



**Transform  
Health**  
INDONESIA

# Landscape Analysis of Digital Health for Universal Health Coverage in Indonesia 2022



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## ACRONYMS AND GLOSSARY TERMS

### ACRONYMS

<b>APJII</b>	Association of Indonesian Internet Service Providers
<b>APBN</b>	Anggaran Penerimaan dan Belanja Negara, or National State Budget
<b>BAKTI</b>	Telecommunication and Information Accessibility Agency
<b>BAPPENAS</b>	National Development Planning Agency
<b>BKKBN</b>	National Family Planning Coordination Agency
<b>BPJS-Kesehatan</b>	Social Security Agency for Health
<b>BSSN</b>	National Cyber and Crypto Agency
<b>DPR</b>	People's Representative Council
<b>DPRD</b>	People's Representative Council at provincial and/ or district levels
<b>DJSN</b>	National Social Security Council
<b>IDI</b>	Indonesian Medical Association
<b>JKN</b>	National Health Insurance
<b>KKI</b>	Indonesia Medical Council
<b>MoCI</b>	Ministry of Communication and Information
<b>MoH</b>	Ministry of Health
<b>MoE</b>	Ministry of Education
<b>MoHA</b>	Ministry of Home Affairs
<b>MoV</b>	Ministry of Village
<b>MoF</b>	Ministry of Finance
<b>MoSA</b>	Ministry of Social Affairs
<b>PLN</b>	State Electricity Company
<b>SJSN</b>	National Social Insurance System
<b>RPJMN</b>	National Medium-Term Development Planning
<b>RPJPN</b>	National Long-Term Development Planning

## GLOSSARY OF TERMS

<b>Digital health</b>	Use of information and communication technologies (ICTs) in support of health and related fields, including health services, health surveillance, health and education literature, knowledge and health research.
<b>eHealth</b>	Electronic Health: defined by the World Health Organization (WHO) as the use of information and communications technologies in support of health and health-related fields, including health care services, health surveillance, health literature, health education, knowledge, and research. eHealth is a general term which includes four distinct but related components.
<b>Health Information Systems (HIS)</b>	Systems to gather, aggregate, analyze, and synthesize data from multiple sources to report on health; can include information related to patient records, disease surveillance, human resources, management of commodities, financial management, service delivery, and other data needed for reporting and planning purposes.
<b>Health system</b>	<p>A health system's many parts operate at many levels. Smaller systems may be self-contained and have limited scale and scope, such as those involved in running a clinic or managing a health information system. Larger systems might involve the coming together of various smaller systems, e.g., clinics, hospitals, and health-promotion programs, to provide coherence at community or national level.</p> <p>World Bank (2007). Healthy Development: World Bank Strategy for Health, Nutrition, and Population Results</p>
<b>Interoperability</b>	Interoperability is the ability for diverse health information systems and technologies to communicate, exchange data, and use/interpret exchanged data. For two systems to be interoperable, they must be able to exchange data and subsequently present that data such that it can be understood by a user.
<b>People-centred care</b>	<p>An approach to care that consciously adopts perspectives of individuals, carers, families, and communities as participants in, and beneficiaries of, trusted health systems that are organized around the comprehensive needs of people rather than individual diseases, and respects social preferences. People-centered care also requires that patients have the education and support they need to make decisions and participate in their own care, and that carers are able to attain maximal function within a supportive working environment. People-centered care is broader than patient and person-centered care, encompassing not only clinical encounters, but also including attention to the health of people in their communities and their crucial role in shaping health policy and health services.</p> <p>Framework on integrated, people-centered health services. WHO A69/39 (2016) <a href="http://apps.who.int/gb/ebwha/pdf_files/WHA69/A69_39-en.pdf?ua=1">http://apps.who.int/gb/ebwha/pdf_files/WHA69/A69_39-en.pdf?ua=1</a></p>
<b>mHealth</b>	Mobile Health: provision of health services and information via mobile and wireless technologies.
<b>Telemedicine</b>	Provision of health care services at a distance; can be used for interprofessional communication, patient communication, and remote consultation.

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# 1. INTRODUCTION

## 1.1 Background

IAKMI or the Indonesian Public Health Association established in 1971, is an independent public health professional organization dedicated to achieving Health for All. IAKMI is headquartered in Jakarta and has chapters in 34 provinces. Acting as Transform Health's National Coordinating Partner in Indonesia, IAKMI is establishing and organizing the coalition aimed at working together towards a joint objective of accelerating the adoption of digital technology to accelerate the achievement of Universal Health Coverage (UHC) through building consensus on the needed tools, approaches, processes and resources, as well as joint advocacy to secure policy change and investment. IAKMI is developing a campaign platform in Indonesia to engage multiple stakeholders on the issues and to empower youth, women and marginalized communities and their representatives and to provide them with the means through which they can engage their governments and donors and call on them to prioritize the equitable adoption of digital technology to enable them to access UHC.

Transform Health commissioned IAKMI to conduct an initial landscape analysis and to map stakeholders, to describe existing digital health in Indonesia, and to explore opportunities in integration of digital health to strengthen the health system toward the achievement of UHC by 2030 in Indonesia.

## 1.2 Method

The assessment analyzed the current health situation based on reference data such as monitoring progress on UHC, the health-related SDGs and on information provided by key informants to understand issues on equitable access to UHC and digital health in Indonesia. The assessment conducted desk review and key informant interviews.

