained to be the leading cause for DALYs in 2017 (Figure 2) (3).

Six out of 10 of the root causes of death in Indonesia in 2017 were NCDs. Stroke was the first leading cause of death between 2007-2017, with the incidence increasing 29.2% in just 10 years. The second leading cause was

Epidemiological Transition in Indonesia 1990-2017

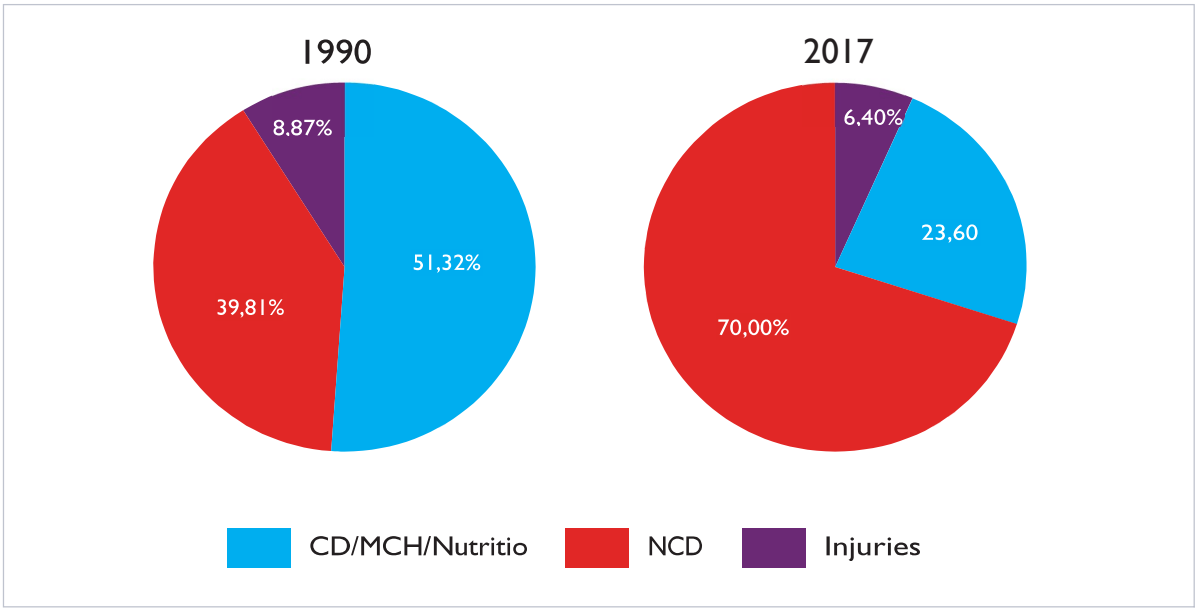


Figure 2

Source: Health Research and Development Agency (Balitbangkes), MoH

ischemic heart disease, which increased by a similar amount. The most significant increase was in diabetes. In 2007, diabetes was the sixth cause of death. Death from diabetes significantly increased (50.1%), making it the third leading cause of death in 2017.

Another increase also occurred to chronic obstructive pulmonary disease and Alzheimer's, making them to be the seventh and eighth leading cause of death, increasing 10.5% and 49.7% respectively. Death by cirrhosis decreased, making it to be the fifth leading cause of death in 2017 after holding the fourth position in 2007. That being said, incidence rate of cirrhosis has increased up to 5.6% during the last 10 years (see Figure 3) (4).

Geographically, the greatest DALYs lost are in the eastern Indonesia including Papua, Maluku, Northeast Sulawesi, and West Nusa

Top 10 causes of death in 2017 and percent change, 2007-2017, all ages, number

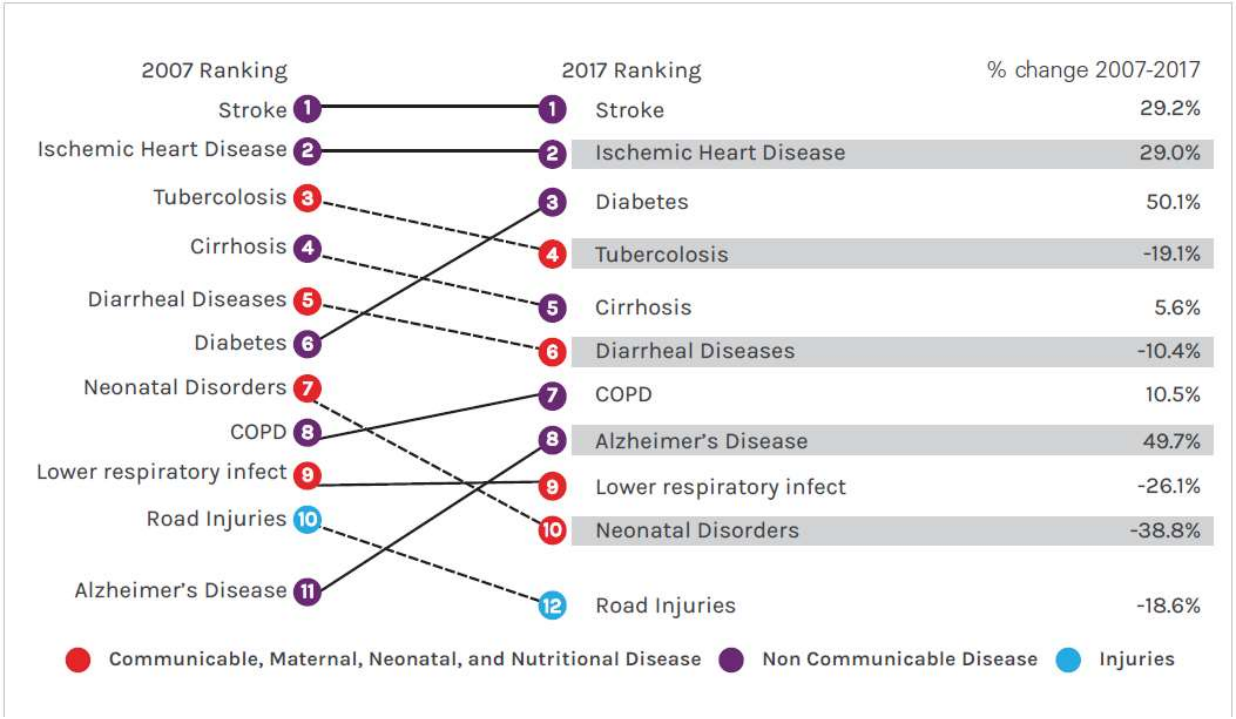


Figure 3

Source: Institute for Health Metrics and Evaluation: Indonesia Country Profile
IHME. Global Burden of Diseases Compare: Indonesia. 2018.

Tenggara (Figure 4). In all four provinces, premature deaths contribute greatly to DALYs lost compared to disability due to disease.

Communicable diseases are the main driver in Papua, followed by Maluku and Gorontalo. Conversely, the greatest contribution of NCDs to DALYs lost exists in North Sulawesi, followed by West Nusa Tenggara, and West Sumatra. Papua, East Kalimantan, and Jambi are three provinces with the greatest DALYs lost caused by injuries. These differences in DALYs lost between geographic areas reflect pervasive health inequalities between the eastern and western parts of Indonesia. In addition to access to health facilities and professionals, relatively low availability of health promotion and education programming in eastern Indonesia contributes of the burden of disease.

Table 1 shows that the three main risk factors for DALY lost in Indonesia in 2016 were: high blood pressure, dietary risks, and high fasting glucose. Tobacco is the fourth leading risk factor. Indonesia is the only country in Asia and 1 out of 9 countries in the world that has yet to sign

DALYs in Indonesian Provinces, 2017

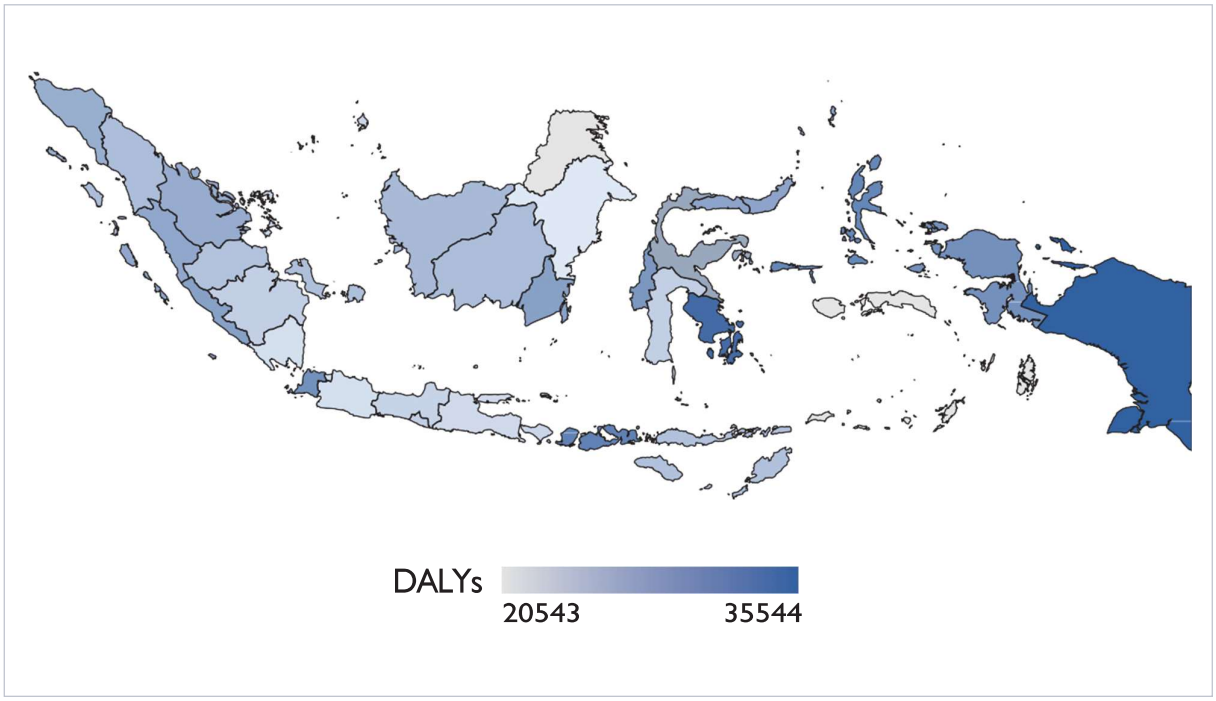


Figure 4

Source: Balitbangkes, estimation by IHME (2018)

the Framework Convention on Tobacco Control (FCTC) from WHO (5). Unhealthy lifestyles including physical inactivity compounds the effect of other risk factors.

According to Riskesdas, the prevalence of diabetes mellitus diagnosed by doctors on people aged 15 and older increased from 1.5% (2013) to 2.1% in 2018. The prevalence was higher in Special Capital Region of Jakarta, East Kalimantan, and Special Region of Yogyakarta. The prevalence of hypertension decreased a little, from 9.4% (2013) to 8.4% (2018) (6). The prevalence for stroke was 10.9% with interprovincial variance of 4.1% up to 14.7%. While for heart disease diagnosed by doctors on people of all ages, the prevalence was 1.5%. The province with the highest prevalence is North Kalimantan and the province with the lowest prevalence is East Nusa Tenggara (6).

Rank of attributable risk factors of Disability-Adjusted Life Years, Indonesia vs. comparator countries, 2016

	Number of DALYs in Indonesia	Indonesia	Malaysia	Philippines	Thailand	Vietnam
High systolic blood pressure	13.4	1	1	3	5	2
Dietary risks	13.6	2	2	1	3	4
High fasting plasma glucose	10.1	3	4	4	4	5
Tobacco	9.5	4	3	2	1	1
Child & Maternal malnutrition	9.5	5	11	7	12	8

Table 1

Source: Mboi, N. et al. On the road to universal health care in Indonesia, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016(6)

3. STRATEGIC ISSUES

3.1 Population Aging and Demographic Bonus

Between the year 2020-2024, Indonesia will have a declining Population Growth Rate below 1%. At the same period, there will be an increase of population aged 65 and older, from 4.46% to 4.68%. Indonesian population in the year of 2020 is estimated to reach 269,603,430 people and in 2024, the number will increase to 279,965,172 people (1).

Alongside with the change of population age structure, the burden of disease for each age group also changes proportionally to the change of population in 2020-2024. The morbidity rate due to NCDs will rapidly increase along with the growth of population aged 65+. Table 3 shows the profile of burden of disease based on age groups in 2016. The groups are divided into three: a) people of young age (0-4 years old), the burden is related to birth process and complication; b) people aged 5-14, the burden is related to skin diseases, NCDs such as diarrhea and traffic accidents, and c) people of productive age and the elderly, the burden is related to degenerative diseases.

The projection of DALY conducted through a simple regression between DALY of each

Indonesian Population Based on Age Groups

Age Group	2020 Male	2020 Female	2020 Total	2024 Male	2024 Female	2024 Total
0	2.212	2.159	4.372	2.227	2.173	4.400
1-4	8.889,3	8.691,1	17.580	8.830,1	8.628,2	17.458
5-14	22.490,0	21.624,0	44.114	22.317,6	21.585,4	43.903
15-49	73.450,3	72.120,9	145.571	74.581,8	73.152,6	147.734
15-64	93.292,9	92.046,9	185.340	96.756,6	95.567,8	192.324
65+	8.452,6	9.745,1	18.198	10.231,8	11.647,5	21.879

Table 2 Source: The Statistics Indonesia (BPS), Bappenas, and UNFPA (2018)

Disease Profile Based on the Age Group, 2016

Age	Three Leading Diseases Contributing to DALYs		
0-4	Premature birth	Encephalopathy on babies due to asphyxiation and birth trauma	Congenital anomalies
5-14	Skin diseases	Gastrointestinal infections	Diarrhea
10-19	Skin diseases	Traffic accidents	Gastrointestinal infections
15-64	Coronary heartdisease	Stroke	Diabetes mellitus
60+	Coronary heartdisease	Stroke	Diabetes mellitus

Table 3 Source: Global Burden of Disease (IHME)

kind of disease and the population based on the age group between 2010-2016 shows that there is a minor change to the burden of disease (see table4).

In 2020, communicable diseases will contribute 20% of DALYs whereas the NCDs contribute 71% to DALYs. Diarrhea and TB still contribute to DALYs but at a lower level. Injuries will continue to contribute to DALYs (8% between 2016 and 2024). Cardiovascular

Projection of Disease Contribution Percentage against the Total DALYs in Indonesia Year 2020-2024

Disease	2016	2020	2024
Communicable Disease	24,9	20,4	16,4
Non-Communicable Disease	67,1	71,4	75,4
Accidents	8,0	8,1	8,2
Heart Disease	19,0	20,3	21,3
Diabetes	7,9	8,9	9,8
Tuberculosis	4,2	3,5	3,0
Chronic Obstructive Pulmonary Disease (COPD)	2,2	2,4	2,5

Disease	2016	2020	2024
Diarrhea	2,7	1,9	1,2
Alzheimer	1,0	1,1	1,2
Chronic Kidney Disease	1,7	1,8	1,9
Depressive Mental Disorder	1,0	1,0	1,0
Hip and Neck Pain	3,9	4,3	4,6
Total	**72.732.990**	**71.513.527**	**70.542.526**

Table 4 Source: Global Burden of Disease (IHME)

disease also increases due to the aging population. Depression and back and neck pain will also contribute to DALYs up to 1-4% between 2020-2024. In addition to DALYs, the projected prevalence (number of patients) of a disease also shows a similar pattern (Table 5).

The incidence rate of communicable diseases and NCDs are anticipated to decrease between 2020-2024, with communicable disease decreasing faster than NCDs. Meanwhile, the prevalence of accidents is expected to increase rather rapidly - by up to 13.8% between 2017-2020.

This is a result of the high number of people of working age who are at high risk of experiencing accidents, particularly traffic accidents. The NCD prevalence will continue to rise with the prevalence of diabetes. The prevalence of Alzheimer's is estimated to

Projection of the Number of Indonesian Population Suffering from Certain Disease, 2017-2024

Prevalence	2017	2020	2024
Communicable Disease	70.585,86	63.381,36	59.109,77
NCD	92.703,83	92.294,65	92.184,46
Injuries	7.963,02	10.889,65	12.577,91
Heart Disease	5.109,60	5.745,68	6.228,47
Diabetes	8.131,93	8.711,57	9.490,67
Tuberculosis	31.177,84	28.453,77	26.688,39
Chronic Obstructive Pulmonary Disease (COPD)	2.746,90	2.989,65	3.182,33
Diarrhea	1.126,52	777,18	584,92
Alzheimer	390,75	464,94	517,75
Chronic Kidney Disease	10.549,89	11.660,22	12.549,39
Mental Disorder	2.582,21	2.985,59	3.241,32
Hip and Neck Pain	7.541,21	7.250,56	7.213,54
Total	**97.309,71**	**96.692,35**	**96.350,71**

Table 5 Source: Global Burden of Disease (IHME)

grow, followed by depression and chronic kidney disease.

The Indonesian population will start to age in 2040. The aging population has greater health and well-being risk and vulnerability. Deteriorating physical ability and aging are some of the risk factors for degenerative diseases such as Alzheimer's.

In addition to degenerative diseases, people aged 60 and older are exposed to diverse levels of dependence ranging from low up to total dependency (Figure 5).

The elderly developing stroke will experience total dependency compared to those having heart disease, diabetes, rheumatic conditions, or injuries.