Multiple sources of information (e.g., technical reports, news articles, etc.) on the overall health system, the information and communication technology (ICT) policy and regulatory framework, and digital health in Indonesia were gathered and reviewed for this landscape analysis. Individual key informant interviews were conducted to comprehend the level of understanding of the digital health ecosystem in Indonesia and the potential roles stakeholders could play in digital health deployments.

The landscape analysis was guided by reviewing essential elements required to constitute a national “eHealth framework”.<sup>1</sup>

**Table 1. eHealth Framework**

<b>Leadership &amp; Government</b>			
<b>Strategy &amp; Investment</b>	<b>Services &amp; Application</b>	<b>Legislation, Policy &amp; Compliance</b>	<b>Workforce</b>
	<b>Standards &amp; Interoperability</b>		
	<b>Infrastructure</b>		

(Source: WHO-ITU)

<sup>1</sup> World Health Organization and International Telecommunication Union (2020). Digital Health Platform Handbook: Building A Digital Information Infrastructure (Infostructure) for Health.

## 2. OVERVIEW OF THE INDONESIAN HEALTH SYSTEM

Indonesia is an island nation, bridging the Asian and Australian continents in South-East Asia. With a population totalling around 272 million individuals, it is the fourth largest populated country in the world. With a continuously growing population the UN estimated that the population of Indonesia can exceed 285 million by 2035 and another 290 million by 2045. The population growth rate of Indonesia between the year 2000 and 2010 stood at an average of 1.49 percent. The growth does not spread evenly, the highest was in the eastern of Indonesia, Papua (5.46 percent) and lowest was in Central Java (0.37 percent)<sup>2</sup>. The rapid growth and the fact that Indonesia is the largest archipelago in the world makes it challenging to support and escalate the health care services, especially in remote areas and small islands of Indonesia.

Indonesia's Human Development Index (HDI) for 2019 is 0.718 which puts it in the "high" category and ranked 107 out of 189 countries and territories. Between 1990 and 2019, Indonesia's HDI value increased from 0.523 to 0.718, an increase of 37.3 percent. It reflects the progress Indonesia has made in life expectancy at birth, expected years of schooling, and GNI per capita during the period. However, Indonesia's HDI falls to 0.590 - a loss of 17.8 percent, when inequality is taken into account.



Figure 1. Map of Indonesia

<sup>2</sup> <https://www.indonesia-investments.com/culture/population/item6>



Indonesia's economic growth averaging 5.6 percent a year between 1970 and 2019 led to a significant decrease in the poverty rate and enabled the country to gain middle income status. However, the economic growth is unfortunately not reflected in the national health budget allocation, which is relatively low (2.9 percent of Indonesia's total gross domestic product (GDP) in 2018, or 5.0 percent of the National State Budget (APBN) in 2020<sup>3</sup> - leading to insufficient facilities and workforce needed for public services, and encouraging the growth of private



**Figure 2. Disparities of Human Development Index in Provinces**

health facilities. Decentralization has also affected the capacity of the Ministry of Health to maintain integration and alignment across the different levels of the health system<sup>4</sup>.

The COVID-19 pandemic brought this economic growth to a halt. By February 2021, Indonesia's gross domestic product (GDP) fell slightly more than expected in the fourth quarter, tipping Southeast Asia's largest economy into its first full-year contraction in more than 20 years in 2020. GDP retracted by 2.19 percent in October-December compared with the same period a year earlier, as noted by the statistics bureau. That year, Indonesia struggled to overcome this recession as the country was grappling to get its COVID-19 outbreak under control. At that time, Indonesia had the highest caseload and death toll from respiratory disease in Southeast Asia. Yet, the Government's push to fully vaccinate the population resulted with improvements in a number of indicators including the processing manager index (PMI) as of January 2022 which is at the level of 53.7 and is in the expansion zone and higher than the Asian PMI which is at the level of 52.7. Investment is growing better. In 2022, investment will reach Rp 901 trillion and grow 9 percent year on year. Foreign investment grew 10 percent year on year to reach Rp 454 trillion.

<sup>3</sup> Ministry of Finance, <https://www.kemenkeu.go.id/apbn2020>

<sup>4</sup> World Health Organization, Regional Office for South-East Asia. The Republic of Indonesia Health System Review. Health Systems in Transition. Vol-7, Number 1

## 2.1. A Decentralized Health System

The public system, organized inline with the decentralized public administration system with central (national), and sub-national levels: provincial and district government responsibilities.

At national level (central government), the responsibilities consist of strategic regulatory framework and direction, management of some tertiary and specialist hospitals, standardization, financing and human resources. The head of the Ministry, the minister is accountable to the President with the national state budget. While the provincial authorities (Dinkes) oversee the provincial hospitals, technical and monitoring support to district level healthcare and manage inter-district work within the province. The Provincial Authority answers to the governor and the provincial government with their own provincial public budget. The district/city level health (Dinkes) authority is responsible for the management of district/city own public hospitals and Public clinics (Puskesmas<sup>5</sup>- primary health center) and concurrent sub-district facilities. The District/City health authority answers to the head of the district/mayor for the use of the public district/city budget.