The Level of Dependency on the Elderly Aged 60 and Older Based on the Disease Suffered, 2018

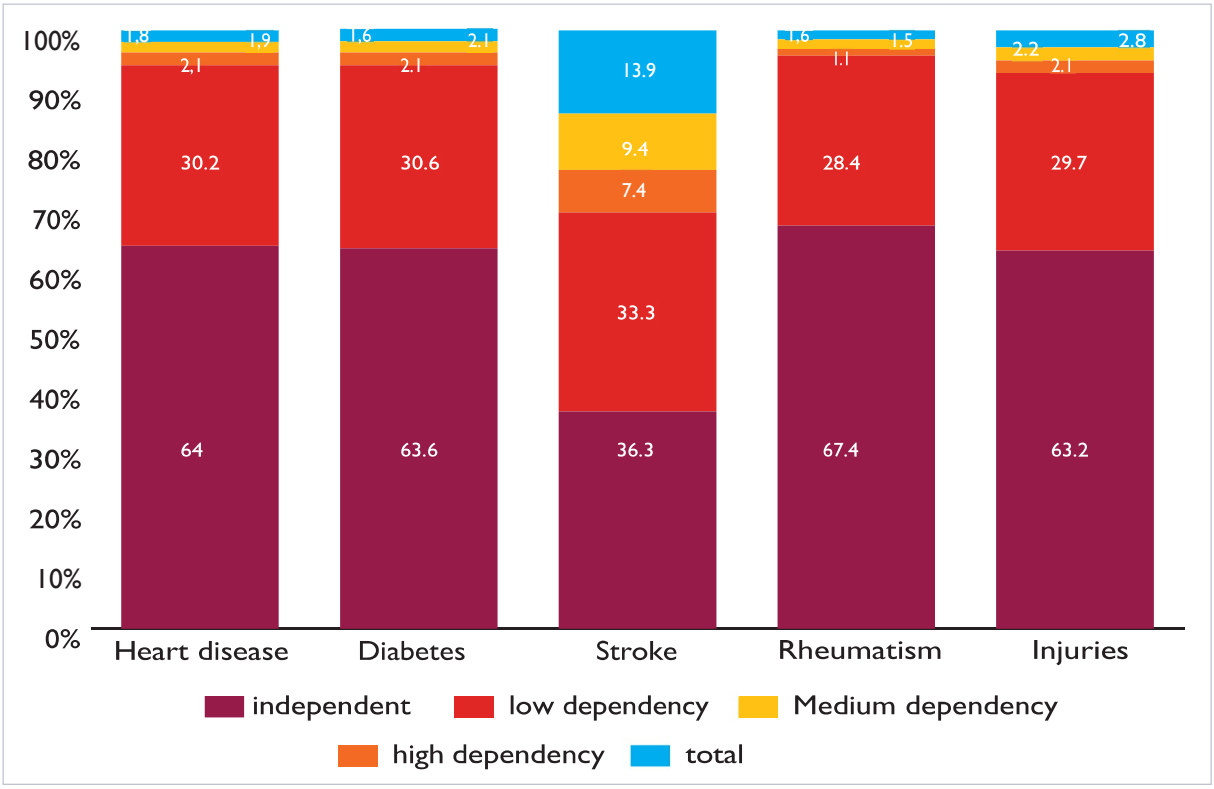


Figure 5

Source: The 2018 Riskesdas

Alzheimer's is a neurodegenerative disease characterized by progressive cognitive function deterioration.

The symptoms include deteriorating memory, thinking capacity, as well as communication and learning abilities (11). The data from IHME shows that there was a spike in Alzheimer's prevalence from 939,214 to 1,111,081 cases during the year of 2010-2016. It is estimated that Indonesia bore the expense incurred by Alzheimer's about USD 1.8 billion in 2015 (12), (13). The declining birth rate and the increase in life expectancy will result in changes to the population structure, affecting the country's economic growth.

This 'demographic dividend' results from a decline in the number of population aged 0-14 and 65+ relative to the working age population aged 15-64 years old (dependency ratio). If optimized, this dividend can enable the increase in per capita income or asset accumulation.

A declining dependency ratio benefits the country. Indonesia entered the demographic dividend era when the total dependency ratio decreased from 80.7% in 1980 to 51% in 2010 (Figure 6). This ratio will continue to decrease and reach its lowest point between 2020- 2035 (14). Based on the result of population projection by the 2015 SUPAS, the lowest ratio hit will be 45.5% in 2020. Results of the 2010 Population Census (2013) and data from the UN Population Division (2017) are largely similar and suggest the lowest ratio achieved will be 46% in 2030.

The shift in the population age structure and the decline of dependency ratio will occur in almost all provinces however at different rates. Provinces with low TFR will hit the lowest ratio faster compared to those with high TFR. However, most of Indonesian provinces today still have TFR above the Net Replacement Rate (NRR) or 2.1 children per woman. West Nusa Tenggara, Papua, and

Dependency Ratio in Indonesia, 1980-2030

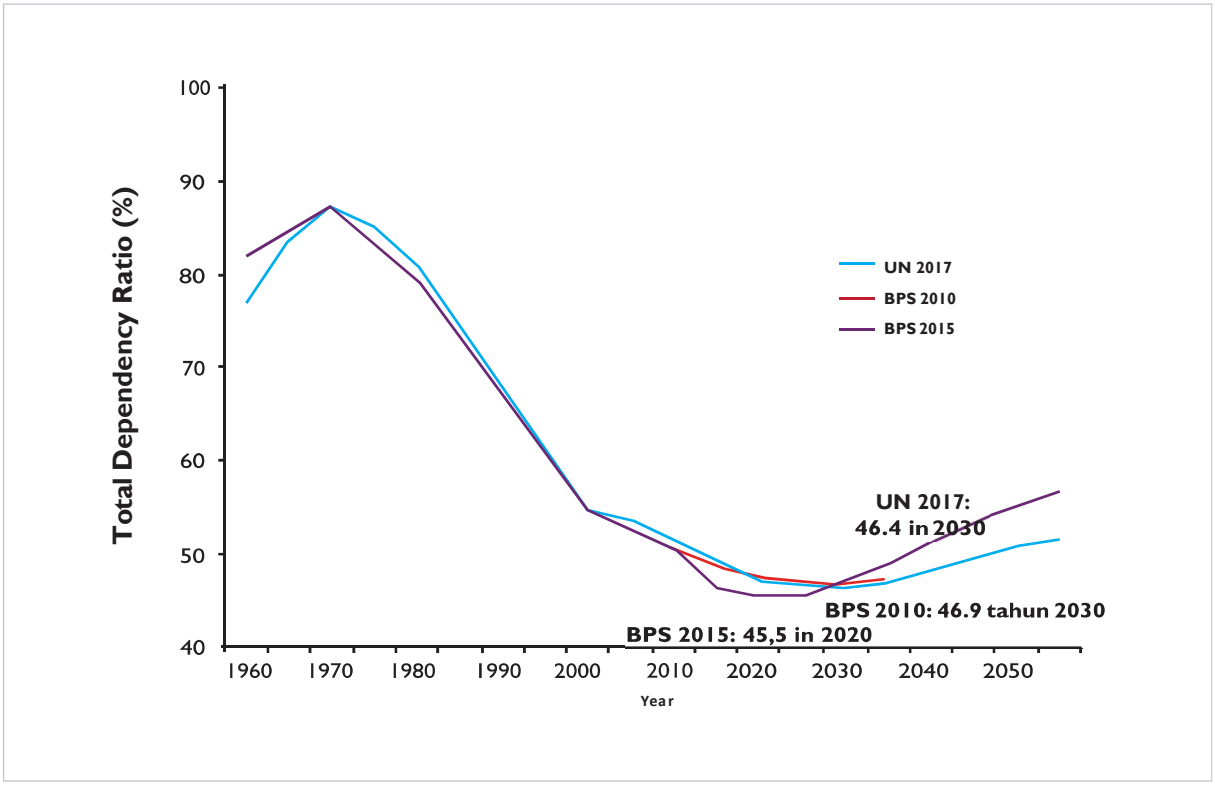


Figure 6

Source: Background Study of the 2020-2024 RPJMN Directorate of the Private Sector Cooperation Center (PKPS) of Bappenas

Aceh experience the lowest ratio between 2020-2030. Provinces with TFR below NRR such as Special Capital Region of Jakarta, Special Region of Yogyakarta, and Bali will hit the lowest ratio faster between 2015-2020. East Nusa Tenggara will hit the lowest ratio after 2040 (up to 2045), valuing only up to 52% due to its high TFR (15).

The shift in dependency ratio provides Indonesia the chance to experience demographic bonus at least twice. The first demographic bonus occurs when the per capita income increases due to the rise of productive population relative to the non-productive population. This dividend is temporary or transitional in nature (16). A second demographic bonus is predicted to be achieved during the increase of (the current) working age population's disposable assets (savings) finance future consumption. (17).

The policies and strategies to optimize the demographic dividend require cross-sectoral efforts, particularly within the health sector. Importantly, health sector investments should be diverse, multidimensional and cross-generational – addressing the health risks and challenges of youth and elderly simultaneously (18). This includes, for example, human capital investment during the first 1000 days of life. During that period – until children turn 2 years old, 80% of cerebral growth and development occurs. The remaining 20% occurs within the next 3 years, until children turn 5 years old. Early investment is important since the existing fetuses and infants will be the workforce of demographic bonus period, during 2025-2035.

3.2 Maternal and Neonatal Mortality Rates and Reproductive Health

Indonesia has set the ambitious 2030 SDG target for maternal mortality at less than 70 deaths per 100,000 live births.

Concerted Effort to Optimize the Demographic Bonus

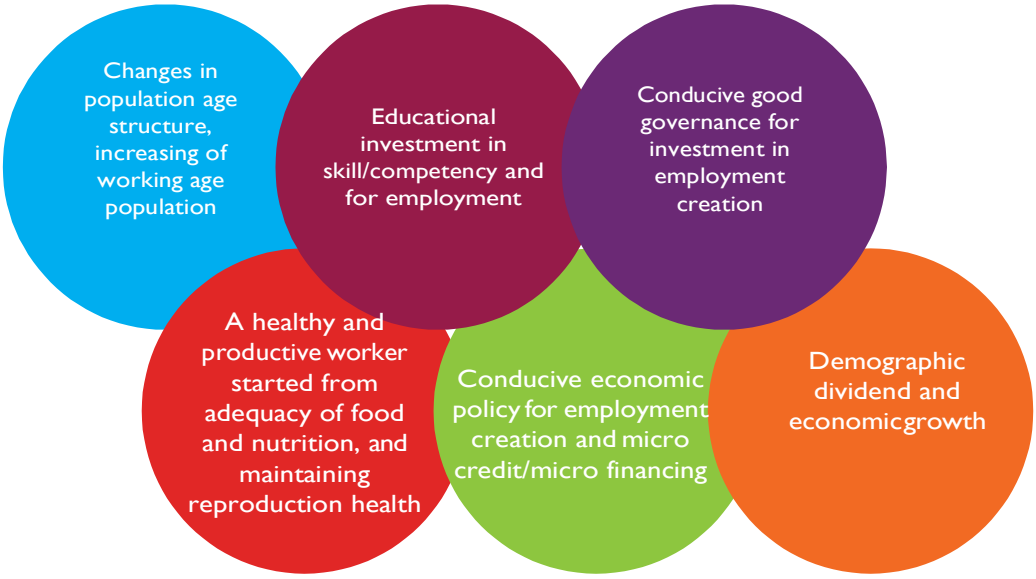


Figure 7

Source: Adioetomo (2017)

Data from the 2012 and 2017 IDHS show a continuing increase in deliveries assisted by skilled birth attendants, from 83 per cent in 2012 to 91 per cent in 2017 (2).

However, Indonesian MMR remains the highest in the Southeast Asia, roughly 12 times higher from Thailand's (25 deaths per 100,000 live births) (19).

Despite the positive achievements with 77.4 per cent of women receiving four antenatal visits, 91. per cent delivering with a skilled attendant, and 79 per cent facility births, high levels of maternal and newborn deaths suggest quality of care remains a critical issue. Recent reviews suggest the place of maternal death has shifted from homes in 2008 to hospitals in 2017.

Ineffective referral systems and unreadiness of primary healthcare facilities to identify high risks and providing appropriate care including referral to higher levels remain major contributors to preventable deaths (21).

For the last two decades, there has been a stagnant achievement of the Family Planning Program. Modern contraceptive methods decrease from 57.9 percent (the 2012 IDHS) to 57.2 percent (the 2017 IDHS).

Additionally, there are still many remote areas with difficulties to access Primary Healthcare Facilities (FKTP) and Advanced Referral Healthcare Facilities (FKTRL).

In 2016, 20% of MMR and 18% of IMR occurred at home or on the way to the healthcare facility [17]. Only 2.7% of healthcare facilities offer the complete 10-component ANC package [18].

Only 40% of the existing facilities have met the basic protocol standards and only 70% of them are capable of treating postpartum hemorrhage, preeclampsia, and prolonged labor [19].

Cross-sectoral involvement is required to decrease MMR. It is due to the various interwoven contributing factors of MMR (primary, direct, and indirect factors) (see Figure 8) (22).

Preventive and promotive measures must be a part of future policies. The coverage of quality family planning must be broadened to prevent high-risk pregnancies, early adolescent childbirth (mothers aged <20), old childbearing age (> 35 years old), short childbirth interval (less than two years), and frequent childbearing (more than 3 or 4 times). This contraceptive method decreases the risk of MMR up to 58% (24).

In essence, there are five contributing factors to the decrease of MMR namely:
a) women's health status improvement;
b) access to quality services and trained health professionals; c) access to preventive measures such as family planning program;

Concept Framework of Maternal and Neonatal Mortality Factors

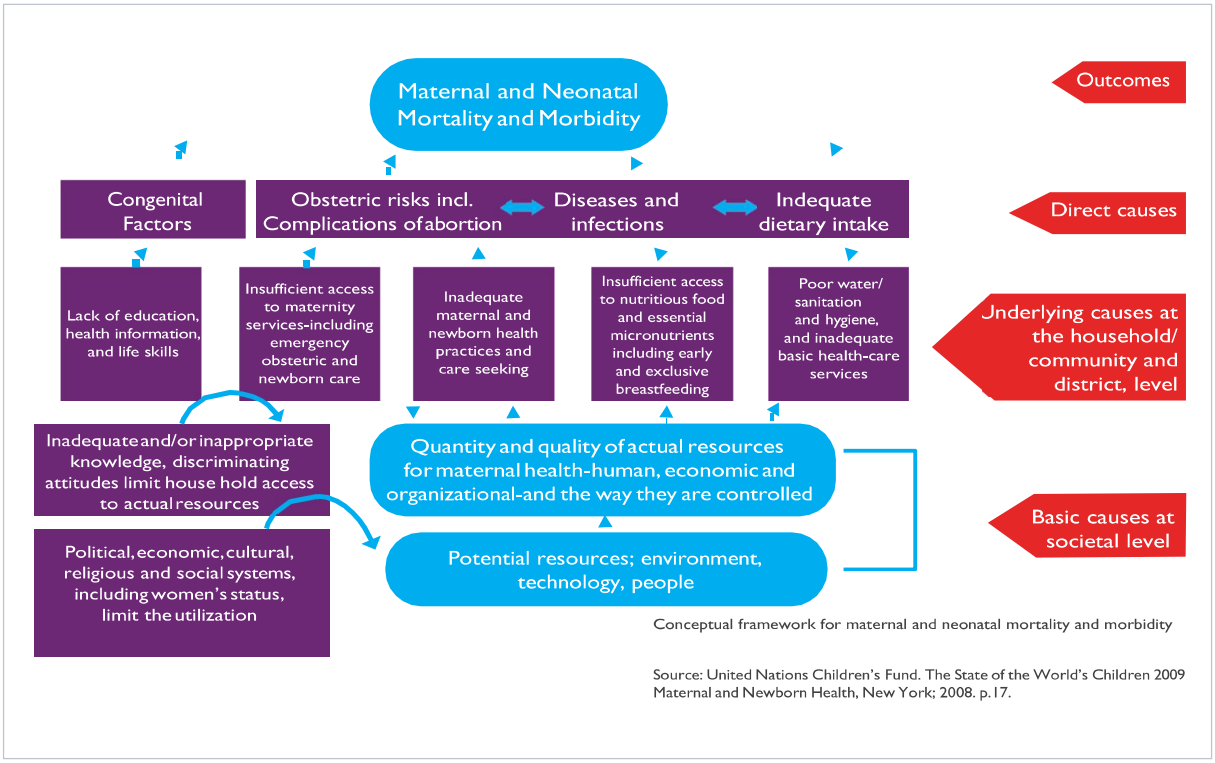


Figure 8

Source: UNICEF, 2008

d) access to quality MCH; and e) treatment of the factors with unknown causes (23).

Similar to MMR, IMR also decreased since 1990 (Figure 9). Nonetheless, there is still gaps based on geographic inequalities health status, social-economic conditions, and residence in urban-rural areas. IMR among lowest quintile households (52 per 1,000 livebirths) is higher than that of the highest quintile households (17 per 1,000 livebirths). Similar disparities exist between urban and rural areas (2). In 2015, the root causes of IMR were preterm birth (36%), asphyxiation and birth trauma (22%), and congenital disorders (17%) (25). This is the main challenge in achieving the 2030 SDG target to reduce IMR to 12 per 1,000 livebirths (26). In addition to MMR and IMR, the Age Specific Fertility Rate (ASFR) is still high. The high birth rate among adolescents is also another factor contributing to MMR and children's poor health status.

Neonatal Mortality Rate, Infant Mortality Rate and Under-5 Mortality Rate in Indonesia, 1991-2017

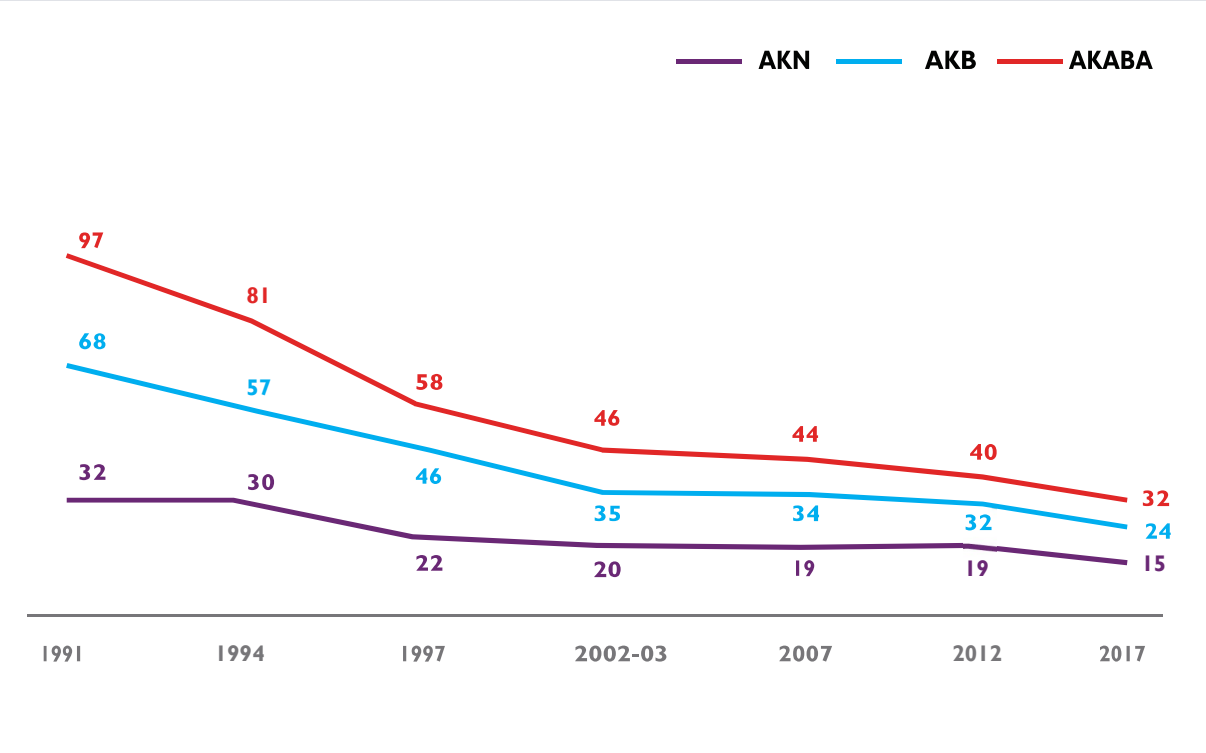


Figure 9

Source: BPS, Kemkes, BKKBN: serial IDHS 1991 - 2017

Therefore, an effort to improve women's health status must be supported with interventions that should be implemented long before pregnancy, such as education on reproductive health for adolescents.

3.3 Double Burden of Malnutrition

Indonesia still experiences high prevalence of malnutrition and obesity—known as the Double Burden of Malnutrition/DBM. DBM affects all aspects of life.

The most severe and long-term impacts occur during the rapid growth and development period namely the first 1000 days of life, beginning from pregnancy until children turn 2 years old and during teenage years.

The 2018 Riskesdas shows that stunting (body height-to-age below standard) on

children is the most common form of malnutrition in Indonesia affecting 30.8% of the total children. Wasting (body weight-to-height below standard) also affects 10.2% of total children.

These children have 11.6 times higher risk of death than those with good nutritional status. Those who survive may continuously experience developmental issues over their entire life. Meanwhile, obesity on adults has significantly increased from 15% in 2013 to 22% in 2018 (6,28).

Adolescence is a critical period for physical growth, second only to the first year of life, a time when profound psychosocial and emotional changes occur and enhanced cognitive and intellectual capacities are achieved (29).

This age group is exposed to both underweight and overweight. Almost a third of girls will enter pregnancy undernourished or as a high-risk pregnant woman Overweight among 16-18-year-old adolescents jumped dramatically from 1.4 per cent in 2010 to 7.3 per cent in 2013 (30). There are three indirect factors causing DBM. First, improper diet and food insecurity. Nearly half of the population (45.7%) consumes less than 70% of the recommended dietary allowance (RDA) for energy, whereas 36.1% consumes less than 80% of RDA for protein (31).

About 93.5% of population aged 10 and older fails to consume five portions of fruits and vegetables a day. At the same time, a growing proportion of the population is consuming excessive amounts of unhealthy food and drink, estimated at around 30 per cent, with sugar, salt and fat consumption exceeding WHO recommendations (32).

Poor economic accessibility and availability of healthy food options are the main causes of food insecurity. Conversely, the expenditure for preserved food and beverages, which mainly are processed food with high sugar, sodium, and fat content, rose four times higher between 2007-2017.

This condition leads to high prevalence of obesity. Within 3 years (2013-2016), the

Progress towards meeting RPJMN 2019 targets for children with undernutrition

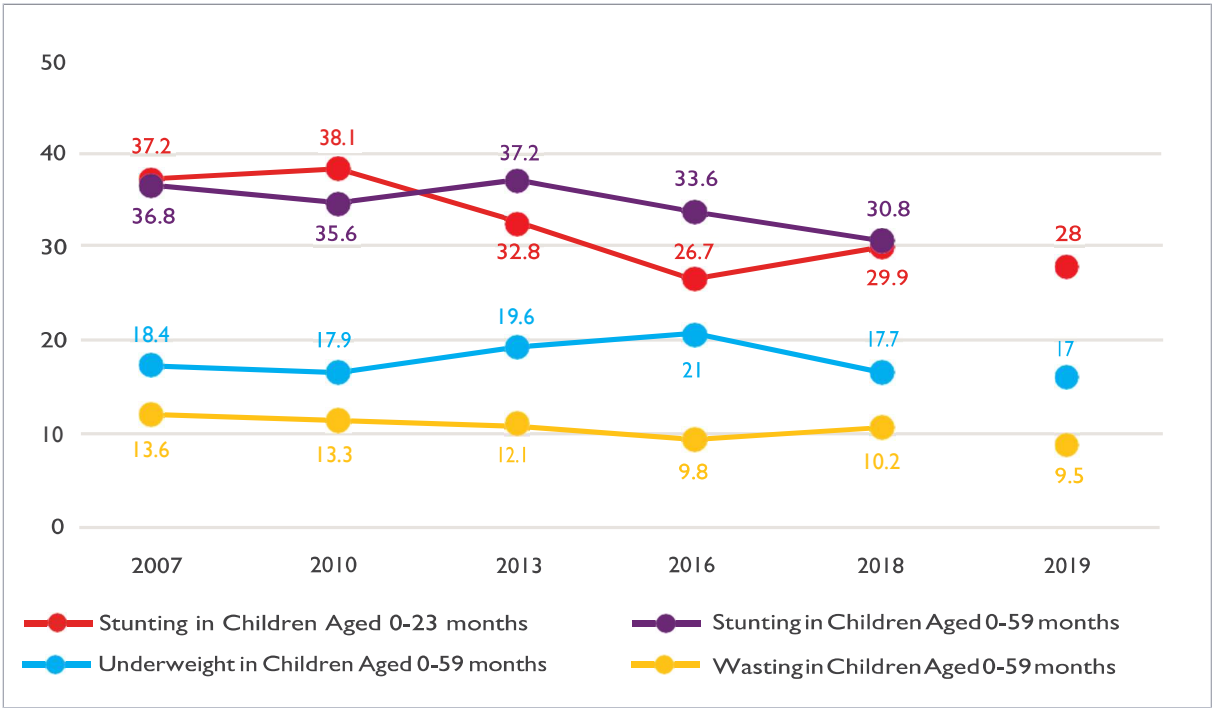


Figure 10

Sources: Riskesdas 2007, 2010, 2013, Sirkesnas 2016, Riskesdas 2018

prevalence of obesity increased five times higher than the target of the 2019 RPJMN. Obesity among women is nearly two-fold higher than among men (women 42%, men 24%). North Sulawesi has the highest obesity prevalence, whereas NTT has the lowest. The obesity prevalence is relatively the same for both high and low-income quintiles (30).

The second cause is related to diseases, inadequate access to health services, clean water, and sanitation. Communicable diseases are still common and related to malnutrition, NCDs increase as the result of the rising prevalence of obesity adding to the burden of health service system.

The third cause is related to poor infant and young children feeding practices, mothers' quality food intake as well as parenting. The root cause of DBM includes poverty and inequality, demographic trends and urbanization, gender relationship, social and cultural trust, and emergencies. Nearly half (48%) of babies are given weaning food too early in Indonesia and the food introduced is not suitable for the optimum growth and development. Only 23% of babies aged six up to eight months were given four or more food varieties in 2012. The number increases to 75% for age group of 18-23 months. More than half (57.5%) of female workers in Indonesia are employed informally and have limited opportunity to meet their child's basic nutritional needs (33).

3.4 Communicable Diseases and EIDs

Despite showing significant decline in death by communicable diseases, the burden of such diseases is still high especially for certain types of communicable diseases. It means that, to control the key risk factors to reduce the burden, communicable diseases must be monitored through an effective, regular, and coordinated surveillance. In addition to vaccine-preventable diseases (VPD), there are three communicable diseases requiring extra attention, namely TB, HIV/ AIDS, and malaria.

Tuberculosis: Indonesia has the second highest burden of TB in the world. In 2017,

842,000 people contracted TB — the number of cases is almost similar to that of China, a country with the population four times higher than Indonesia.

The incidence of TB is commonly found in Java and Bali with the rate totaling of 58% of the total national incidence. Men have two times higher TB prevalence compared to women. The prevalence increases with age, with those aged 65 and older having a four-fold greater risk of contracting TB compared to those aged 15-24 (37). Geographically, nearly 50% of TB cases occurs in West, Central, and East Java (39).

It is estimated that half of TB cases go undetected although the diagnosis and treatment of TB in private healthcare facilities are not recorded properly (38). Indonesia has a high number of cases of MDR-TB and rifampicin-resistant TB (RR-TB) and ranks in the 20 highest MDR-TB burden countries in the world.

The precise MDR-TB burden in Indonesia is unknown as there is no nationwide representative data on RR-/MDR- TB prevalence. Precise estimates of extensively drug-resistant TB (XDR-TB) are also unknown. Based on data from smaller resistance surveys, WHO estimates there could be as many as 32,000 incident cases of RR-/ MDR- TB annually, corresponding to around 10,000 cases among the notified cases (37).

The ineffective use of rapid molecular test (TCM) utilizing GeneXpert and the increase of MDR-TB cases are predicted to worsen the TB situation in Indonesia.

The quality of TB care in the private facilities is a concern. Private providers, especially the private pharmacies, account for 74 per cent of initial care seeking and 51 per cent of treatment, but only 9 per cent of case notification (41). The treatment rate at public primary health care facilities (puskesmas) is significantly higher than in the private sector, where treatment delays, sustained transmission, increased MDR-TB, catastrophic expenses and impoverishment are more likely in the private section. Therefore, public sector engagement with the private sector around TB control is imperative. Out of the five key risk factors of TB in Indonesia, smoking is the ultimate driving factor (see Figure 11).

HIV/AIDS: Indonesia has experienced an increase in new HIV infections, with an estimated 630,000 people living with HIV/AIDS (PLHIV) [8]. There were 48,000 new cases and 38,000 AIDS- related deaths in 2016

Tuberculosis cases by risk factors

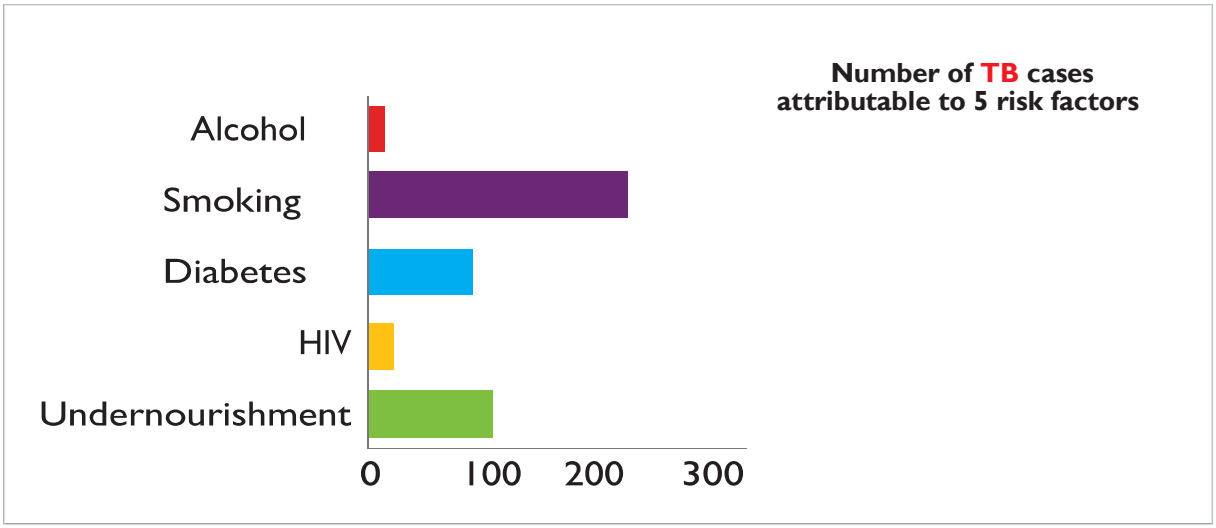


Figure 11

Source: WHO, Global TB Report 2017

alone (a 69 per cent increase between 2010 and 2017) (34).

Regional variation is wide – West Papua and Papua have the highest HIV case rates compared to other provinces, at nearly 8 and 15 times greater, respectively, than the national case rate. HIV prevalence is mostly concentrated among 'key affected populations' (KAPs) that are the most vulnerable population due to their high- risk behavior, such as female sex workers (FSWs), men who have sex with men (MSM), transgender persons (TG) and people who inject drugs (PWID) (35). Among these populations, prevalence is as high as 30% - nearly 100-fold higher than the general adult population (0.3%). Barriers in accessing services for HIV prevention, testing, and treatment due to high stigma and discrimination mean that these high-risk group may experience limited access to ART in the future (36).

MoH has rolled out a continuum of HIV care, which authorizes doctors to immediately offer antiretroviral therapy (ART) to patients once they are diagnosed with HIV/AIDS, regardless of CD4 count. This is in line with UNAIDS '90-90-90' target by 2020, where 90 per cent of all people living with HIV should know their HIV status, 90 per cent of people

diagnosed with HIV infection should receive sustained antiretroviral therapy (ART), and 90 per cent of people receiving ART should have viral suppression. However, a wide gap still exists, because only 42 per cent of PLHIV knew their status in 2017, and only 14 per cent of these PLHIV were receiving ART (2017). Viral load testing and early infant diagnosis is largely absent in Indonesia, while only about 10% of HIV positive pregnant women receive ARVs, which is the lowest in the region (34).

Malaria: In 2017, 52% of 514 districts/cities in Indonesia had been declared free from malaria (39). The highest burden of malaria exists in five provinces in the eastern part of the country (Papua, West Papua, NTT, Maluku, and North Maluku). These provinces are home to 5% the total population, but they contribute 70% to the total cases of malaria in Indonesia (42).

Significant constraints to malaria elimination are low socio-economic status, poor housing and geographic characteristics, including hard-to-reach, forestry, mining and logging areas. Access to care in many areas remains limited and available staff are mostly poorly trained.

Evidence shows that between 30 per cent and over 40 per cent of puskesmas staff located in these districts had no malaria training at all. Stock-outs of malaria drugs and rapid diagnostic tests (and reagents) are common due to supply-chain problems at the districts' warehouses (42).

Vaccine Preventable Diseases (VPD). Based on the data of Riskesdas, the complete basic immunization coverage suggests a decline from 59.2% in 2013 to 57.9% in 2018. The highest decrease occurs in Gorontalo (19%), Aceh (18.8%), and Riau (17.8%). The low coverage of the immunization has led to the emergence of diseases such as measles, diphtheria, and polio. Factors affecting low coverage include supply and demand systems. Despite experiencing some problems, the supply system is relatively adequate.

Although needing improvement, the cold chain management is functional. Only 70% of cold chain is in prime condition, 18% is adequate, and 12% needing improvement. Regarding the demand system, there is resistance against immunization for various reasons. Regions with low immunization coverage may be the source of disease transmission to the others. Additionally, introduction to the new vaccines (MR, JE, pneumococcal, and rotavirus) face obstacles since these vaccines have yet to be included within routine immunization schedule.

Strengthening human resource capacity (particularly at the village health post level), improved surveillance, and vaccine quality control supported by the appropriate facilities and infrastructures are required.

Complete Basic Immunization Coverage, Riskesdas 2013–2018

No.	Province	2013	2018	Change
1.	Aceh	38.3	19.5	18.8
2.	Sumatera Utara	39.1	32.7	6.4
3.	Sumatera Barat	39.7	38.7	1.0
4.	Riau	52.2	34.4	17.8
5.	Jambi	60.3	62.6	2.3
6.	Sumatera Selatan	48.3	48.3	-
7.	Bengkulu	62.1	62.6	0.5
8.	Lampung	62.4	67.3	4.9
9.	Bangka Belitung	67.7	75.2	7.5
10.	Kepulauan Riau	71.6	71.2	0.4
11.	DKI Jakarta	64.5	68.0	3.5
12.	Jawa Barat	56.6	58.3	1.7
13.	Jawa Tengah	76.9	75.0	1.9
14.	Yogyakarta	83.1	83.7	0.6
15	Jawa Timur	74.5	69.2	5.3
16.	Banten	45.8	47.0	1.2
17.	Bali	80.8	92.1	11.3
18.	Nusa Tenggara Barat	75.4	70.8	4.6
19.	Nusa Tenggara Timur	50.3	51.6	1.3
20.	Kalimantan Barat	47.4	48.0	0.6
21.	Kalimantan Tengah	42.0	47.5	5.5
22.	Kalimantan Selatan	52.0	68.7	16.7
23.	Kalimantan Timur	65.9	73.6	7.7
24.	Kalimantan Utara	-	73.3	73.3
25.	Sulawesi Utara	60.9	56.9	4.0
26.	Sulawesi Tengah	47.1	47.9	0.8
27.	Sulawesi Selatan	49.5	60.8	11.3
28.	Sulawesi Tenggara	47.3	45.6	1.7
29.	Gorontalo	80.6	61.6	19.0
30.	Sulawesi Barat	52.4	50.2	2.2
31.	Maluku	29.7	33.1	3.4
32.	Maluku Utara	42.6	38.1	4.5
33.	Papuan Barat	35.6	47.6	12.0
34.	Papua	29.2	29.2	-
	Indonesia	59.2	57.9	1.3

Table 6

Source: RISKESDAS 2013, 2018

Emerging Infectious Disease: Health security threats can emerge in the forms of biological, chemical, radio-nuclear terrorism, zoonotic diseases, and food safety threats, irrespective of their origins or sources. About 70 percent of (new) human emerging infectious diseases (EIDs) are zoonotic diseases (originating in animals) (44) Given Indonesia's dense population and wide geography with expanding travel activities within and between countries, a strong health security response is imperative.

Emerging Infections Diseases (EIDs) have caused global, societal, and economic impacts related to rapid disease transmission and unexpected deaths. Indonesia need improved capacities for real-time case detection, surveillance data analysis, and standard laboratory diagnosis for humans and animals (45). The 2017 Joint External Evaluation (JEE) identified two areas of improvement in the Indonesian health system: (i) coordination with other sectors to prevent, detect and respond to public health emergencies; and
(ii) quality of surveillance (in areas around AMR pathogens, EIDs, vaccine preventable diseases (VPDs), and data analysis) (46).

Considering that most EIDs are zoonosis and related to animal, human, and commodity traffic, close collaborations between the veterinary/agriculture, port health, and immigration sectors are essential.

To address new EIDs, effective disease surveillance is required to detect the EIDs at an early stage. According to the prevailing provisions/regulations, the institutions that are required to conduct the surveillance are Community Health Centers, Public Hospitals, District/City Health Offices, Provincial Health Offices, and the Ministry of Health. Strengthening the surveillance capacities of those institutions are essential in addressing the EIDs epidemic/pandemic threats.

3.5 Non-Communicable Disease (NCD) and the Risk Factors

Indonesia is undergoing a rapid epidemiological transition, and NCDs are becoming responsible for the dominant share of the overall disease burden. NCDs are threatening Indonesia in two ways. Firstly, the reduction of mortality and parallel improvements in life expectancy has led to an aging society. Secondly, the economic growth, rapid urbanization, climate change and the unhealthy and sedentary lifestyles have led to a significant increase in the prevalence of NCD risk factors.