Understanding the health governance system is important when strategizing any advocacy for

public system reform. There is a great level of authority from sub-national governments therefore, any strategy affecting and requiring reform from points of care demands the work to take place from district/city and provincial areas.

Puskesmas is important in the context of the UHC roll-out, acting as the first point of call for public health efforts through their focus on prevention and health promotion at the primary level, particularly in administering childhood vaccinations. Most care for low-income patients occurs at this level, as those under the UHC scheme are unable to access health care elsewhere without a referral letter or unless it is an emergency.

## 2.2. Healthcare Providers: Public and Private Care

The healthcare system in Indonesia has both public and private components. The healthcare is partially financed and delivered through public health care facilities, consisting of health centers and public hospitals. Health centers provide various public health and primary health care to a defined community, usually a sub-district level. The system is based on a primary health care concept with the primary community based clinic (Puskesmas) is the frontline health care facility, supported by hospitals and other sub-district/city

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<sup>5</sup> The Minister of Health Regulation No.43 Year 2019 on Puskesmas

community-based health care facilities.

By December 2020, there are 10,205 Puskesmas, consisting of 4,119 inpatient Puskesmas and 6,086 non-inpatient Puskesmas and more than 21,000 sub-primary health centers throughout Indonesia.

Public hospitals, providing secondary and tertiary care, consist of four types: (1) Type D Hospitals (less than 50 beds) with four specialists: an internist, an ob-gyn, a surgeon, and a pediatrician) provide basic secondary care at district level; (2) Type C Hospitals (50-100 beds with more than four types of specialists) serve secondary and tertiary care for a larger district; (3) Type B Hospital (between 100-400 beds with variety of specialists) providing referral care of more advances at provincial level; and (4) Type A Hospital (up to 1,500 beds) designed to provide top (national) referral care. The number of hospitals in Indonesia until 2019 consisted of 2,344 General Hospitals and 533 Special Hospitals.

There is a range of private health providers from hospitals to clinics managed by for profit and non-profit entities (faith-based organizations, charities) and individual doctors and midwives servicing in their private clinics and other facilities (usually a hospital, can be public or private). There are a range of private providers, including networks of hospitals and

clinics managed by not-for-profit and charitable organizations, for-profit providers, and individual doctors and midwives who engage in dual practices (i.e., have a private clinic as well as a public facility role).

Indonesia's health care infrastructure is dominated by private players: data from 2017 shows that of the 2,776 hospitals in Indonesia, 1,767 were private. Currently, three thousands hospitals. Private hospitals and clinics continue to attract higher-income patients and are likely to see benefits from the country's expanding middle class.

### 2.3. Healthcare Financing

The Government of Indonesia has implemented the National Health Insurance (JKN) since 2014 to achieve universal health care. To administer JKN, the National Social Security Council (DJSN) created the Social Security Agency for Health or BPJS-Kesehatan as a public corporation – in other words, profit oriented public company - with governance that is directly responsible to the President of Indonesia. JKN brings together all major existing health insurance schemes under a single agency - the Social Security Agency for Health (BPJS Health) - which was made mandatory for all Indonesians. Indonesia has made significant progress in JKN coverage, which has increased from 46.5% of the population in 2014 to 85% in March

2021, representing 223 million people<sup>6</sup>, making the Indonesia BPJS Kesehatan as a company – one of the largest single payer health systems in the world.

In 2019, the average monthly out-of-pocket spending on outpatient care at private hospitals in Indonesia was approximately 2.5 thousand Indonesian rupiah. The out-of-pocket spending may be due to the medical costs that are not covered by the Indonesian National Health Insurance, or JKN. Private insurance is within the purview of the Ministry of Finance with payment mechanisms managed through contract with healthcare providers.

BPJS-K has established coordination of benefits (President of Indonesia) with some of the leading private health insurance providers to provide a top-up option for middle- and high-income members of the JKN (Health-care and Social Security Agency, 2014). Meanwhile, health services in hospitals are more effective and efficient. Payment for health services uses the INA-CBGs (Indonesian Case Base Groups) Package which depends on the diagnosis and procedure for each disease. Doctors must be precise in determining the diagnosis and procedures that must be carried out for a disease. If the doctor conducts an examination to establish a diagnosis and performs procedures for the disease outside

the clinical pathway, then the costs cannot be claimed to BPJS, meaning the hospital that has to bear these costs<sup>7</sup>.

Primary health care is mostly handled by private clinics, private physicians, private dentists and private midwives and nurses. Latest figures show that 42% of private clinics, 60% of private hospitals and 14% of private general practitioners are contracted with BPJS-Health to provide services to JKN patients<sup>8</sup>.

#### 2.4. Health Organization and Management

Following the decentralization of the national health system since the reform from 1998-1999, the health care services and management system is organized into three administrative levels: central, provincial, and district/city. Under the decentralization system, provincial and district levels have broader authority in regional development. On the other hand, the Ministry of Health provides guidance, supervision and policy formulation. According to Health Law 36/ 2009, Government's responsibility in the health sector includes planning, actuating, controlling, supervising and monitoring health provision to

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<sup>7</sup> Minister of Health Regulation No.27/2014 on Technical Guidance to Indonesia Case Base Groups (INA-CBGs) system

<sup>8</sup> Agustina R, Dartanto T, Sitompul R, Susiloretni KA, Achadi EL, Taher A, et al. Review Universal health coverage in Indonesia: Concept, Progress, and Challenges. *Lancet*. 2019;393:75–102. [https://doi.org/10.1016/S0140-6736\(18\)31647-7](https://doi.org/10.1016/S0140-6736(18)31647-7)

<sup>6</sup> BPJS Kesehatan ([bpjs-kesehatan.go.id](http://bpjs-kesehatan.go.id))

achieve equitable and affordable health care services. Health service delivery was provided following the health care referral system from the primary level to secondary and tertiary level.