The mortality rate due to NCDs in 1990 had risen from only 37% to 73% in 2016(47). Cerebrovascular diseases were the leading cause of death, with a 29% increase between 2007 and 2017 (48). The World Economic Forum (2015) estimated the potential economic loss caused by five domains of NCD (cardiovascular disease, cancer, COPD, diabetes, and mental health conditions) between 2012-2030 had reached US$ 4.47 trillion – 5.1 times greater than the 2012 Indonesia's GDP (49). Indonesia is predicted to suffer a more substantial loss than other highly populated countries such as India and China [19].

Indonesia's commitment to reduce morbidity and mortality due to NCDs are becoming the priority of the 2015-2019 RPJMN. However, the results of the 2018 Riskedas show that the NCDs-related indicators, such as smoking, and obesity prevalence are much higher than in 2013 [6].

Indonesia is the only country in Asia and one of the nine countries worldwide that had not yet signed the WHO Framework Convention on Tobacco Control [5]. After alcohol, air pollution is the second most important risk factor for NCDs [70] and is estimated to contribute between 40,000 - 80,000 deaths per year in Indonesia [44]. In fact, it ranks eighth as the risk factor contributing to the total number of deaths and disability [72]. In 2020, around 50 percent of Indonesians will reside in urban areas; and it is estimated to grow to 70% by 2050 [46]. People who live in urban areas have a high exposure to pollution. The leading sources of air pollution in Indonesia include peat land and forest fires, motor vehicles, coal-fired electric power generation, dust, open burning, biomass burning, and secondhand tobacco smoke.

3.6 Strengthening the Health System

3.6.1 Human Resources for Health (HRH)

HRH Inadequacy in the primary and referral health care facilities. The results of the 2017 HRH Survey (Risnakes) highlighted a gap in HRH availability in Indonesia, both in the primary and referral healthcare facilities.

Total numbers of providers at nearly all administrative levels are below the national targets by 2019 (39). 7.7% of all community health centers (puskesmas) are still without physicians, and 37.5% without dentists. At the provincial level, there are more than 40% puskesmas in Papua, Maluku, and West Papua that do not have physicians and dentists. Furthermore, there are approximately 24-26% puskesmas without community health workers and nutritionists, and around 30-32% without environmental health and pharmaceutical officers. Around 60% puskesmas do not have Medical Laboratory Technologists (MLTs).

DKI Jakarta occupies the top position (80.6%) in terms of the unavailability of the community health workers in puskesmas, Papua holds the second position (49.2%), followed by East Java (45%). Among all puskesmas, there are only around 27% of them having
5 types of health workers (environmental health officers, pharmaceutical officers, nutritionists, community health workers, and MLTs).

At the referral healthcare facilities level, the medical specialists for the basic medical specialist facilities have not been fulfilled in all hospitals, either in public hospitals, Indonesian Army/Police hospitals, or private hospitals. Only 54.22% of 332 class C public hospitals have four basic specialist practitioners and three supporting specialist practitioners.

The availability of anesthesiologists, radiologists, and clinical pathologists in public, private, and Indonesian Army/Police hospitals is around 45%-84.5%. There are only 16.7%-37% public hospitals in Maluku, North Maluku, Papua, and West Papua provinces that have 5 types of supporting specialist practitioners.

Uneven distribution of HRH. The annual rate of growth of private healthcare facilities is higher than public hospitals (7% vs. 2%). This growth has taken place largely in urban areas. This makes specialists reluctant to go to disadvantaged areas, borders and outermost islands (DTPK), especially those in Eastern Indonesia.

The 'multiple practices' policy (practicing at more than one health facility during the same working hours) has resulted in the fact that specialists dedicate more of their time in private practice(s). Up to 7 times larger disparity is found in the inter-provincial distribution of physicians. DKI Jakarta is at the top position (4.9 per 100,000 people), and Maluku is at the lowest position (0.7).

The uneven distribution of HRH is also influenced by the inadequacy of financial and non-financial incentives including in-service trainings and housings. The JKN capitation payment, which is bigger in areas with higher population density, also induces HRH's preference for urban areas.

Until now, the fulfillment of HRH is carried out in the form of permanent or temporary labors, both for DTPK and other regions. The permanent labors include Civil Servants (PNS) and Contract-Based Government Employees (PPPK).

Meanwhile, the temporary labors include regional Contracted Workers (PTT), Team-Based special designation workers of the Nusantara Sehat (NS) program, Individual workers of the NS program, Obligatory Work of Medical Specialists (WKDS), Resident and Contract Assignment/Honorarium-based Regional Public Service/Private/Foreign Agencies. However, the financial and non-financial incentives must be increased to attract more HRH willing to be assigned in DTPK and other less attractive areas.

Quality of HRH and Health Education Institutions. In 2015-2017, the results of the competency tests for doctors, dentists,

midwives, and nurses never reached more than the required 80% score. Furthermore, only 1.5% of midwifery institutions and 2.7% of nursery institutions were awarded the highest-level accreditation. In the faculty of medicine and dentistry, the levels were 63% and 48% respectively, suggesting a major quality gap between institutions (52). Health education institutions with low accreditation contribute to the low quality of HRH graduates. They lack in-service trainings to enhance the capacities of HRH. During 2015-2016, only 30.1% of the healthcare providers and its supporting staffs who got the healthcare service or management trainings (50). Of all 34 provinces, Papua has the highest proportion of puskesmas without trained medical workers (50).

Task Shifting and Multi-Tasking. Multitasking and task shifting are the responses to the shortage of qualified HRH. The 2017 Risnakes shows that nearly all (95%) hospitals implemented multi-tasking jobs and 52.1% reported task shifting. Meanwhile, 96% puskesmas implemented multi-tasking jobs and 66.1% implemented task-shifting (50). Finally, there is currently a moratorium on the recruitment of HRH with the exception of doctors, midwives, and nurses. This has resulted in shortages in key public health personnel in areas such as environmental health, nutrition and laboratory, which has implications on the workload distributions and program performances.

3.6.2 Medicines, Medical Equipment, and Drug and Food Control

In the context of decentralization, the provision and management of budget for essential public-sector medicines and medical equipment are assumed by local government. However, the central government remains as the authority for ensuring the adequate supply of medicines and buffer stocks and for ensuring the safety, efficacy, and quality of medicines. On average, the availability of drugs, vaccines, and medical equipment are increasing significantly from 75.50% in 2014 to 85.99% in 2017.

However, **the availability of medicines and medical equipment has become the major challenge in several places, especially in DTPK.** There is also a noticeable disparity on the availability of medicines and vaccines between public and private healthcare facilities.

Medicines, vaccines, and medical equipment remain as major challenges. The Drug Planning Form (RKO) has not been developed optimally. Much of the planning still takes place using the RKO, which is based solely on the prior consumption/ usage and fails to anticipate the dynamic needs associated with the changing patterns of disease or improvements of the program coverage. Coordinated planning from the national, provincial and district levels often lead to a mismatch between supply and

Indonesia Supply Chain Summary

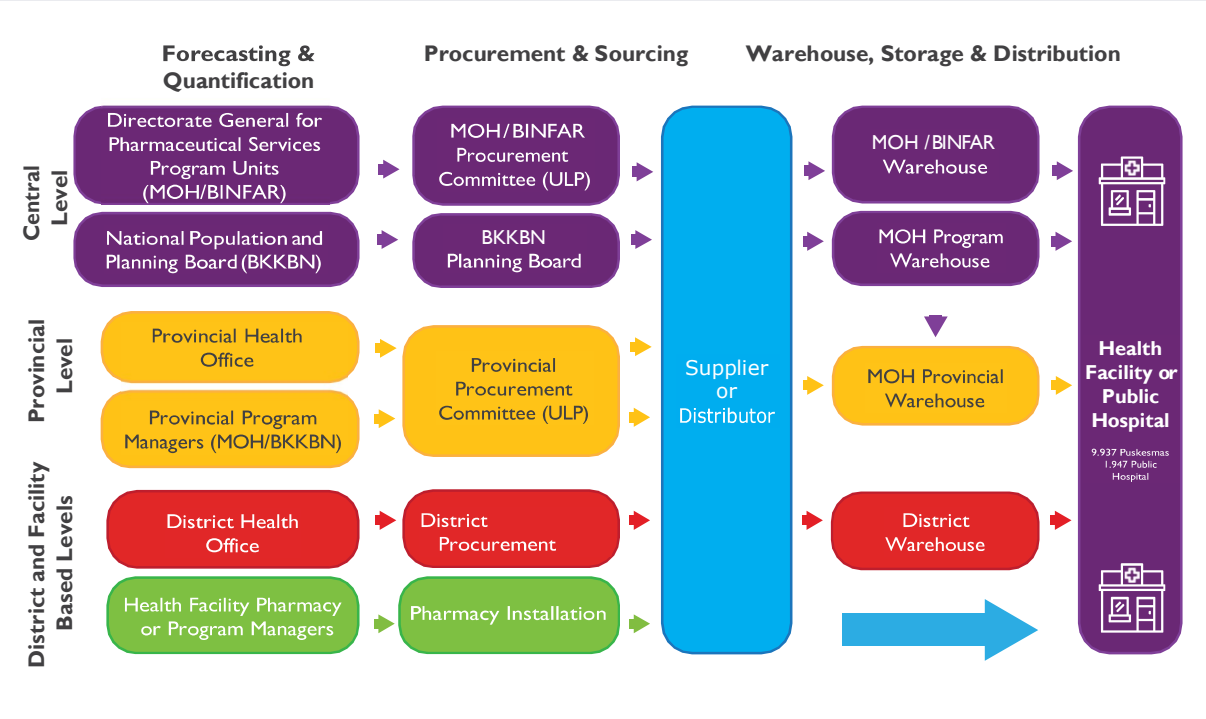


Figure 12 Source: ADB, Medicines Procurement in Indonesia: ADB Health Talk, 2016

demand (53). This has resulted in the varied availability of pharmaceuticals and medical equipment in both primary and referral healthcare facilities. Going forward, the process of distributing drugs and vaccines from the district/city pharmacy warehouses to the healthcare facilities that they supply must be taken more seriously.

The drugs and medical equipment provision system still needs improvement. E-catalogue has not yet included all drugs listed in the national formulary. Recent evidence suggests that there are substantial differences between the drugs listed in the national formulary, essential medicines guide, and the e-catalogue. Around 8% of formulary drugs have not been included in the e-Catalogue (54). Requests on drugs by healthcare facilities are often not fulfilled. Drug purchasing by hospitals is still problematic due to a long lead-time between orders and deliveries – in several cases, more than six months. As the system relies on online connectivity, challenges relating to infrastructure and personnel persist, particularly in DTPK areas. **Indonesia is also facing challenges in terms of the rational drug use.** The rational drug use (RDU) has been implemented in only 23.93% of the puskesmas at the district level in Indonesia. Of all the districts/cities having implemented RDU, the rate of the rational drug use has only reached 70%. The irrational use of antibiotics has led to antimicrobial resistance (AMR).

Domestic pharmaceutical and medical equipment autonomy shall be enhanced. More than 90% of the raw ingredients of drugs are imported products. The import value of this the raw ingredients reaches 25% of the total value of the national pharmaceutical business. In addition, 94% of the medical equipment in Indonesia are imported products, still far from the realization of the domestic medical equipment autonomy. Domestically produced medical equipment are currently dominated by basic, low-tech products. The number and capability of comprehensive and accredited household health supplies (PKRT) testing laboratories are still limited. Currently, there are only

eight (8) certified Pharmaceutical Raw Materials (Bahan Baku Obat - BBO) manufacturers. Meanwhile, the other 9 BBO manufacturers are still in the certification/development process. Regarding the traditional medicine, **Indonesia has the opportunity to develop the traditional medicine industry** because it is one of the world's top five mega biodiversity countries.

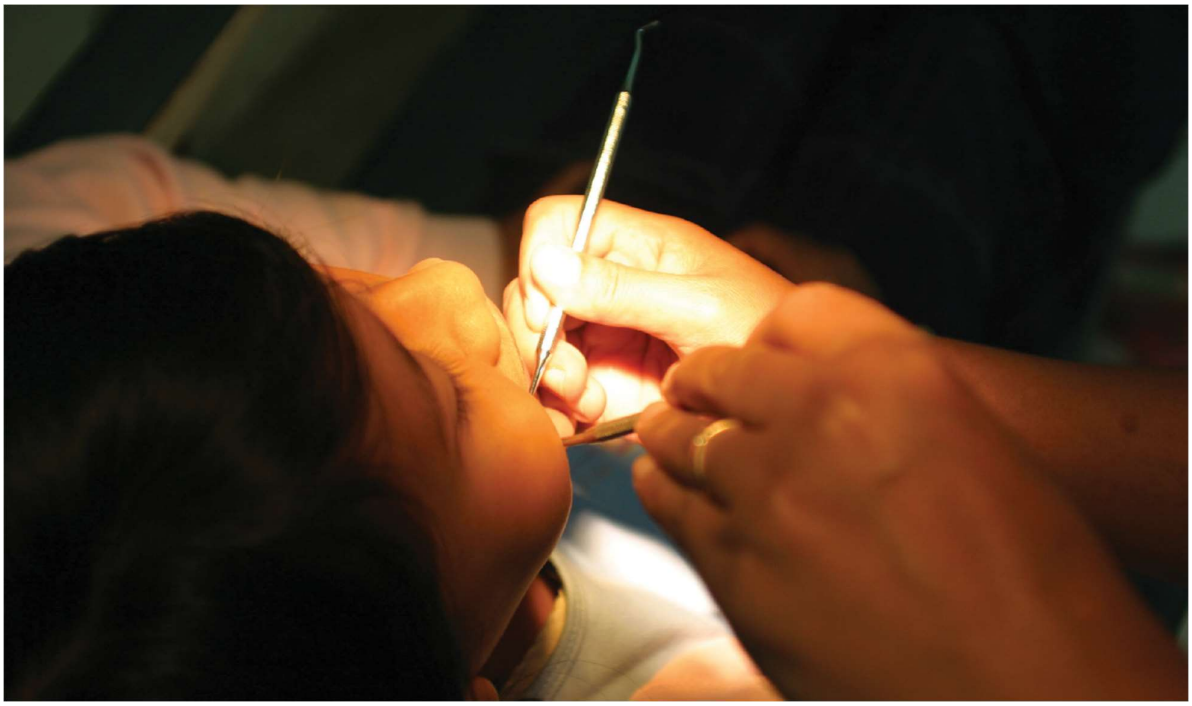
The main challenge is to produce traditional medicines that can meet the international standards of safety, quality and efficacy. Furthermore, the illegal traditional medicines circulating in the market still becomes another challenge. Currently, half of the traditional medicine industry players are concentrated in Central Java Province. The improvement of human resources, facilities, and infrastructure capacities still need to be done to increase the export-oriented herbal production capacities until 2024.

The performance of drug and food control has not been optimal. Both medicinal and food products actually had met the required quality standards (each having reached, respectively, 99.18% and 92.40%). However, the capacity of the laboratory testing for drug and food control is still limited. This has affected the continuity of the drug quality assurance. Besides, food safety still remains a major challenge. During 2013-2017, around 271 cases of food poisoning were reported. Some food safety cases that continuously occurred were the use of Food Additives (BTP) that exceeded the permitted limits and the use of prohibited/dangerous chemicals in food, especially at the home industry, food catering service, and MSME (medium, small, micro economic) levels.

This food safety problem makes Indonesian food products unable to compete in the international market. According to the data from 2011-2014, the American Food and Drug Monitoring Agency (US FDA) had rejected 1,451 Indonesian food products due to food safety problems (+/- 30 rejections per month).

3.6.3 Health Service

Indonesia adheres to a three-tiered healthcare system consisting of primary, secondary, and tertiary level services. Each level supports both public health (UKM) and individual health (UKP) services. The primary health service, with its network of integrated health posts (*posyandu*), village maternity huts (*polindes*), and village health post (*poskesdes*), addresses community-based health services (UKBM) at the sub-district level.



Public Health Services (UKM)	Individual Health Services (UKP)
Any activities of the government, community, and private sector to maintain and improve health and prevent public health problems. The public health efforts include, but not limited to the following: • Health promotion • Healthcare • Eradication of infectious diseases • Mental health • Improving community nutrition • Safeguarding pharmaceutical preparations and medical devices, • Protecting the use of additives (food additives) in food and beverages, • Protection the use of narcotics, psychotropic substance, additives, and hazardous materials, and • Disaster management and humanitarian assistance.	Any activities conducted by the public and private government to maintain and improve health, prevent, and cure illness and to rehabilitate individual cases. The unique individual health activities include, but not limited to the following: • Health promotion efforts • Prevention of diseases • Outpatient treatment (ambulatory services) • Inpatient treatment • Restrictions and recovery of disability to individuals • Traditional and alternative medicine • Physical and cosmetic fitness services
The principles are: • The government mainly organizes UKM activities with the active participation of public and private roles • The UKP is held by the public, private, and government sector • The implementation of health efforts by the private sector must consider its social function. • Organization of the health efforts needs to be comprehensive, integrated, sustainable, affordable, tiered, professional, with high quality. • Implementation of health efforts, including traditional and alternative medicine that must not contradictory with scientific rules. • The application of health efforts that must be following the values and socio-culture norms, moral, and professional ethics.	

a. Community-based Health Efforts (UKBM)

Indonesia has a robust network of community-based health services. In the past eight years, the number of the integrated health posts (posyandu) had increased by 9%, from 266,000 posts (2009) to 294,000 posts (2017) – with parallel increases in the number of voluntary community health workers (cadres) supporting them. However, **only 50% of the current posyandu is considered active and functioning properly** (39). This well-functioning network is critical to achieving gains in the major public health programs, such as immunization, nutrition, and disease control.

b. Basic Health Services

The uneven availability and distribution of primary healthcare facilities amongst regions still becomes a challenge. In order to overcome the unevenness, the acceleration of development in DTPK areas has been carried out.

The 2017 Indonesia Health Profile notes an increase in the number of puskesmas by 7% between 2014 and 2017. Around 35% of these facilities support in-patient care.