The key actors in the organization of the health services are the Ministry of Health and the Ministry of Home Affairs. The technical aspect of health is under the purview of the Ministry of Health, yet Health Offices at provincial and city/district levels are under the command of the local government or the Governor (provincial) or Mayor/Head of District (Walikota/Bupati) – therefore under the purview of the Ministry of Home Affairs.

While the Provincial Health Office develops technical policies on health services, human resources, carry on the intercity/district coordination and has a M&E function. There is also the role in registration, licensing, accreditation and certification at provincial level, as well as any assisting task in health. However, there is no clear statement establishing that the district/city health offices must report to or be accountable to the provincial office<sup>9</sup>.

Meanwhile the district/city health office is organize and implement various health services including epidemiology surveillance,

communicable and non-communicable disease treatment, disaster management, environmental health, nutrition, primary and secondary health preventive measures, registration, licensing, accreditation promotion and certification, social health insurance, human resources for health, health surveys and health information systems as well as monitoring and evaluation.

There is no hierarchical relation from central/national MoH all the way towards district/city authorities, as provincial and the latter are accountable to their respective local government leaders (government, district/city mayor). The district/city health authorities do not answer to the provincial office and so on towards the national level. The relation is more on a technical support scope of work.

Most public health services are delivered through primary health centers referred as Puskesmas at sub-district level. These Puskesmas only provide outpatient care, though half provide both outpatient and inpatient care. The design is for one Puskesmas to cover per 30,000 people, complemented with sublevel health posts and health centers servicing 3,000 population. While in villages, health services are provided through mobile units, maternity huts and village health posts.

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<sup>9</sup>Mahendradhata Y, Trisnantoro L, Listyadewi S, Soewondo P, Marthias T. et al. (2017). The Republic of Indonesia Health System Review, Health Systems in Transition, Vol-7 No.1. WHO Regional Office for South-East Asia. <https://apps.who.int/iris/handle/10665/254716>

## 3. UNIVERSAL HEALTH COVERAGE

### 3.1. Indonesia's Improving UHC Status

Achieving UHC remains a challenge for Indonesia. According to BAPPENAS, the challenges include: (i) demographic transition (the number of productive age population that increasing adolescent health needs, and going to aging population - needs for elderly care; (ii) geographical condition – in term of supply side equity: to provide health facilities, placement of health providers, and to solve transportation barriers; (iii) high burden of disease and not optimal health service capacity; (iv) health workers is still under the target and distributed not even; (v) health facility gap; (vi) disparities of health conditions and uneven capacities in provinces.

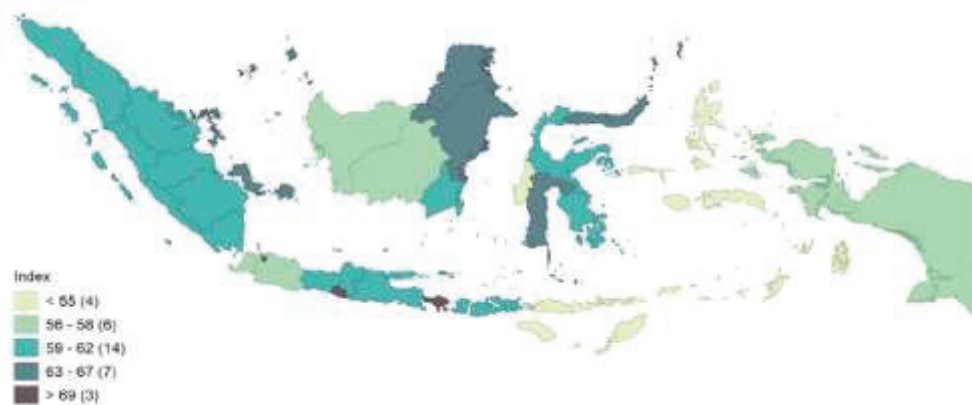
**Table 2. Indonesia's 2021 UHC Achievement**

<b>Indonesia's UHC Achievement: 2021 Update</b>				
	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>Health Service Coverage Index</b>	<b>61</b>	<b>65</b>	<b>62</b>	<b>62</b>
<b>Reproductive, maternal, newborn and child health</b>				
Satisfied need for Family Planning	79	79	77	77
Pregnancy care (%)	85	90	90	91
Child immunizaion (DTP3)	69	79	85	77
Care-seeking for suspected pneumonia	81	69	69	92
<b>Infectious diseases</b>				
Tuberculosis (effective) treatment coerage	36	46	57	56
HIV ART coverage	13	14	17	26
Access to basic sanitation (%)	68	68	73	73
<b>Non-communicable diseases</b>				
Prevalence of normal blood pressure	76	76	77	100
Prevalence of normal fasting blood sugar level	92	100	100	53
Tobacco non-use (%)	64	64	50	50
<b>Service capacity, access and health security</b>				
Density of hospital beds	33	67	67	67
Health worker density	55	55	40	40
Health security IHR compliance	99	63	99	69
<b>Financial Protection</b>				
Impoverishment	0.8%	0.2%	0.2%	0.3%
Catastrophic expenditure on health	3.6%	2.7%	2.7%	2.7%

Source: WHO SEA Region (2021)

Indonesia is already making progress towards UHC. Indonesia's service coverage index is 62 in 2020, showing a slight increase from 45 in 2010 and 49 in 2015 indicated by WHO. As pictured above from the Prakarsa Foundation policy brief from January 2020, the index is derived from the average value of the index of four dimensions, from which each is calculated the average index value of a set of indicators. "Service coverage index presents a numerical value based on a scale of

one to one hundred, with the higher the index the better the service coverage<sup>10</sup>. Darker shades reflect better UHC coverage thus Indonesia, showing most provinces' access to health care has improved.

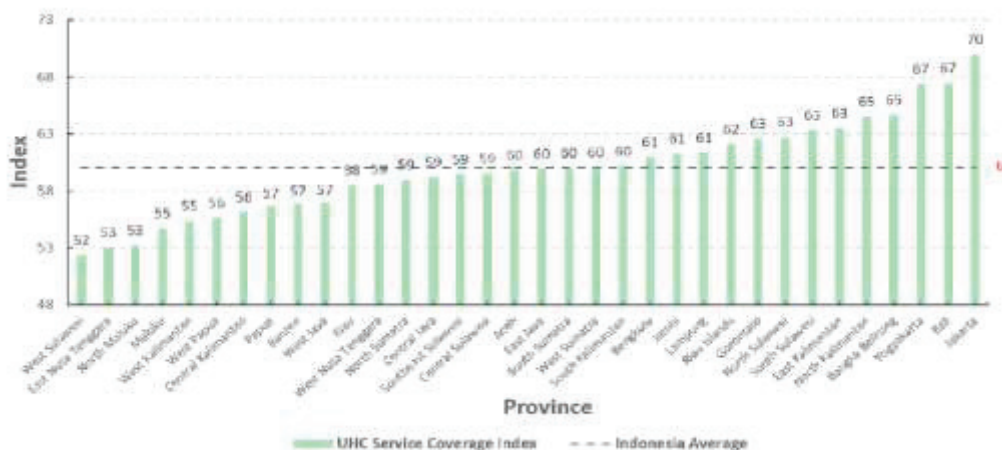


**Figure 3. Indonesia’s UHC service coverage index**

The increasing public’s use of health services, and health expenditure is shifting expenditure from private out-of-pocket expenditure to government health expenditure through the public health insurance scheme. This has meant greater demand for health services and more money in the health system.

**3.2. UHC in Indonesia: some remaining challenges**

Despite an average index of around 60, the progress is unevenly distributed across the country. Jakarta attains the highest index at 70 coverage while West Sulawesi has a level of 52 and most provinces getting coverage of more of the national average, as can be seen in Figure 5. The report goes on noting that the lowest index of 49 is attributable to noncommunicable diseases while infection diseases is at 59. Reproductive health, mother, newborn and child health reached an index of 65 indicating UHC service coverage is improving and even better is the dimension of service capacity and access at 67.



**Graphic 1. Universal Health Coverage (UHC) Service Coverage per province**

<sup>10</sup> [Policy-Brief-20-eng-UHC-Current-Achievements-and-Steps-for-Improvement.pdf \(theprakarsa.org\)](https://www.theprakarsa.org/policy-brief-20-eng-uhc-current-achievements-and-steps-for-improvement.pdf)



The pandemic Covid-19 showed that cross-institutional synergy is to cater the population much in need of care, from vertical public institutions to horizontal scope involving the private sector. The pandemic has uncovered long-ignored risks, among others weak health systems, gaps in social protection and structural inequalities. The crisis also underlined the importance of basic public health, strong health systems and emergency preparedness, as well as the resilience of a population when facing a new virus or pandemic. Thus, UHC strengthens a country's ability to be better prepared for future pandemics.

Another looming challenge is the unaffordability of the insurance premiums for the urban poor and most rural population due to their low incomes and would tend to pay out of pocket. The low catastrophic expenditure is not due to the achievement of financial protection in obtaining health services but because of limited access to health services.





## 4.

# DIGITAL HEALTH IN INDONESIA

The health challenges raised by the Covid-19 pandemic in Indonesia, encouraged the Indonesian government to be more committed to reform the health sector. The digital health revolution driven by eHealth development and innovation, led to the peer-to-peer approach: enabling the users to share and search for the latest information, long distance-consultation with medical practitioners, using e-prescribing, and patient's health profiles sharing among health institutions. Digital health and eHealth are used as umbrella terms encompassing concepts and intersections of health and ICTs activities, among others comprises mobile health (m-Health), health information technology, electronic health records, and telehealth. Health data in the Indonesia policy context of health information system refers to certain patient health metadata used for health development. Health data is collected by health services facilities and public regulators such as MoH to support health development. Optimal use of a digital based health system would bring equitable distribution of services, improving the quality of health services, especially in remote areas (DTPK), saving health costs, time efficiency, and accelerating access to referral centers.