Half of this increase is resulted from the establishment of facilities in DTPK areas (39). Even though there has been an increase in the number of healthcare facilities, both in the

Trend of Growth Number of Primary Health Care in Indonesia, 2014-2018

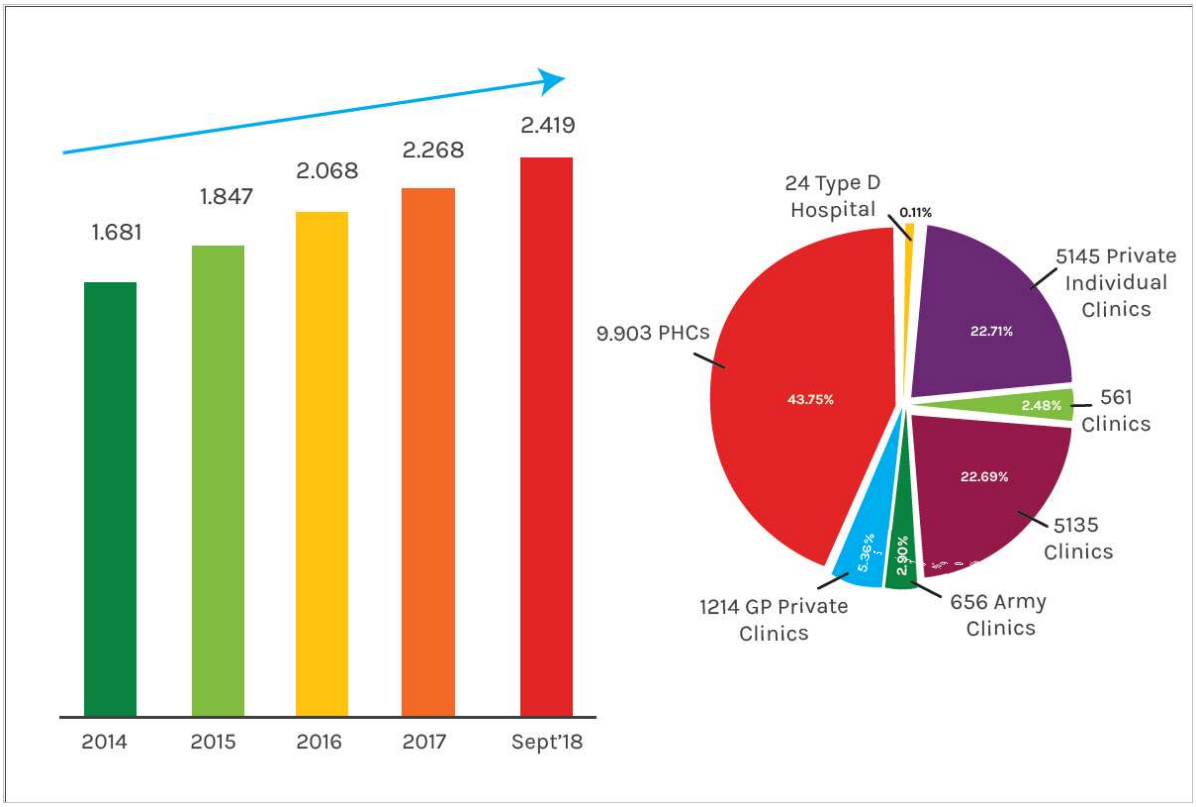


Figure 13 Source: BPJS, 2018 (presented during Evaluation of JKN Implementation, 18 Nov 2018)

Proportion of Puskesmas Meeting the Human Resource for Health Readiness, 2017

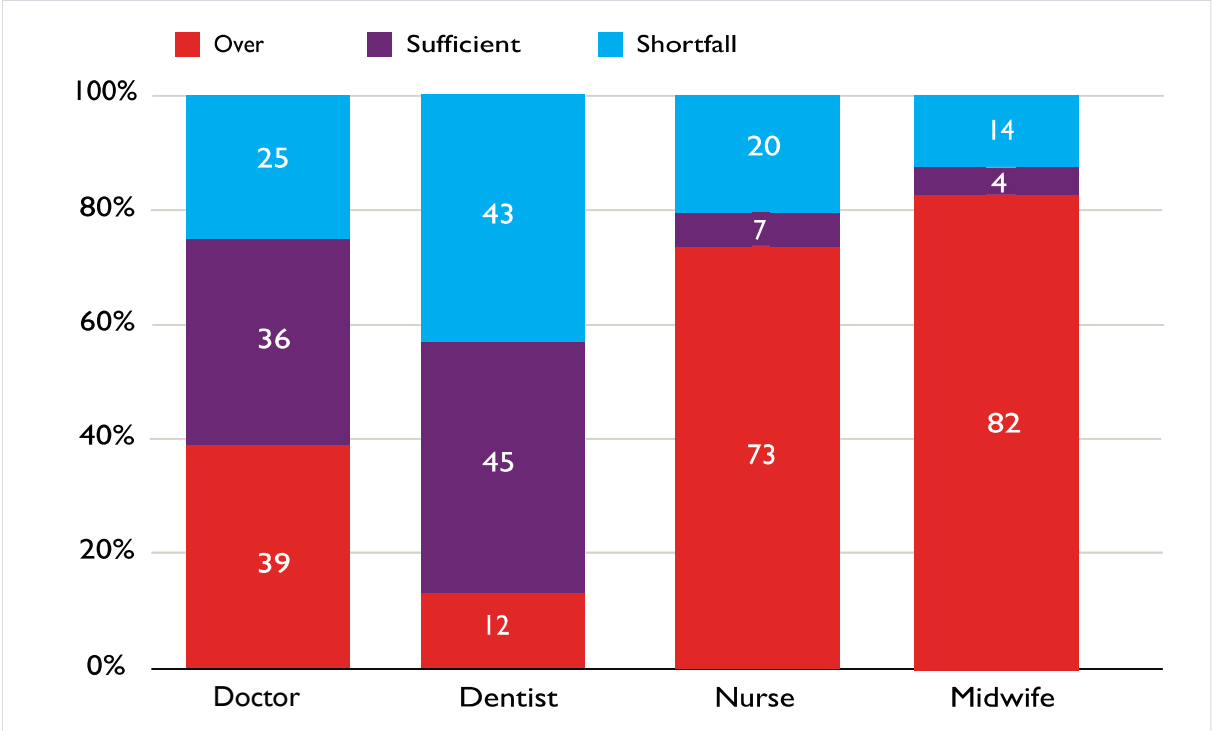


Figure 14 Source: calculated data from Pusdatin of MOH, 2017

public and private sectors (see Figure 13), this has not been followed by the improvements in HR and other infrastructures. There are still many puskesmas that have not met the standards, especially in terms of the HRH availability (see Figure 14). This affects the quality of the basic health services.

The implementation of the national health insurance program (JKN) has important quality implications. Between 2015 and 2018, the number of public and private facilities contracted by BPJS-K had increased by 23%. The public-sector facilities are better than private facilities in terms of the general preparedness, including the availability of basic facilities, drugs, and medical equipment (see Figure 15) (57).

However, the function of primary healthcare networks as the gatekeeper is below optimal. The primary health care services position as the gatekeeper is very important as they are the first healthcare provider delivering health professionals services and if they are not having sufficient competencies, it may cause

higher referrals and costs. In fact, the number of referrals is still high as it is constrained by the health workers' competency and moral hazard of the participants. Although the capitation payment (KBK) scheme applied under JKN will potentially incentivize

Availability of Basic Infrastructure of Puskesmas in Indonesia, 2011

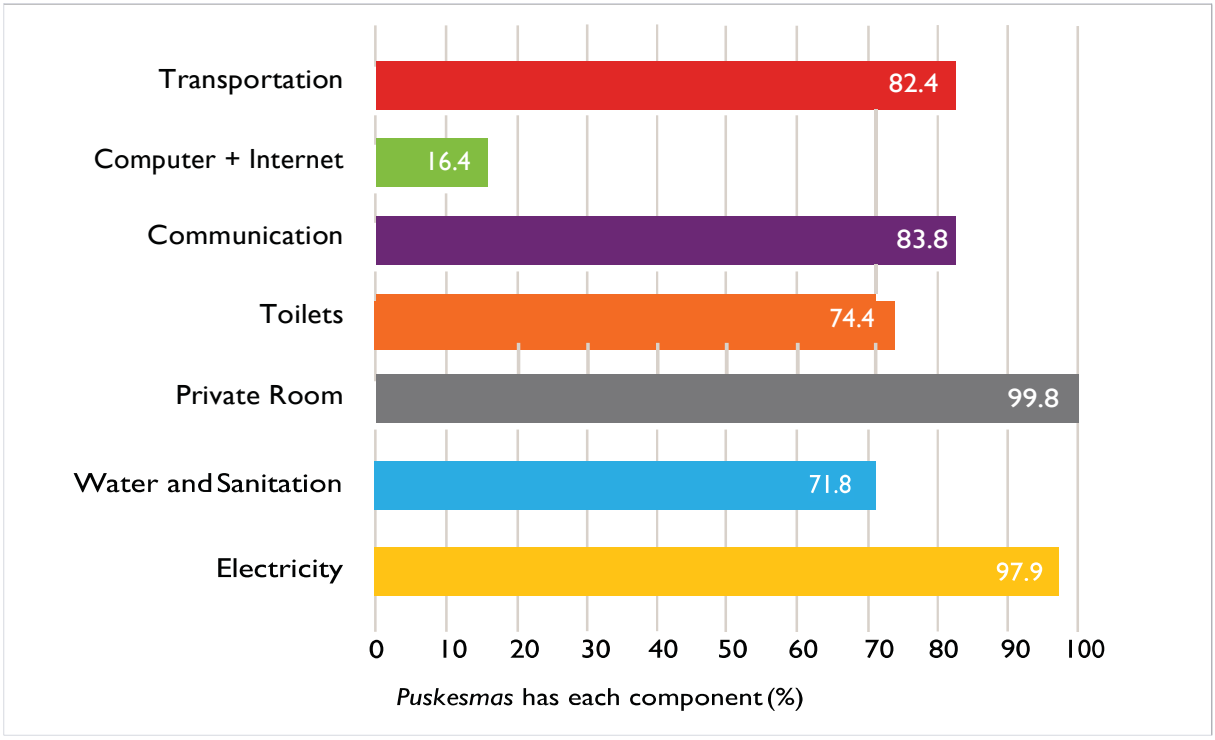


Figure 15

Source: Risfaskes (2011), quoted from World Bank, 2014

reductions in referrals, the number of referrals to higher level facilities remains high: 17% of the total visits.

c. Referral Health Services

The number and distribution of the secondary and tertiary health facilities continues to increase each year. However, the spread in the regions is still uneven, including in terms of the service quality. The biggest growth of hospitals occurs on the island of Java. Each year, the growth of private hospitals is higher than public hospitals. However, public hospitals have a larger number of beds. Most of the hospitals are class C and class D hospitals. The total number HRH in the hospitals in 2017 constituted 69% of HRH and 31% of the supporting health personnel. There should be an improvement on the availability of specialists, both in terms of type and number. Concerning facilities and infrastructure, there's still a challenge in terms of the management of hospital medical wastes that has met the standards. The unreadiness of the supply side has resulted in an imbalance access to health services between urban and rural areas, as well as DTPK.

The referral system needs improvement. The current referral system adheres to a tiered system: from primary services to secondary services, then to tertiary services. Currently, there are around 110 regional referral hospitals, 20 provincial referral hospitals, and 14 central referral hospitals.

The current referral system has not been running optimally due to the limited infrastructure, varied competencies of the HRH, and the unstandardized service quality. Furthermore, there are a large number of referrals from primary healthcare facilities to secondary and tertiary healthcare facilities. This occurs mainly due to the inadequate capacity of the primary healthcare facilities. The efforts to strengthen the healthcare facilities are carried out in stages by developing the regionalized referral governance concept. However, quality and uneven distribution issues have caused the existing referral system to be inadequate. The competence-based tiered referral system is also constrained by geographical, distance, transportation, and funding issues on the patient's side.

3.6.4 Health Coverage and the National Health Insurance (JKN)

The escalation of needs for health coverage and new sources of coverage. On one hand, health development has succeeded in improving several indicators of the health quality level. On the other hand, it faces three (3) main challenges. The first one is the unfinished agendas, such as reducing the maternal mortality rate, stunting, and improving immunization coverage. The second challenge is the increase of NCDs, hence increasing health expenditures. The third one is the significant role of other sectors that have not been maximized. All three challenges have escalated the needs for health coverage. To date, Indonesia has not optimized the mobilization of sufficient financial resources to cover its health expenditures. Within 2010-2016, the percentage of health expenditures in Indonesia was relatively relative to the country's GDP (crawling slowly to 3.3%). The Indonesia Total Health Expenditure (THE) is among the lowest in the world when compared to countries with moderate to lower income (5.9% of its GDP). Therefore, the effort to mobilize the various financial resources to cover health expenditures, either from the government, the non-governmental entities, and the community, must be improved.

Spending bias at the Individual Health Services (UKP) level. More often than not, the recommendations to increase the health spending are formulated without a deep analysis on where the money should go. The approach is frequently program-specific driven, which is vertical, or input-specific driven, limiting to the human resources only, hospital only, or drugs only.

This approach tends to create partial and fragmented coverage. Whereas the necessary regulations and formal policies have been established with specific targets, such as the

health problem of the community, partialism and fragmentation have encouraged the domination of the UKP in health expenditures, thereby marginalizing the Public Health Services (UKM). This has prevented the achievement of many health status indicators because they need interventions by the community, particularly in eradicating TB, suppressing the rate of HIV, preventing stunting in children, controlling tobacco use, ensuring the access to clean water, and so on.

Health coverage must be comprehensive. The UHC (Universal Health Coverage) concept, as defined by WHO, is a comprehensive concept having the aim to provide the people with the access to promotive, preventive, curative, and rehabilitative services, as well as the access to a proper health environment. The UHC means the access for all people to UKP and UKM health services. However, in practice, this concept is reduced to health insurance.

The same is true in the implementation of the National Health Insurance (JKN) program in Indonesia: it is understood as the application of the UHC. Indeed, health insurance is necessary to ensure the access to curative health services. It does not, however, cover all types of health interventions. Community health interventions refers to public goods, preventing the implementation of tariff and health insurance mechanisms to cover them. Therefore, the UKM coverage is included in the National State Budget and the Local Government Budget.

In the future, comprehensive coverage will be inevitable. Such comprehensive coverage requires a thorough plan, synchronized to cover both the costs of curative and preventive measures, as well as the cost to strengthen the system necessary to address health problems.

The curative, promotive, and preventive actions as well as strengthening the health system are all interrelated. The three areas are simultaneously necessary and should not be dichotomized or fragmented. The current pattern of health problems and its development in the future demonstrates the increasingly important interventions of the UKM and the health system strengthening. Therefore, the role of the government in covering the health spending may not be reduced, putting in mind that the needs for it will only increase. The governments are committed to subsidize health premiums for the poor through the JKN scheme. The reality now shows the dominant role of the government in the provision of health facilities, HRH management, and medicines/ medical equipment management. This means that the government will have to continue assuming its responsibility for covering such elements of costs in the health system.

The fiscal capacity is limited at the local level. The enactment of Law No. 23/2014 (concerning the division of the government affairs) and Government Regulation No. 18/2016 (concerning the standards of local apparatuses organization), as well as Government Regulation No. 2/2018 (concerning Minimum Service Standards or MSS) have increased the responsibilities of the local governments in covering health expenditures. Nevertheless, the fiscal analysis at the local level reveals that the fiscal capabilities of at the sub-national levels are still limited.

There are several reasons for this: a) the regional budget is mostly from the central government, including the physical and non-physical Special Allocation Funds the allocations of which are regulated by the central government.

The role of PAD (Locally-owned Sources for Revenues) is low, only as much as 10%; b) the personnel expenditures (BP) approximately reached 46% of the regional budget. This means the fiscal capacity for non-salary expenditures is 54%; c) the local government has to allocate 20% of its budget for the education sector; d) in addition to the MSS on the health sector, the local government is also responsible for 5 other MSSs.

In total, there are 29 types of basic services in 6 MSSs under the responsibility of the local government; and e) the local government needs to finance the infrastructure

development of its administrative area (e.g. the development and maintenance of the district/municipal roads). Only 177 out of 542 districts have really implemented the requirement, as mandated in Law No.36/2019, to allocate 10% of the regional budget for health.

The continuity of the JKN. The main challenge in the implementation of JKN as a social security program is the bias approach, focusing too heavily on the demand side by boosting the number of participants to pool up premiums to be used as a financial protection when the participants are sick. In fact, the availability and affordability of the health services – the supply side – is of the same importance. Without the availability of and the access to health services, health insurance, from the perspective of the insured, is ineffective. Another challenge for of the implementation of the JKN program is its financial stability. Since its operation, the JKN program has experienced a remarkable deficit, reaching over IDR 6.23 trillion in 2017 (58). Simply stated, a deficit occurs when the money payable for the claims is bigger than the money collected from the premiums. This is because the collected premiums are much smaller than the estimated actuarial need. Further, not all residents have become members of the JKN program, particularly those working in the informal sectors. Many local governments did not pay the premiums timely for the Jamkesda program. Besides, many independent members did not pay their premiums (10.8 million non-paying members in 2017, increasing to 14.6 million in 2018). On the supply side, the referral system from primary health services have not always function effectively, hence incurring greater costs. Ensuring the fiscal continuity and the equal access to quality health services is still a major challenge for the JKN program. It takes a comprehensive evaluation and analysis on the impacts of the existing policies to inform more effective strategies.

3.6.5 Management and Information System

The health development management is not yet optimal. The decentralization process in Indonesia began two decades ago. The planning, budgeting, and management of such a process have become crucial issues. Varied management capacities of the local governments have contributed to the poor health system performance in general. The condition is worsened by the obscure roles and responsibilities at the various governmental levels. The qualification standards of HRH, including the technical competences, have not been established. The technical guidance and monitoring are not yet optimal. In addition, the implementation of health development is not fully supported by adequate regulations, leading to the less effective implementation at the regional level.

Fragmented health information system. Data system integration is essential to produce valid and reliable data. Decentralization has resulted in local management of health information systems – which has resulted in a data architecture that is fragmented. In the absence of the well-coordinated standardized monitoring and surveillance systems, many regional agencies have initiated their own systems. Accelerated implementation of a standardized reporting and health management information systems, optimizing the use of digital health innovations, collecting real-time surveillance data, and making the gradual shift from aggregated to individual reporting are the critical long-term investments for Indonesia.

4. POLICY RECOMMENDATIONS

4.1 Specific Strategies

4.1.1 Strengthening the Health Services to Anticipate the Aging Society and the Demographic Bonus

The demographic transition that results in the change of the age structures of the population. This will shape disease patterns and will determine the demand for health services in the future. The fulfillment of the needs for health services for the **citizens 0-14 years old** is essential in the health system because early health investment plays a major role in shaping future health status, cognitive skills, and productivity levels.

The demand of health services at 0-4 years of age should be responded to with: (1) equal distribution of access and health services as well as ANC (antenatal care) HRH, childbirth, and postnatal care; (2) drugs and essential equipment availability; and (3) even distribution in terms of sanitation and drinking water. Meanwhile, for children and youth (5-14 years of age), the commitment for juvenile reproductive health, communication, information, and education of reproductive health, as well as traffic safety, are necessary.