The revenue from digital health is expected to grow from \$85 million in 2017 to \$973 million in 2022 at a compound annual growth rate of over 60%<sup>11</sup>. The Indonesian ICT infrastructure for ICT reached 204.7 million internet users in Indonesia in January 2022. Indonesia's internet penetration rate stood at 73.7 percent of the total population at the start of 2022. Indonesia's internet penetration rate stood at 73.7 percent of the total population at the start of 2022. The Kepios Global Data Insights indicates that internet users in increased by 2.1 million (+1.0 percent) between 2021 and 2022, with user figures of 73.05 million people did not use the internet at the start of 2022, meaning that 26.3 percent of the population remained offline at the beginning of the year<sup>12</sup>.

In 2022, Frost & Sullivan Digital Market Overview Indonesia projects that digital health revenues can reach US\$ 726 million with a growth rate of 60 percent per year<sup>13</sup>. The digital ecosystem in the health sector expansion became accelerated by the Covid-19 pandemic. The most common health service that is digital base practiced is telemedicine, as tele-pharmacy, tele-laboratory, virtual medical education, and virtual assistants.

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<sup>11</sup> [Digital Market Overview FCO Indonesia 25May18.pdf \(frost.com\)](#), accessed 20 March 2022)

<sup>12</sup> [DataReportal – Global Digital Insights](#)

<sup>13</sup> [Digital Market Overview FCO Indonesia 25May18.pdf \(frost.com\)](#)

The scope of the digital health transformation reaching tele-health levels. IDI has noted that there are three important digital health aspects that requires special attention:

1. Adequate internet infrastructure, not only optic internet structures, but also collaboration of parties in the ecosystem such as: health workers, digital health start-ups, health facilities and pharmacy;
2. Integrated telemedicine: which requires computerized health services and health workforce that are digital literate; and
3. Electronic medical record: where information systems are integrated, patient data confidentiality is upheld to the highest degree and data sovereignty is respected.

The government supports digital health adoption, issuing guidelines for remote medical services possible and laying down broadband infrastructures that reach all of its major islands. Meanwhile, local developers and medical service providers pushed e-health onwards to introduce their new technology to the Indonesian people. In response to the spread of Covid-19 across Indonesia, MoH issued a circular letter<sup>14</sup>, allowing doctors and dentists to perform certain treatments via telemedicine.

#### 4.1. Gaps Analysis: Room for Improvement and Support

##### Leadership and Government

President Joko Widodo gave clear instructions to capitalize on the digital transformation momentum brought about by the COVID-19 pandemic, at the Restricted Meeting on Digital Transformation Planning held at the Merdeka Palace in Jakarta on 3 August 2020. In response, the Government of Indonesia through the Ministry of Communication and Informatics (Kominfo) announced the digital roadmap for 2021-2024, intended to accelerate Indonesia's digital transformation agenda. Infrastructure is recognized as a key enabler for digital transformation in Indonesia

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<sup>14</sup> Circular Letter No. HK.02.01/MENKES/303/2020 concerning the Organization of Health Services through the Utilization of Information and Communication Technology to Prevent the Spreading of Corona Virus 2019 Disease (COVID-19)

The implementation of the digital health sector in Indonesia is primarily under the jurisdiction of the following ministries and institutions:

Ministry/Agency	Jurisdiction
Ministry of Health	telemedicine and health services in general
National Agency of Drug and Food Control	distribution of medicines (online and offline)
Ministry of Communications and Information	electronic systems used for telemedicine
Ministry of Industry	business licensing of an electronic systems provider

The key players active in the digital health market in Indonesia are:

- **Government:** legislation enacted by the government is anticipating the development of digital health as well as information technology, although improvements are still needed to give certainty to investors and to build harmony with related and perhaps overlapping regulations
- **Healthcare Providers:** healthcare services have been transformed by digital technology, which has changed them from conventional to digital. Healthcare providers are nowadays engaged in facilitating healthcare-related services to their consumers
- **Pharma Industry:** currently, trading in pharmaceutical products can be carried out through electronic trading, including websites, software and mobile applications, and digital platforms
- **Investors:** the development of digital health (including the invention and creation of applications and software) needs financing, which depends partly on investor funding

### Strategy and Investment

The strategy for the acceleration of digital transformation has been outlined in Presidential Decree 95/2018 concerning Electronic Based Government Systems (SPBE). The aim is to achieve effective, transparent, and accountable governance as well as quality and reliable public services. Among the major programs is the one data policy. This is stated in Presidential Regulation 39/2019 concerning One Indonesian Data (SDI).

Through SDI implementation, the government can collect data in one door that is accurate, up to date, integrated, and easily accessible. The focus is on supporting government development programs. Therefore, the data provided includes data on food, energy, infrastructure, maritime, education, health, education, economy,

industry, tourism, and bureaucratic reform. The data is used for decision making and fulfilling data needs for the community.