The large number of **citizens of productive age (15-64 years old)** will make up the source of economic growth acceleration if these people are healthy and productive. Health promotion and disease prevention activities (healthy diet, non-smoking lifestyle, physical activities) are required to maintain the productivity of people within that range of age. Besides, an adequate availability of specialists should be ensured to anticipate the occurrence of diseases, either communicable or non-communicable, in this group.

The increasing number of elderly people needs to be anticipated through health promotion and early prevention to reduce the levels of morbidity and disability when people get older. In addition, it is necessary to formulate the accumulation system or individual investment to be used as the source of health coverage in old age. Pay- as-you-go type of health coverage is an alternative to reduce out-of-pocket spending when old people are ill or become disabled.

4.1.2 Reducing Maternal and Neonatal Mortality Rates as well as Strengthening Reproductive Health Services

Strengthening health promotion, including the access to Family Planning (FP) services. FP services should be strengthened by focusing on areas with high maternal and neonatal mortality rates. Campaigns, intensive advocacy, and strong partnership between the government and the community in the effort to prevent maternal and neonatal mortality rates are necessary.

Sustainable midwifery services should be supported by improving the quality of the health resources, particularly midwives. Sustainable midwifery services have succeeded in reducing the premature birth rate up to 24 percent (66). By improving the number of children born in health facilities, there is an opportunity to provide quality maternal and neonatal services, especially to prevent high-risk delivery. All mothers and babies should stay in the health facilities for at least 24 hours after delivery, which is the critical period where complications may occur. Therefore, improving the capacity of HRH, particularly midwives, is required to provide sustainable and quality maternal and neonatal services. Maternal health services for DPTK need to be strengthened, especially the availability of maternity waiting homes. Maternal waiting homes have been proven effective in ensuring childbirths take place in a close proximity to skilled HRH for those with difficult access to it.

Strengthening the referral system of maternal and neonatal health services. Most maternal deaths that occur in health facilities are referral-related cases. 63% of mothers of such cases experienced multiple/zigzag referrals, with 52% having referred to two facilities and 11% to three facilities. Multiple/zigzag referrals indicate ineffective referral system. The referral system for maternal health services should be improved to prevent maternal deaths.

Enhancing the quality of care through effective monitoring, feedback, and capacity development. The efforts to reduce maternal and neonatal mortality rates are carried out by ensuring that all deliveries take place in the health facilities. Today, only about a half of existing hospitals have been accredited (39). This condition will influence the quality of maternal and neonatal health services. Therefore, the capacity of facilities and infrastructure of the health service needs to be improved, including the availability and capacity of their HRH. The maternal and neonatal health service management should also be enhanced. Feedback and monitoring should be improved to enhance the performance and strengthen the existing health services.

Improving coordination, partnership, and cross-sectoral engagement. Cross-sectoral cooperation to reduce maternal and neonatal mortality rate is essential. Collaboration with the education sector is necessary to enhance community awareness on health, nutrition, and reproductive health through community-based education. The reproductive health education for youth is required to improve the health status and to prepare them as future parents. Building cooperation and partnership platforms with the private sector should be carried out since many deliveries take place in private health services.

Strengthening the information system to enhance the quality of the service. Each maternal and neonatal death should be recorded according to standards. Valid and accurate information about the causes of death will help improve the policies and programs to identify and address key drivers.

4.1.3 Scaling Up the Community's Nutrition Status to Decrease the Multiple Nutrition Burdens

Establishing a strong regulation framework to increase the commitment and budget allocation for nutrition at the national and regional levels. This effort is carried out by: 1) re-orienting the policy makers in all ministries, particularly at the national and regional levels, to the importance of target, indicators, and strategies of nutrition relevant to the RPJMN in the planning documents; 2) Revising the Government Regulation Number 42/2013 to ensure a broader authority from the National Nutrition Task Force; and 3) developing a standardized budget and accounting system for nutrition at the national and regional levels.

Improving the provision of high-quality nutrition services for all communities, by means of: 1) health sector planning and developing the minimum health services standard comprising all specific actions of nutrition based on the evidence; 2) improving the capacity and skills of nutritionists and HRH to provide for services to anticipate malnutrition and obesity as well as ensuring the availability of a sufficient number of nutritionists in each community health center; 3) strengthening the regulation to control the marketing of food and beverages containing high fat, salt, and sugar, babies and children food products, as well as encouraging staple food fortification; 4) strengthening the provision system and nutritional product supplies to ensure efficiency; 5) developing and strengthening the programs and regulations that support the improvement of health and nutrition, especially for mothers and children; and 6) establishing the policies to comprehensively anticipate obesity that includes prevention and management.

Improving the campaign, advocacy, and communication in behavior change for the improvement of nutrition through innovative methods and various channels of communication, by means of: 1) engaging the community, women, schools, and religious organizations in improving the

awareness of nutrition and the economic and health benefits obtained from a better nutrition; 2) developing nutrition advocacy, communication campaign, and mass mobilization through clear and interesting messages according to the age groups and strategies for all ministries/agencies and all relevant parties, disseminated through innovative communication channels.

Developing the information system and nutritional evidence to provide credible and accurate sources of data to be used for making decisions, by means of: 1) revitalizing the nutritional information system to integrate specific-nutrition and sensitive-nutrition indicators that can be analyzed and communicated on a regular basis and in a clear format; 2) improving the capacities of the policy makers and planners at the local level in using the information in the planning, programming, and monitoring stages; and 3) reviewing the priority gap in terms of knowledge and nutritional evidence, as well as initiating researches to fill in the gap.

Broadening the multi-sectoral engagement to scale up nutrition, by means of: 1) identifying sensitive nutritional priority programs that contribute to the anticipation of under-nutrition and obesity cases; 2) mapping the policies and available resources, and identifying the necessary supports for all main sectors to implement sensitive nutrition priority programs, including community empowerment; 3) improving the coordination and communication between multiple sectors and stakeholders (including the non-government entities) at the national and regional levels and clarifying the roles required from each stakeholder group to ensure that the targeted communities receive a full set of interventions needed; 4) integrating specific and sensitive nutrition interventions for a more effective implementation; and 5) strengthening the regulations to scale up nutrition in all sectors, such as preventing child marriages, integration of key nutrition messages to the curriculum of education, and family planning.

4.1.4 Controlling Communicable and New Infectious Diseases

Improving surveillance and monitoring. The development of the integrated Health Information System (SIK) for preventable communicable diseases is highly required to identify cases and better understand trends and overall burden of diseases in particular areas. Several types of surveillance that can be carried out according to the recommendations of the WHO include: (a) a sentinel survey which involves notifications from a limited number of carefully selected locations, usually referral hospitals; (b) an active survey, which is usually carried out

specifically, to eliminate or eradicate the diseases through active visits to health facilities to identify the case; and (c) a passive survey, which is conducted through a regular reporting of data of the diseases by all health service facilities.

Implementing specific approaches to control malaria. The efforts to manage malaria in local areas should be in accordance with the endemic level of the areas. The strategies include: (a) for districts/cities with high and medium malaria incidence: regular screening of malaria for pregnant mothers, case finding through rapid diagnostic testing, the utilization of insecticide treated bed nets, improving the case management, and enhanced laboratory capacity; b) for districts/cities with low malaria incidence: mapping malaria hotspots, detecting active cases by cadres and eradicating the malaria residual foci, such as illegal mining and forest areas; and c) for districts/cities where malaria has been eliminated: migration survey, case management networks, surveillance and active outreach for new cases.

Improving the community participation. The efforts to controlling diseases, such as TB and HIV/AIDS, and to ensure immunizations require the commitment of all relevant stakeholders in order to reach all levels of community, including the vulnerable population and high-risk areas. Active supports from the community to detect cases, reporting, contact investigation, and drug monitoring should be improved.

Increasing the needs for HIV/AIDS health services and reducing the stigma. The controlling of HIV/AIDS should be implemented with the concept of reducing the risk and danger of transmission, particularly among key populations. The efforts are conducted by broadening the promotion and education to prevent HIV/AIDS transmission, scaling up testing for HIV and other sexual communicable infections, anti-retroviral medication, and follow-up services for HIV/AIDS.

Improving the capacity in the management of emerging infectious diseases. Most emerging infectious diseases in tropical countries are from animals. Addressing EIDs will therefore require solid coordination, including exchange of surveillance data between the health sector and animal husbandry sectors. External coordination with other countries to prevent, detect, and respond to the threat of emerging inflectional diseases should also be strengthened. It is conducted by means of: (1) developing cross-sectoral strategic plans, and (2) appointing agencies responsible for the technical coordination of the relevant sectors to prevent, detect, and respond to the health emergency.

Implementing comprehensive approach to anticipate antimicrobial resistance. The improvement of rational drug use, especially antibiotics, and antibiotic avoidance for diseases likely to be of viral origin are important to limit the spread of antimicrobial resistance. These efforts are implemented through promoting the rational use of antibiotics, monitoring the practice of infection control in hospitals, monitoring the antimicrobial resistance, and limiting the use of antibiotics for animals.

4.1.5 Controlling Non-Communicable Diseases and the Risk Factors

Strengthening the implementation of Healthy Living Community Movement (Germas) The main risk factor of NCDs is unhealthy lifestyle, such as poor diet, lack of physical activity, and smoking. Unhealthy lifestyles result in a growing burden of NCDs. The change to healthy life behaviors must be immediately realized by strengthening the Healthy Living Community Movement (Germas), which supports increased adoption of physical activities, creating a healthy environment, promoting healthy life education, improving early detection of NCD risk factors, as well as providing healthy and nutritious food. The Germas movement should not only be carried out by the government, but also by the community and the private sector.

Strengthening early detection to prevent NCDs. Most NCD patients are not aware of

their conditions. With the high mortality rate due to NCDs and the possibility of having a non-productive population, community awareness of NCDs needs to be improved. The efforts should be developed by strengthening the early detection for NCDs. This will support the early management of risk factors, such as obesity, diabetes, and hypertension, that will, in turn, decrease the burden of NCDs. Therefore, early detection capabilities and capacities should be strengthened at the primary health care level, through improving routine screening programs. The implementation of the MSS, family-based health approach (PISPK), and chronic diseases management program (prolanis) by Primary Health Care Facilities, which is supported by the BPJS, are the three programs that support the early detection of NCDs.

Strengthening the regulations to support healthy lives. Regulations are required to improve the roles of the industry in producing healthy and nutritious food, improve food labeling and enhance consumer awareness. Incentives for the private sector should be created to support this effort. Limiting f the consumption and marketing of food and beverage products that pose health risks (high salt, sugar, and fat) may also be carried out by the application of targeted taxation measures.

Implementing health-oriented development. The prevention efforts for NCDs require the roles of multiple sectors. The infrastructure support, procurement of nutritious food, and healthy environment will enable healthy behavior and lifestyle shifts. These efforts are supported by other sectors. Health issues should be a mainstream discussion in the development of policies for other sectors (health-oriented development).

Improving the surveillance of NCDs. A data collection system for NCDs needs to be developed to facilitate a better understanding of the epidemiology of NCDs in various provinces and districts/cities in Indonesia. Valid data will allow adequate developments of policy development response to prevent NCDs.

4.1.6. Strengthening Health System Performance

a. Fulfillment of Human Resources for Health

Strengthening the regulation and governance in the development and empowerment of HRH, through: a) arrangement of the regulations supporting the development and empowerment of HRH, both at the central and regional levels; b) synchronization of central and regional governments policies on the HRHs' promotion, deployment, transfer, and career development; c) development of the affirmative policy for HRH, especially for DTPK areas; and d) development of task shifting operational policy.

Development of the affirmative policy for HRH especially for DTPK areas. The proposed policies must adjust to the regional condition by considering, among other things, the social, cultural, and regional capabilities factors. The policies on HRH fulfillment can be carried out through promotion and deployment for a certain period of service and supported by the provision of adequate financial and non-financial incentives. The fulfillment of human resources for health through affirmative policy can also be improved by recruiting local health educational institutions graduates.

Improving the quality of HRH needs planning. The ability of central and local governments in HRH needs planning must be improved. Therefore, appropriate and comprehensive information about the availability of human resources for health is required. Private sector and community's involvement in health development must be mapped and taken into account as an information on the availability of HRH.

Optimizing the efforts to achieve evenly distributed HRH. The evenly distributed HRH among regions can be achieved by formulating redistribution policies of HRH through transfers. Moratorium on the appointment of civil servants, particularly for those related to Public Health Services (UKM),

must be reviewed. The strengthening of UKM without the support of HRH will be more challenging. Furthermore, affirmative action policies such as the deployment of temporary HRH can be carried out to overcome the shortfall of HRH in certain regions. These efforts to distribute HRH must be supported by providing adequate financial and non-financial incentives.

Improving the quality of HRH to achieve competency standards and competitive advantages. The human resources quality improvement can be accomplished by improving the quality of the education system and health educational institutions. Reforming the education system of HRH enables HRH to respond to the community needs in regard to health.

The reform includes education and training subsidies, the structure and content of the curriculum, the application of the new pedagogical methods, and criteria adjustment for student acceptance in HRH education, which are supported by the use of information technology in education and training. A review of the curriculum is conducted to prepare graduates who will be placed in rural areas and DTPK areas.

Students' internship and residency are prioritized to be conducted in rural areas and DTPK areas. Special acceptance quota and medical specialist scholarships for doctors are allocated for those who work in DTPK areas. Moreover, the strengthening of in-service training that integrates formal education and training with actual service practices in health care institutions needs to be improved.

The quality of educational institutions must also be enhanced. These can be done by strengthening collaboration and coordination between the joint committee of Kemenristek Dikti and the MoH. Medical specialist education development and acceleration to meet the HRH requirement in hospitals, such as hospital-based medical specialist education, are the areas of strategy to be considered by the joint committee as well. Supervision of health professionals' practices must be carried out through competency test, registration, and permission to practice.

Strengthening the HRH information systems. To obtain the quality, comprehensive, and up-to-date HRH data, the existing information system must be integrated. This information system must also include data and information of private health care facilities. The regulations governing the interoperability of all HRH information systems must be strengthened so that the integration of information systems runs optimally. The involvement and participation of all parties are two of the keys to the successful system.

b. Fulfillment of Pharmaceutical & Medical Equipment Availability and Drug & Food Supervision Strengthening

To ensure the availability of medicines, vaccines, and medical equipment which are affordable, evenly distributed, and quality in Indonesia, it requires the relevant policies to: (1) increase the access, equity, availability, distribution of drugs, vaccines, and medical equipment supply chains, and their rational use by health service facilities (fasyankes) and the community; and (2) strengthen the control of drugs, traditional medicines, vaccines, medical equipment, and household health supplies (PKRT) within pre and post-marketing stages to ensure their safety, effectiveness, and quality.

Harmonization of law to increase access, availability, and even-distribution of medicines, vaccines, and medical equipment as well as to improve the drug and traditional medicines industries, including domestic raw materials and medical equipment.

Strengthening the capacity of human resources, facilities, and infrastructure both at the central and regional levels to improve the access, equity, availability, and control of medicines, vaccines, medical equipment, and PKRT.

Additionally, the provision of pharmaceutical human resources at Puskesmas is followed by increased competencies, such as the competency in the procurement of

medicines/medical equipment that consider morbidity/epidemiology, drug categories and health service facilities condition, as well as the competency in rational use of drugs and control of antimicrobial resistance (AMR).

Optimization of the use of health information systems, through digitalization of pharmaceuticals, medical equipment, and the application of drugs e-monev in pharmaceutical and medical equipment products planning, procurement, and control to provide fixed needs and budgets, both for the government and for the private sector.

Improving drug pricing system. Determination of the owner estimate (OE) of drugs need to be re-evaluated in order to make it more realistic and in compliance with the international price references by taking tax, distribution, and other elements into account. Moreover, a review of JKN tariff (capitation and Indonesia Case Base Groups/ INA CBGs) needs to be carried out which will directly or indirectly support the availability of affordable and quality pharmaceutical products and medical equipment for the community.

Strengthening coordination among stakeholders in supply chain governance and domestic production independence. Coordination between the roles and functions of government institutions at the central level, especially among the Ministry of Health, BPOM, and LKPP is needed for better governance of drugs, vaccines, medical equipment, and PKRT (supply-chain management).

Coordination in information, resources collaboration, and other strategic partnerships among academics, business, government, community, and the media (ABGCM) encourage the independence of domestic pharmaceutical and medical equipment production based on research and innovation. These efforts need to be supported by a road map of the development and production of medicinal raw materials, traditional medicines, and domestic medical equipment, strategic plans for the domestic needs and potential raw materials identification, monitoring and evaluation, incentive packages, and push/pull market mechanism development for domestic production.

Increasing the effectiveness of drugs and food monitoring. It must be prioritized to strengthen the Good Regulatory Practices (GRP) for the guarantee of pre-post market drug and food related to security, efficacy/ benefits/effectiveness, quality and validity of drug and food as a whole, and to have the upstream-to-downstream (full spectrum) concept for comprehensive protection of public health.

The institutional framework and drug & food monitoring capacity strengthening is based on a risk management approach, utilization of information technology, and cross-sector collaboration to improve transparency, accountability, good governance, and efficiency. These efforts are carried out through: (a) the development of risk-based models for production inspection and product evaluation of GRP;
(b) the development of testing models with laboratory regionalization for drugs and food;
(c) intensification of law enforcement related to drug and food crimes.

Strengthening public health protection and promotion through effective risk communication. The easy access to internet and information technology nowadays enables the public to obtain detailed information on drug and food products from various sources.

c. Quality and Equitable Health Services

The efforts to realize quality and equitable health services are carried out through: strengthening community-based health efforts (UKBM) programs through the outreach, involvement, and empowerment of the community, as well as accelerating supply side readiness followed by improving the quality and capacity of health resources and strengthening referral system & quality health services using digital technology.

Strengthening community involvement in UKBM program through the enhancement of quantity and quality of health cadres and digital technology utilization. The number and quality of cadres need to be increased through the recruitment of new cadres, including those who belong to the millennial generation, and the provision of regular coaching/training. The Ministry of Health needs to create new innovations by utilizing digital technology in delivering health education and information messages for cadres. In addition, the emergence of community movement groups for healthy living, such as marathon, healthy hearts, and bike clubs, needs to be facilitated and directed to become a social force for the community's healthy living behavior.

Revitalization of Posyandu to be more responsive to health problems. In order to strengthen the role of Posyandu, new strategies and innovations need to be formulated. Furthermore, Puskesmas needs to provide guidance and conduct regular contact with health cadres to always mobilize the community to visit Posyandu.

Strengthening the implementation of the School Health Services (UKS) program. Adolescent health problems need serious attention and treatment, especially those related to nutrition, reproductive health, and risk behavior. Thus, the implementation of UKS program needs to be improved through:
(1) strengthening intensive coordination and communication among the Health Office, the Education Office, and the Regional Office of Religious Affairs; (2) defining the UKS program between Puskesmas, schools, and school committee; and (3) increasing the quality of UKS program that focuses on education, practice, and peer education enhancement.

Strengthening leadership in Puskesmas governance. The head of Puskesmas has considerable roles in determining the direction and movement of Puskesmas in serving public health. A good leadership of the head of Puskesmas enables teamwork, encourages participation, and develops the ability to work professionally. Strengthening needs to be done through Puskesmas management training and leadership training for the heads of Puskesmas.

Strengthening the implementation of UKM program by Puskesmas. At present, the UKM program is increasingly marginalized since JKN was applied at the Puskesmas level, whereas UKM is very crucial in community- based health management. Therefore, it is necessary to strengthen the UKM program through: (1) the arrangement of norms, standards, procedures, and criteria (NSPK) for each UKM activity;(2) revoking the moratorium to meet the requirement regarding the number and comprehensiveness of health professionals at Puskesmas; (3) enhancing the intensity of the UKM program with the support of services; and (4) UKM program funding support from other sectors, one of which is village funds.

Development of health service facilities as needed. Preparation of health facilities throughout Indonesia to ensure public access to quality health services should to be taken into account. Therefore, it is necessary to develop a roadmap for the supply of health services, both primary, tertiary, and secondary health facilities, as a reference for the central and regional governments in developing health service facilities. Furthermore, it is also necessary to map out the financing mechanism which will be used in carrying out the development, including the Government-to-Business Cooperation (KPBU). The existence and growth of private-owned health service facilities must also be considered in the development measures.

Strengthening the referral system through the regional network of health service facilities, evaluating the current referral system, and utilizing digital technology. The purposes of regional referral systems are to prevent patient's waiting list and to provide cost-efficient and time-effective services, both from the perspective of the service providers and patients. Therefore, an evaluation of the current referral system is needed to be used as an input for the improvement and strengthening of the referral system. Information technology

needs to be applied in building a referral system so that the process will be faster and more accurate, for example to locate health service facilities, register, and find beds.

Improving the quality of health service facilities through accreditation acceleration and clinical pathways. Health service facilities accreditation is aimed at maintaining standardized service quality throughout Indonesia in both primary, secondary, and tertiary health service facilities. Thus, it is necessary to accelerate the target of accreditation of all health facilities in the near future. Another effort taken to maintain the quality of services is by asking hospitals to create clinical pathways for quality and cost control.

d. Increasing the Effectiveness of Health Financing and JKN Implementation

Seeking new health financing sources. Increased health challenges imply the need for larger amounts of health financing. Having fallen into the middle-income category, Indonesia is no longer an eligible recipient of foreign assistance. This leads to an increased need for domestic financing for programs that have been relying on grants, such as those for AIDS, TB, malaria, and immunization programs. Such an increased need urges the government to seek new health financing sources. The state fiscal capacity for health can be improved by imposing an excise tax on health-risk products and earmarking their use for health development. This effort certainly requires a strong policy push and tailored regulations. In addition, cooperation with the private sector must be extended on the provision of health infrastructure and services.

Increasing the effectiveness and efficiency of state health expenditure. Fiscal capacity for health can be improved not only by seeking new financing sources. It can also be made possible through effective and efficient allocation of the existing budgets. To ensure efficient budget allocation, priorities must be set according to the level of necessity. In addition, promoting independent health facilities and increasing the budget for health promotion and disease prevention programs may also contribute to the effectiveness and efficiency of health expenditure. Strengthening health promotion and disease prevention programs is considered as an effort to improve fiscal capacity by reducing disease burden and risk factors in order to reduce health financial burden.

Increasing the effectiveness of funds disbursement for health development to regions. Health financing in regions is largely very dependent on the disbursement of funds from the central government. Annual increase in funds disbursed to regions demands monitoring and evaluation of its utilization to ensure successful achievement of health development goals in regions. Therefore, the DAK effectiveness controlling and monitoring system must be developed. The DAK utilization mechanism, including the program menu and the recipient location prioritization, must be improved in order to effectively accelerate the regional development. Affirmative action policy in health financing through a disbursement mechanism for DTPK regions/puskesmas needs to be exceptionally developed.

Strengthening the implementation of JKN. The implementation of JKN can be strengthened through the improvements of its governance, which include institutional strengthening, the improvement of data and information transparency, and the integration of the JKN data system and other data systems for policy making and monitoring.

The sustainability of JKN needs to be maintained by expanding the participation, improving the participant data collection system, reviewing and setting up benefits packages with reasonable premiums, and integrating various sources of social security the ensure the continuity of JKN financing. In addition, strategic purchasing must be implemented to prevent various violations in health facilities. The expansion of cooperation with health facilities, including private health facilities (hospitals and clinics), and the affirmative action in the JKN management in

the eastern and DTPK regions in the form of cooperation on health facilities, tariffs, and incentives, are necessary to ensure equitable health services in all regions.

e. Strengthening Governance and Health Information Systems

Improving the HR capacity of DHOs in managing health development in regions. DHOs play an important role to ensure smooth health development in regions. As regional health assistants, DHOs must have adequate capacity, both in terms of management and substance. Their health development planning and budgeting capabilities must also be improved. In response to new challenges and affairs in the health sector, such as the fulfillment of MSS, the achievement of the SDGs, and the assistance for regional technical implementing units (Unit Pelaksana Teknis Daerah/UPTD), the HR capacity of DHOs must be continuously improved as needed.

Developing regulations to strengthen health development governance in regions. Regulations, including NSPK, needs to be developed to help regions implement the policies made by the central government. Among the regulations that need to be developed are those governing the main duties and functions and the competence standards of DHOs and the work relationship among DHOs, hospitals, and puskesmas.

Improving data and information systems to support health development governance. Data and information systems must be improved through the integration of information systems to facilitate performance monitoring. Data integration will produce more valid data to strengthen the policy planning. In addition, a mechanism that ensures compliance with the periodic data reporting must be developed to optimize the utilization of data system.

Strengthening the monitoring and evaluation systems and regional assistance in the implementation of health development. In this era of decentralization, local governments have extensive authority to carry out health development in their regions. However, the capacity of each local government in carrying out development in their regions varies. Therefore, assistance and monitoring by the central government are needed to enable local governments to carry out development in their regions optimally. The monitoring and evaluation systems need to be strengthened to ensure the implementation of programs and policies is consistent with the targets set.

4.2. General Strategies

1. Encouraging Comprehensive Approaches and Interventions

Interventions to address various health issues (CD, NCD, MCH, adolescent nutrition) must be carried out with comprehensive planning.

The interventions include: (i) treatment at the individual level (UKP); (ii) health promotion and disease prevention at the community level (UKM); (iii) supporting efforts by other sensitive sectors (Social Determinants for Health/DSK); and (iv) health systems strengthening (PSK).

These efforts need to be supported by the dissemination of "comprehensive concepts and approaches" to all health stakeholders at the national, provincial and district levels.

The concepts detail the types of interventions needed for UKP, UKM, DSK, and PSK for every health problem.

In addition, guidelines and training modules for integrated health planning and budgeting are needed as a reference and material for improving the capacity of health stakeholders. To strengthen the planning for cross-sectoral interventions, research on DSK needs to be prioritized in the research agenda for the next 5 years.

2. Improving UKM

DHOs and puskesmas spearhead most UKM activities. Functions or activities of UKM carried out by puskesmas and DHOs include: 1) 12 basic services, including SPM-K;
2) other UKM services that are not included in SPM, such as family planning, nutrition, malaria, filariasis, environmental sanitation, observation of public places, home visits, etc.; 3) alertness and preparedness to anticipate the threat of outbreaks, especially CDs that are potentially epidemic/pandemic and generally zoonotic; 4) community empowerment for health, including the empowerment of health cadres; and 5) mobilization of other sector units that are directly related to UKM activities.

Improving the capacity of DHOs to plan and implement UKM

In the coming years systematic measures need to be taken to improve the capacity of 514 DHOs. The measures include:

1. Setting the DHO organizational standards in accordance with the provisions regarding the main duties and functions of DHOs (Law No. 23 of 2004, Government Regulation No. 18 of 2007, Government Regulation No. 2 of 2018, and other provisions) and in accordance with the Structure Follows Strategy principles;
2. Setting the standards of the types of DHO human resources to carry out the main duties and functions of DHOs, including epidemiologists for the conduct of surveillance, health promotion professionals to mobilize and empower the community and run cross-sectoral advocacy campaigns, and IT personnel to manage health information systems;
3. Improving the capacity of DHOs to manage district health information systems;
4. Improving the capacity of DHOs to prepare performance-based plans and budgets; and
5. Conducting pilot studies by contracting the implementation of certain UKM activities to third parties.

Improving the capacity of puskesmas to implement UKM

Among the measures that need to be taken to improve the capacity of puskesmas to implement UKM are:

1. Filling the puskesmas human resource vacancies in compliance with the standards, including UKM implementing personnel (public health workers, sanitation and nutrition experts), administrative personnel, and information technology personnel;
2. Improving the capacity of Puskesmas to prepare performance-based activity plans and budgets for the absorption of Health Operational Assistance (Biaya Operasional Kesehatan/BOK) funds;
3. Strengthening the BOK funding policy for the implementation of UKM; and

4. Reviewing and revising the technical guide books of all UKM programs and distributing them to all puskesmas, followed by the improvement of capacity of DHOs to carry out technical assistance.

3. Strengthening UKP

UKP strengthening includes health service readiness (supply side), which consists of primary and advanced services, and sufficient, effective, efficient, and sustainable financing (demand side).

Strengthening primary health services

- Increasing the accreditation status of puskesmas, primary clinics (private) and independent physicians (*Dokter Praktek Mandiri*/DPM);
- Filling the HRH vacancies in compliance with the standards;
- Ensuring the availability of pharmaceuticals and medical equipment;
- Encouraging the establishment of an association of primary clinics and an association of independent physicians to serve as BPJS providers; and
- Accelerating the institutional transformation of puskesmas into local public services agencies (*Badan Layanan Umum Daerah*/BLUD) for the purpose of financial management independence.

Strengthening advanced services

- Accelerating the development of clinical pathways followed by costing;
- Revising INA-CBGs' rates according to costing;
- Filling the specialist's vacancies in compliance with the standards, including affirmative action for DTPK areas;
- Intensifying the accreditation process of all referral health services (FKTLs); and
- Facilitating private investment in FKTLs in areas lacking FKTLs.

4. Encouraging and enhancing cross-sectoral roles (mainstreaming health)

- Providing evidence basis for the importance of contribution from other sectors to health (e.g. analyses of Social Determinants of Health and reviews of health-related environmental impact analyses);
- Improving the capacity of human resources to carry out health-oriented planning;
- Strengthening cross-sectoral cooperation on health planning;
- Developing regulations that support cross-sectoral cooperation on health; and
- Strengthening cross-sectoral coordination mechanisms, both at the national and regional levels.

5. Overcoming disparities to achieve equity

- Conducting in-depth analyses of disparities and their causes;
- Assessing regional capacity in terms of fiscal capacity, DHO and puskesmas capacity, financial management, effectiveness of community empowerment, and logistics management;
- Formulating appropriate affirmative action plans in accordance with regional needs (staffing, financing, training);
- Providing special policy intervention packages for puskesmas in DTPK areas, including staffing, health financing, and the direct provision of pharmaceuticals and medical equipment from the central authorities; and
- Developing regulations that support the efforts to evenly distribute health services.

5. CONCLUSION

Indonesia is a culturally diverse and geographically large country. In the early independence period, the people had very low health status, short life expectancy, and very weak health systems and services. Among the first challenges was to build a health sector that provides standard health services focusing on health promotion and disease prevention efforts (UKM) and basic curative services (UKP) that are evenly distributed to all regions. These efforts have now produced significant results as indicated by the increasingly improved health status of the population.

Initially (in the 1950s), the national health system adopted the Bandung Plan as a basis. Health facilities were established in the form of hospitals at the provincial level and puskesmas at the subdistrict level. Doctors, nurses, and midwives were placed in these health facilities through a compulsory service program (as civil servants) by the government. Specialized hospital systems were developed at the provincial and national levels. Doctors and midwives were allowed to open independent practices after completing the required service hours in the state facilities. In the 1990s, the government recruited non-permanent workers to accelerate the filling of HRH vacancies. Most civil servants and non-permanent workers were paid by the central government.

Since the beginning, state health information systems (facilities, human resources, utilization, disease pattern) have been dominated by public services. As a result, all health information has been collected only through and about public services. Having data only from the public sector has made current HIS less reliable. Data from the 2010 census shows an increase in the role and importance of the private sector. A more recent national survey also reveals that more and more people have started to utilize private health care facilities (private clinics

/independent physicians) for more comfortable care and extensive availability of medicines. Therefore, more and more HRH (doctors, nurses, and midwives) have opened private practices.

Since the beginning of decentralization in 2001, the central government control over health issues at the district level has begun to diminish. One of the important objectives of decentralization is to provide information needed for planning at the district level to address problems at the local level. For this reason, the information provided at the provincial and district levels must be the same. The problems faced by provinces and districts today are not only new communicable diseases such as HIV/AIDS, which emerged since the late 1980s, but also emerging infectious diseases. The prevalence of TB remains high and so is the prevalence of malaria in certain regions. Diseases that were considered less important in the past 25 years (such as heart disease, stroke, diabetes, overweight, and obesity) have now been recognized as important causes of morbidity and mortality. Nutritional problems remain an important cause

of morbidity and mortality among infants and children. Obesity has increased rapidly among children and adults. Anemia remains a cause of health problems for young women, pregnant women, and toddlers. Overall, health disparities are still very wide.

The challenge now, after almost two decades of decentralization, is to develop health systems that are able to address current diverse needs of the population. This effort must be carried out jointly by the central and local governments, non-governmental organizations, and the community. The 2020-2024 RPJMN is an opportunity for the government to strengthen the role of each of these stakeholders. Integrated health information systems can facilitate the monitoring and evaluation of health status and systems. Strengthening health development governance, especially at the regional level, is absolutely necessary. In the spirit of decentralization, DHOs must have adequate capacity to manage health development at the regional level. In addition, health financing reforms must be carried,

Focusing not only on the adequacy of resources but also the efficiency and effectiveness of resource utilization to achieve the health development goals.

REFERENCES

1. BPS, Bappenas, UNFPA. Proyeksi Penduduk Indonesia Hasil SUPAS 2015. Jakarta; 2018.
2. BKKBN, BPS, Kementerian Kesehatan RI, USAID. Survei Demografi dan Kesehatan Indonesia 2017. Jakarta: BKKBN, BPS, Kementerian Kesehatan RI dan USAID; 2018.
3. GBD 2016 Mortality Collaborators. Global, regional, and national under-5 mortality, adult mortality, age-specific mortality, and life expectancy, 1970-2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet. 2017;390(10100):1084–150.
4. Institute for Health Metrics and Evaluation (IHME). Global Burden of Diseases Compare: Indonesia. 2018.
5. Mboi N, Murty Surbakti I, Trihandini I, Elyazar I, Houston Smith K, Bahjuri Ali P, et al. On the road to universal health care in Indonesia, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet. 2018;6736(18):1–11.
6. Badan Penelitian dan Pengembangan Kesehatan Kemenkes RI. Riset Kesehatan Dasar 2018. Jakarta: Kementerian Kesehatan RI; 2018.
7. Pan American Health Organization, WHO. The Essential Public Health Functions as a strategy for improving overall health systems performance: Trends and challenges since the Public Health in the Americas Initiative, 2000-2007. Washington, DC; 2008.
8. WHO. Essential Public Health Functions: A Three-country study in the Western Pacific Region. Manila, Philippines; 2003.
9. WHO Regional Office for the Western Pacific. Essential public health functions: a three-country study in the Western Pacific Region. Manila, Philippine; 2003.
10. WHO Regional Offices for South-East Asia and the Western Pacific. Public health functions. In: Health in Asia and the Pacific. Manila, Philippines; 2008.
11. Duthey B. Background Paper 6.11 Alzheimer Disease and other Dementias, Update on 2004. World Heal Organ. 2013;(February):1–77.
12. IHME. Global Health Data Exchange (GHDx). Global Burden of Disease Study. 2016.
13. Alzheimer's Disease International. Dementia in the Asia Pacific Region. 2014.
14. Setyonaluri D. Background Study RPJMN Bidang Kependudukan: Struktur Umur Penduduk dan Bonus Demografi. 2018.
15. Setyonaluri D. Demographic and Epidemiology Transition. Jakarta: Bappenas; 2018.
16. Lee R, Mason A. What Is the Demographic Dividend? Finance Dev. 2006;43(3).
17. Prskawetz A, Sambt J. Economic support ratios and the demographic dividend in Europe. Demogr Res. 2014;30(1):963–1010.
18. Adioetomo SM. Bonus demografi dan jendela peluang meletakkan dasar pembangunan manusia. In: Memetik Bonus Demografi: Membangun Manusia Sejak Dini. Jakarta: Rajawali Grafindo; 2017. p. 23.
19. ASEAN secretariat. ASEAN Statistical Report on Millennium Development Goals 2017. Jakarta: ASEAN; 2017.
20. Badan Pusat Statistik Indonesia, BKKBN, Kementerian Kesehatan RI, ICF International. Survei Demografi dan Kesehatan Indonesia Tahun 2012. Jakarta; 2013.
21. Achadi E. Strategi Kunci dalam upaya penurunan AKI, AKN, AKB dan AKBa. Badan Perencanaan dan Pembangunan Nasional; 2018.
22. UNICEF. The State of the World's Children 2009 Maternal and Newborn Health. New York; 2008. 168 p.
23. McCarthy J, Maine D. A framework for analyzing the determinants of maternal mortality. Stud Fam Plann. 1992;23(1):23–33.