At the Annual Scientific Forum (FIT) 2021 coinciding with Digital Health Week 2021, The **Ministry of Development Planning/Bappenas** elaborated the President's direction for digital transformation in the country:

1. Acceleration of access expansion and infrastructure improvement: digital technology followed by the acceleration of internet service provision in 12,500 villages or kelurahan and public service points.
2. Digital transformation roadmap in strategic sectors such as: government, public services, social assistance, sector education, health sector, trade, industrial sector, broadcasting sector
3. Accelerate integration of national data centers
4. Prepare HR needs (human resources) for digital talent
5. Quickly prepare regulations, funding schemes, and digital transformation financing

To date, the prevailing regulations in Indonesia on digital health are currently limited to:

- Telemedicine, which is used at health service facilities (eg, hospitals and clinics), under Ministry of Health Regulation No. 20 of 2019 on Telemedicine Services as part of Health Services Facilities (Regulation 20/2019); and
- Online distribution of medicine, under National Agency of Drug and Food Control Regulation No. 8 of 2020 on the Supervision of Online Distribution of Medicine and Food (Regulation 8/2020)

### Services and Application

The average internet speed in Indonesia, according to the "Digital 2020" report, reaches 13.83 Mbps, while fixed internet speed in Indonesia reaches 20.11 Mbps. The Government has laid construction of the Republic of Indonesia Satellite Multifunction Satellite Project (Satria-I) Earth Station in Cikarang, with ten other gateways to be built in Batam, Banjarmasin, Tarakan, Pontianak, Kupang, Ambon, Manado, Manokwari, Timika, and Jayapura, of which the ten gateways are still in the process of land acquisition<sup>15</sup>. One of the targets of the national digital transformation acceleration program is to strengthen access and quality of digital or internet services to remote areas of the country through the development of SATRIA.

<sup>15</sup> [Kementerian Komunikasi dan Informatika \(kominfo.go.id\)](https://kominfo.go.id), accessed 15 March 2022

## Standards and Interoperability

**Health Information System.** The current IDHIS (Indonesia Demographic and Health Survey) data collected is based on formats developed for a manual system of data collection. The various programs at MOH, in recognizing the need for more information for their respective program monitoring and evaluation developed their own reporting systems for specific purposes.

This has resulted in the use of data sets which are non-standardised, where the data definitions used were different and values varied. Hence the same data element means differently in different formats making data analysis difficult due to inconsistency of data, questionable data integrity and different data definitions.

In view of the different types of information collected in different formats, or similar information being collected in different formats, there is a considerable degree of data inconsistency collected by various agencies. Ministries of Health, Indonesia Central Bureau of Statistics, and civil registration, the backbone of data production and management, lack of required capacity, standardized tools, and resources. Low-quality data is frequently used to make decisions.

The current system of collecting information from the private sector is inadequate and less satisfactory in the analysis of the country profile. There is a need to improve the reporting system from the private sector through enforcement of the Private Health Care Facilities and Services Act. In addition, there are a lot of health and health related activities done by NGOs for which there is no formal way of reporting.

**Telemedicine standardization.** Up to now, Indonesia does not have rules and regulations regarding the digital health care system, so far, the only tool developed by the GOI related to the issue is teleconsultation and teleradiology guidelines. In its effort to limit the spread of coronavirus, the MOH has then issued a circular letter No. HK.02.01/MENKES/303/2020 (on Health Services through the Utilization of Information and Communication Technology for Limitation of the Spread of Coronavirus Disease) to some stakeholders. In its circular letter, MOH allowed doctors to use telemedicine in providing health services during the coronavirus pandemic, including to diagnose, treat, prevent and evaluate a patient's health under their competence and authority. Telemedicine can be carried out between a doctor and a patient or between doctors during the coronavirus pandemic. The authority of doctors to provide telemedicine services includes anamnesis, diagnosis, provision of advice and

prescribing of medicine and medical devices. Now the issue is to extend this scope beyond the period of the Covid19 Pandemic.

There is still no specific licensing requirement for a telemedicine platform in Indonesia. However, if the platform provides an online distribution of medicine, the platform provider must obtain the Pharma Electronic System Operator Registration from the MOH as required under MOH Regulation No. 26 of 2018 on Electronic Integrated Business Licensing Services in the Health Sector.

Unstandardised data and various applications for data input actually add the burden on healthcare facilities

### Infrastructure

Indonesia still has infrastructure limitations in power source and communication network.

**Power Source.** As per 2017, Indonesia's State Electricity Company (PLN) stated that Indonesia has 95.92 percent electrification ratio, superior to their initial target which is 92.75 by the end of 2017. This target is not based on a certain territory or area, instead it is based on how many houses have access to electricity<sup>16</sup>. This percentage shows high numbers of ratio, but considering the vast area and magnitude of Indonesia population, this means that there are still 25 million people in Indonesia that do not have access to electricity, especially in the eastern region<sup>17</sup>.

**Communication Network.** According to Association of Indonesian Internet Service Providers (APJII), in 2017, more than 50 percent (or 143.96 million Indonesian populations) of the 270 million Indonesian have access to the internet<sup>18</sup>. Pertaining the amount of internet users, Indonesia is the fifth highest number of internet users in the world<sup>19</sup>, after China, India, United States, and Brazil, but in terms of internet penetration, the country is considered to have low internet penetration compared to developed countries that have implemented more advanced eHealth technology. Other than internet penetration, digital health literacy and EMR implementation are several concerns which are still faced by internet users in the country. The other concern is regarding the challenge in connectivity. While fiber optic cables are going into the villages, actually in some areas, especially in rural areas, the stability of communication networks is still not adequate for the implementation of digital health<sup>20</sup>.