24. Tsui AO, Mcdonald-Mosley R, Burke AE. Family planning and the burden of unintended pregnancies. Epidemiol Rev. 2010;32(1):152–74.
25. Liu L, Oza S, Hogan D, Perin J, Rudan I, Lawn JE. Global, regional, and national causes of child mortality in 2000–13, with projections to inform post-2015 priorities: an updated systematic analysis. Lancet. 2015;385(9966):430–40.
26. WHO. Every Newborn: an action plan to end preventable deaths. Geneva: WHO; 2014.
27. Demaio A. Addressing the Double Burden of Malnutrition as both Crisis and Opportunity. Sight Life. 2018;32(2):14.
28. Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI. Riset Kesehatan Dasar 2013. Badan Penelitian dan Pengembangan Kesehatan, Kementerian Kesehatan. Jakarta; 2013.
29. BPS. Sensus Penduduk 2010. Jakarta: Badan Pusat Statistik; 2010.
30. Balitbang Kemenkes RI. Riset Kesehatan Dasar 2013. Jakarta: Kementerian Kesehatan Republik Indonesia; 2013.
31. Studi Diet Total. Survei Konsumsi Makanan Individu. Jakarta: Kementerian Kesehatan RI; 2014.
32. Atmarita, Jahari A, Sudikno, Soekatri M. Intake of Sugar, Salt and Fat in Indonesia: The Analysis of Individual Food Consumption Survey 2014. J Indones Nutr Assoc. 2016;39(1):1– 14.
33. Indonesia Investments. Women in Indonesia: Informal Employment, Wage Gap & Violence. March 2018. 2018.
34. UNAIDS. UNAIDS data 2018. Geneva; 2018.
35. WHO. Review of the National Health Sector Response to HIV in the Republic of Indonesia. 2017;
36. Fauk NK, Sukmawati AS, Berek PAL, Ernawati, Kristanti E, Wardojo SSI, et al. Barriers to HIV testing among male clients of female sex workers in Indonesia. Int J Equity Health. 2018;17(1):68.
37. WHO. Global TB Report 2018. Geneva: World Health Organization; 2018.
38. Kementerian Kesehatan RI. Indikator & Target P2TB Tahun 2018 – 2020. NIHRD – Director General for Disease Control; 2018.
39. Pusat Data dan Informasi Kementerian Kesehatan RI. Profil Kesehatan Indonesia 2017. Jakarta: Kementerian Kesehatan RI; 2018.
40. Ruru Y, Matasik M, Oktavian A, Senyorita R, Mirino Y, Tarigan LH, et al. Factors associated with non-adherence during tuberculosis treatment among patients treated with DOTS strategy in Jayapura, Papua Province, Indonesia. Glob Health Action. 2018;11(1):1510592.
41. Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI. Inventory Study TB Indonesia 2017. Jakarta; 2018.
42. Magnani RJ, Harimurti P, Pambudi ES, Samudra RR, Munira SL. Assessing HIV, TB, Malaria and Childhood Immunization Supply-Side Readiness in Indonesia. 2018. p. 1–70.
43. WHO-SEARO. Indonesia South-East Asia Region. New Delhi; 2018.
44. Morens DM, Fauci AS. Emerging Infectious Diseases: Threats to Human Health and Global Stability. PLoS Pathog. 2013;9(7) :e1003--467.
45. Global Health Security Agenda. Global Health Security Agenda: Action Package. 2016.
46. WHO. Joint External Evaluation of IHR Core Capacities of Republic of Indonesia Mission Report: 20-24 November 2017. Geneva: World Health Organization; 2018.
47. WHO. Noncommunicable diseases country profiles 2018. World Health Organization; 2018.
48. Institute for Health Metrics and Evaluation (IHME). What causes the most deaths? 2018.
49. Bloom D.Sc, MM, KP, VC, AB, et al. Economics of Non-Communicable Diseases in Indonesia. 2015.
50. Badan Penelitian dan Pengembangan Kesehatan Kemenkes RI. Riset Tenaga Kesehatan Tahun 2017. Jakarta: Kementerian Kesehatan RI; 2018.

51. LAM-PT Kesehatan. Akreditasi Program Studi Kesehatan oleh LAM-PTKes Maret 2015 - Mei 2018. 2018.
52. Arianti N. Tata Kelola Obat di Era Sistem Jaminan Kesehatan Nasional (JKN). Tata Kelola Obat di Era Sistem Jaminan Kesehatan Nasional (JKN). J Integritas. 2017;3(2).
53. Tim Nasional Percepatan Penanggulangan Kemiskinan (TNP2K). Jaminan Kesehatan Nasional: Temuan Tingkat Nasional. Jakarta: Tim Nasional Percepatan Penanggulangan Kemiskinan (TNP2K); 2018.
54. Yuniar Y. Distribusi, Ketersediaan serta Pelayanan Obat dan Vaksin dalam Menghadapi Jaminan Kesehatan Semesta 2019. Jakarta; 2017.
55. Hendarwan H, Yuniar Y, Despitasari M. Harapan, Kenyataan, dan Solusi JKN dalam Rangkaian Diskusi Panel Indonesia Healthcare Forum. Lembaga Penerbit Badan Penelitian dan Pengembangan Kesehatan; 2018.
56. World Bank. Revealing the Missing Link: Private Sector Supply-Side Readiness for Primary Maternal Health Services in Indonesia. Jakarta: World Bank; 2017.
57. Tim Nasional Percepatan Penanggulangan Kemiskinan (TNP2K). The Financial Sustainability of Indonesia's National Health Insurance Scheme: 2017 – 2021. 2018.
58. BPJS Kesehatan. JKN Utilization Review. Jakarta: BPJS Kesehatan; 2018.
59. PPJK Kemenkes RI, Pusat Kajian Ekonomi Kesehatan FKM UI. Indonesia National Health Account. PPJK Kemen. Jakarta; 2019.
60. TNP2K. Jaminan Kesehatan Nasional (JKN): Delivering the biggest social health insurance program in the world. Jakarta: Tim Nasional Percepatan Penanggulangan Kemiskinan (TNP2K); 2016.
61. Tandon A, Pambudi E, Harimurti P, Masaki E, et al. Indonesia Health Financing System Assessment Spend More, Right and Better. Jakarta: World Bank; 2016.
62. Hidayat B, Nemec J, Rabovskaja V, Rozanna CS, Spatz J. Out-of-Pocket Payments in the National Health Insurance of Indonesia: A First Year Review Policy Brief. 2015.
63. Adioetomo SM. Perempuan dan Bonus Demografi [Internet]. Lembaga Demografi FEB UI. 2017 [cited 2019 Mar 11]. Available from: http://ldfebui.org/perempuan-dan-bonus- demografi/
64. Jones G, Adioetomo SM. HSR 2015-2019: Population, Family Planning and Reproductive Health. Jakarta: Bappenas; 2014.
65. WHO. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva: World Health Organization; 2016.
66. WHO. WHO-Coordinated Sentinel Hospital VPD Surveillance Networks. World Health Organization; 2015.
67. Degeling et al. Implementing a One Health approach to emerging infectious disease: reflections on the socio-political, ethical and legal dimensions. BMC Public Health. 2015; 13:1307.
68. Badan POM. Kinerja BPOM dalam angka Triwulan IV Tahun 2017 dan komunikasi dengan kedeputian IV Badan POM juli 2018. Jakarta: Badan Pengawasan Obat dan Makanan (BPOM);
69. WHO. Policy Brief: National health workforce accounts: The knowledge-base for health workforce development towards Universal Health Coverage. Geneva: World Health Organization; 2016.
70. Barber S, Ahsan A, Moertiningsih Adioetomo Sri, Setyonaluri D. Tobacco Economics in Indonesia. 2008;

APPENDIX

COMPREHENSIVE APPROACH MATRIX TO SOLVE HEALTH ISSUES

No.	Strategic Issues	UKM	UKP	SDK [health resources] (Sensitive Intervention)	PSK (Health System Strengthening)
A. DEMOGRAPHICAL TRANSITION					
1.	The general structure of elders aged 65+: 18.1 million (2020), 21.8 million (2024)	Screening of chronic diseases on elderly	• 1st, 2nd, 3rd geriatric services and referral • Home care, especially for Alzheimer treatment	• Strengthening GERMAS in various groups • Old-age insurance	• Adequate number of medical specialists • The production of home care nurses • Home care facilities • Strengthening Puskesmas to conduct UKM (human resources and health operational fund for UKM)
2.	Demographic dividend 2025-2035	Early human capital investment in family planning (FP), MCH, (ANC, delivery in health facilities [Linfaskes], neonatal visits), preventing wasting and stunting, immunization	D/ and Th/ of diseases that cause human capital disabilities (TB, malaria, HIV, etc.)	• Education, employment, skill training (BLK) • CSR in the form of breastfeeding facilities for breastfeeding workers	• Strengthening FP/MCH services • Strengthening the work health services
B. EPIDEMIOLOGICAL TRANSITION					
1.	NCD increases: DM, hypertension, heart disease, chronic kidneys, Ca, Alzheimer, mental disorder, accidents (especially traffic accidents)	Promotion of healthy life, screening (SPM, PISPK))	Individual promoters, Prolanis by Puskesmas, D/ Th: primary, secondary, and tertiary referral.	• GERMAS (cross-sector) • Increasing tobacco tax • Regulations on healthy food, restrictions on high-sodium, high-sugar, and high-fat food.	• Production, promotion, and deployment of medical specialists • Strengthening FKTP to conduct UKM (human resources and health operational fund for UKM)

No.	Strategic Issues	UKM	UKP	SDK [health resources] (Sensitive Intervention)	PSK (Health System Strengthening)
				• Traffic police, DLLARJ (Department of Transport and Road Traffic), NGOs to encourage safety riding	• Improving financial sustainability of JKN/ BPJS • Availability of medicines for back-referral services in FKTP
2.	• Persistent CD: TB, malaria, AIDS, diarrhea, ARI/pneumonia, dengue hemorrhagic fever (DHF), rabies (in endemic area) • Improved AMR • Decreasing complete basic immunization coverage • Vaccine preventable diseases outbreak (diphtheria, measles)	• Health promotion for CD • Improving the community's knowledge on and motivation to take immunization • Intensification of immunization to solve the decreasing complete basic immunization coverage • Improve CDR of TB • Vector control (malaria, DHF)	• Providing comprehensive services in health facilities • Strengthening JKN/KIS • Improving medication compliance (PMO)	• Environmental Impact Assessment (AMDAL) on the potential outbreak of malaria in development activities (mining, plantation, etc.) • Cross-sector cooperation to handle rabies in endemic areas • Rational/controlled use of antibiotic in livestocks	• The supply of health-lab officers in Puskesmas to CD examination • The improvement of Rational Use of Medicine in FKTP and Advanced Referral Health Facilities (FKRTL)
3	• NED (New Infectious Diseases) • Weak PH function	• Strengthening surveillance • Strengthening Provincial Health Office as the executive officer of SPM at provincial level (epidemics and disaster) • Home sanitation and hygiene	• Referral health facilities for new infectious cases	• Cross-sector involvement and coordination (farming/ livestock, immigration, Ministry of Marine Affairs and Fisheries, etc.) • Preventing and addressing health emergency	• Surveillance of Human Resources • Strengthening surveillance in Puskesmas, Public Hospitals, District Health Offices, Provincial Health Offices, Central Health Offices • Biomedical lab supports for D/ confirmation
C. REPRODUCTIVE, MATERNAL, NEWBORN, CHILD, AND ADOLESCENT HEALTH (RMNCAH)					
I.	**Reproductive Health**				
	Anemia prevalence of people from 15-24 years old group increases from 7% (2007) to 18% (2013)	• Screening of anemia in adolescent		• Strengthening school health program in collaboration with Education Office	• The provision of health-lab officers in Puskesmas to conduct anemia examination

No.	Strategic Issues	UKM	UKP	SDK [health resources] (Sensitive Intervention)	PSK (Health System Strengthening)
		• Campaign of balanced diet and provision of Fe tablet			• The provision of Fe tablets in Puskesmas
	The number of early pregnancy increases (varies in different areas)	Reproductive health campaign, FP (family planning) campaign		• The increased provision of medical equipment and PLKB workers by BKKBN	• The provision of midwives
	Child marriages are common, especially in rural areas.	Reproductive health campaign		• The improved commitment of KUA (Office of Religious Affairs), the Ministry of Religious Affairs, and other religious institutions in implementing marriage laws • Strengthening the commitment of Education Office to compulsory education • Ethnographic assessment to improve the cooperation between health workforce and custom and social figures in implementing the regulations on marriage age	
	• KB unmet need amounted to 11% • KB dropout rate is 34%	IEC on FP, family empowerment (wife and husband) on the use of contraceptive devices	Strengthening KB service in the FKTP of BPJS	• Strengthening the provision of medical equipment, contraceptive devices, FP community social workers, and health service facilities in collaboration with BKKBN, especially in areas with low contraceptive prevalence rate	

No.	Strategic Issues	UKM	UKP	SDK [health resources] (Sensitive Intervention)	PSK (Health System Strengthening)
				• Improving the cooperation with religious leaders and community figures in KB campaign	
	Under-reported KB coverage	Strengthening KB registration and report system in both public and private health facilities	Strengthening the compliance of private health facilities to report their KB services		Strengthening the monitoring and evaluation, as well as the coordination between health office and BKKBN
2.	**Maternal Health** Indonesia is the second highest MMR country in ASEAN	• Intensification of IEC on KB • Strengthening K1 (first prenatal visit) and K4 (minimum four prenatal visits) as well as sweeping of K4 pregnant women • Strengthening the implementation of P4K (Delivery Planning and Complication Prevention Program) and the community mobilization to improve the community-based referral system	• Delivery in health facilities • FKTP capacity to handle pregnancy complications • Referral system of obstetric emergency cases	• IEC on KB by other sectors • Developing community-based referral • The utilization of village potentials (Village Fund) for emergency obstetric referral	• Strengthening the tiered referral system • Strengthening provision of pharmaceutical and medical devices in primary and advanced health facilities • Solving the issue of maldistribution of midwives
	Anemia in pregnant women increases from 37% (2013) to 49% (2018)	• Promotion of and education on balanced diet • Improving the quality of ANC performed by midwives	Tiered treatment of pregnant women with anemia Strengthening the program of JKN/KIS	• The provision of nutritious food by Agriculture Office • Cadre empowerment in collaboration with PKK (Family Welfare Guidance) team	• Addressing Fe tablet shortage in Puskesmas • Strengthening the capacity to detect anemia

No.	Strategic Issues	UKM	UKP	SDK [health resources] (Sensitive Intervention)	PSK (Health System Strengthening)
3.	**Newborn Health** • Neonatal mortality rate decreases from 19 (2012) to 15 (2017) per 1000 live births • Infant mortality rate decreases from 32 (2012) to 24 (2014) per 1000 live births	• Promotion of and education on linfaskes • Promotion of balanced diet consumption by mothers, education on exclusive breastfeeding and Early Initiation of Breast Feeding • Improving the coverage of neonatal visit (KN) and post-partum visit (KF)	• Improving the coverage of delivery in health facilities	• Developing community-based referral • Developing transportation facilities and access to referral	• Improving the provision of pharmaceutical and medical devices, human resources capacity, and financing • Improving the capacity of FKTP in handling ARI/ pneumonia and diarrhea
4.	**Child Health** The mortality rate of under five-year children is high i.e. 32/1000 live births (2017), although it declines from that of 2012, i.e. 40/1000 live births	• Education on under-five year children health • Cadre empowerment in monitoring community health	D/Th: primary, secondary, and tertiary referral of JKN/ BPJS	• Developing transportation facilities and access to referral	• Improving MTBS (integrated management of childhood illness) in primary service health facilities • Strengthening human resources capacity and the provision of pharmaceutical and medical devices in health facilities
D. COMMUNITY NUTRITION					
I.	Community awareness on balanced diet	• Developing nutrition advocacy; communication, information, education campaign on nutrition through clear and innovative messages Incorporating nutrition service in SPM (revised SPM)		• The revision of Presidential Regulation No. 42/2013 to provide larger authority for Gugus Tugas Gizi Nasional (National Nutrition Task Force) • Conducting orientation on nutrition indicator and target for policy makers in all sectors	• Revised SPM to include nutrition service in basic services • Providing nutrition workforce in Puskesmas • Improving nutritionist and health workforce capacity and skill in PKM to address nutrition issues

No.	Strategic Issues	UKM	UKP	SDK [health resources] (Sensitive Intervention)	PSK (Health System Strengthening)
				• Empowering the function of Posyandu and UKBM (community-based health services)	
2.	**Stunting.** Stunting rate is high (31% in 2018), if compared to UNICEF threshold	• Education on balanced diet • ANC in Posyandu to address the issue of anemia in pregnant women • Regular weighing in Posyandu and health facilities • Complementary feeding (PMT) involves the community, women, schools, and religious organizations to increase the nutrition level.	• Education on balanced diet • ANC in Posyandu to address the issue of anemia in pregnant women • Regular weighing in Posyandu and health facilities • Complementary feeding (PMT) involves the community, women, schools, and religious organizations to increase the nutrition level.	• Cooperation with the Agriculture Office on food supply, seeds for village farming, and empowerment by farming instructors • Strengthening the regulations on nutrition improvement acceleration in various sectors, including child protection, early marriage prevention, integrated key messages on nutrition in kindergarten and elementary school curriculum, as well as in teaching materials in Early Childhood Education (PAUD) and Play Groups (KB	• Strengthening programs and regulations on health and nutrition improvement, especially for women and children • Revitalization of nutrition information system to integrate specific and sensitive nutrition indicator standard set • Stipulating policies and setting the capacity of available resources
3	**Wasting** • Amounted to 10.2% (Riskesdas 2018) • Wasting child has 11.6 times higher risk of mortality	• Education on balanced diet • Regular weighing in Posyandu and health facilities, complementary feeding	• Treatment of wasting children in primary and advanced health facilities as per the procedure		
4.	LBW • LBW rate is 6% • Anemia rate in pregnant women is 48%	• IEC on family nutrition • Intensifying the role of Posyandu to provide ANC and to solve anemia and malnutrition issues in pregnant women	• Treatment of LBW infants in primary and advanced health facilities • Promotion of postpartum exclusive breastfeeding		

No.	Strategic Issues	UKM	UKP	SDK [health resources] (Sensitive Intervention)	PSK (Health System Strengthening)
5..	Exclusive breastfeeding: 52%	• IEC on exclusive breastfeeding	• Education on Early Initiation of Breast Feeding and postpartum exclusive breastfeeding	• Cooperation with religious leaders and custom figures to campaign exclusive breastfeeding Implementation enforcement of regulations on the promotion and provision of infant formula	• Improving the commitment of and law enforcement on health workforces in Puskesmas and advanced health facilities to provide Early Initiation of Breast Feeding and exclusive breastfeeding
6.	Obesity: Increasing from 15.4% (2013) to 21.8% (2018)	• Education on balanced diet and fast food intake reduction	• Treatment of obese patient in primary and advanced health facilities as per the procedure	• Intensification of GERMAS • Ministry of Finance: sugar tax Strengthening regulations to control food production, baby food, and high-sugar, high-fat, and high-sodium drinks • Encouraging food fortification • Strengthening nutritious product provision and supply and ensuring the efficiency of meeting the nutrition need for target groups	• Revised SPM: to include nutrition service in compulsory basic services • Providing nutrition workforce in Puskesmas • Adequate budget for UKM (health operational fund in Non-Physical Special Allocation Fund)

Kementerian PPN/
Bappenas

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