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<sup>16</sup> <https://katadata.co.id/berita/2018/03/06/pln-targetkan-seluruh-wilayah-indonesia-dapat-akses-listrik-tahun-ini>

<sup>17</sup> <https://www.suara.com/bisnis/2017/06/07/140358/ada-25-juta-orang-indonesia-masih-tanpa-akses-listrik>

<sup>18</sup> <http://jakartaglobe.id/business/indonesia-143m-internet-users-2017-apjii/>

<sup>19</sup> <http://jakartaglobe.id/business/indonesia-143m-internet-users-2017-apjii/>

<sup>20</sup> Penggunaan Telemedicine di Indonesia, Kemenkes, 2013

## Legislation, Policy and Compliance

Lexology - Law Business Research 2021 in Digital Health 2021 highlighted main regulations governing digital health sector:

**Table 3. Policies related to Digital Health in Indonesia**

Legislation	Governing Body	Highlights
Presidential Regulation 95/2018	Ministry of Communication and Information	The Regulation provides an e-Government system (Sistem Pemerintahan Berbasis Elektronik/SPBE). The regulation includes the development of a masterplan for an eGovernment system that focuses on several areas including budget planning, business process, data and information, eGovernment infrastructure, eGovernment applications, eGovernment security, and eGovernment services.
Ministry of Health (MOH) Regulation No. 21 of 2020 on the MOH Strategic Plan for 2020-2024	Ministry of Health	As part of its strategic plan, the government is preparing a new regulation on the utilization of technology through telemedicine for direct health services between doctors and patients, and the regulation is expected to be issued in 2021.
MOH Regulation No. 90 of 2015 on the Implementation of Health Services in Health Services Facilities in Remote Areas and Very Remote Areas	Ministry of Health	Under the regulation, telemedicine is used as part of the development of health services facilities located within remote and very remote areas. The use of technology in combination with medical expertise to provide health services, from consultations, diagnoses and medical procedures performed remotely
MoH Regulation 20/2019 concerning the Organization of Telemedicine Services between Health Service Facilities	Ministry of Health	Regulation 20/2019 specifically stipulates the use of telemedicine by health services facilities and covers telemedicine with patients. The term of remote health services by health professionals using technology (eg, exchange of information on diagnosis, treatment, prevention of disease and injury, research and evaluation). Under Regulation 20/2019, only health services

		facilities in a hospital may provide telemedicine services to other facilities (eg, hospitals, clinics, public health centers), which includes tele-radiology, tele-electrocardiography, tele-ultrasonography, clinical teleconsultation and other services. In these examples, both facilities must be registered with the MOH.
B POM Regulation 8/2020 on the Supervision of the Online Delivery of Food and Drugs	National Agency of Drug and Food Control	Regulation 8/2020 allows the pharma industry, wholesalers and pharmacies to distribute medicine through an electronic system. Only a pharmacy may engage a third party to provide the system, while the pharma industry and wholesalers may only use their own electronic system. In delivering medicine to patients, Regulation 8/2020 allows pharmacies to deliver independently or engage a third-party legal entity to do it. Regulation 8/2020 covers the distribution of over-the-counter and prescribed medicines. The regulation also stipulates certain requirements and limitations on pharmacies or platform providers when distributing the drugs online.

In addition to the above, the government issued the following regulations on the use of telemedicine during the coronavirus pandemic:

<b>Table 4. Policies related to Telemedicine during the pandemic</b>		
<b>Legislation</b>	<b>Governing Body</b>	<b>Highlights</b>
MOH Decree No. HK.01.07/MENKES/413/2020 on Guidelines for Prevention and Control of Coronavirus Disease	Ministry of Health	As a preventive measure to limit the spread of coronavirus, MOH acknowledges the need for the provision of health services through telemedicine
Regulation of the Indonesian Medical Council No. 74 of 2020 on Clinical and Practical Medical Authority through Telemedicine during	Indonesian Medical Council	Regulation 74/2020 is aimed at providing additional authority for doctors to engage in medical practice during the pandemic in Indonesia. It is stipulated that during the pandemic, medical practice for patients can also be done using a telemedicine app or an



<p>the Coronavirus Pandemic in Indonesia (Regulation 74/2020)</p>		<p>electronic system, which can be online writing, voice or video. Doctors providing services through telemedicine must have a Registration Certificate and Medical Practice Certificate in the relevant health services facility. Further, they are required to refer the patient to a health services facility if the patient is in a critical condition or requires diagnostic action or therapy. This provision seems to restrict doctors from carrying out a diagnosis on patients using telemedicine. There are also specific limitations on the authority of doctors in carrying out medical practice through telemedicine under the regulation. For instance, doctors are prohibited from performing tele-consultations directly with patients without a health services facility, and from diagnosis beyond their competence. When using a telemedicine service, patients must provide general and informed consent following the prevailing laws. A medical practice using telemedicine must maintain medical records that may be manual or electronic, in accordance with the prevailing laws</p>
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**Venture and financing digital health.** Digital health ventures in Indonesia are not comprehensively regulated. Hence, there is currently no definitive guidance for investors engaging in the business. Existing digital health ventures might also be affected by a ruling on the operation of the business when it is eventually issued.

The government has not provided specific financing for digital health ventures. However, the legislation allows the central and regional government to provide financing of telemedicine services, sourced from state or regional budgets and other non-binding sources, as per the prevailing regulations. However, the financing of telemedicine funded by the government is limited to telemedicine by health services facilities (and not between a healthcare facility and patients). Support to promote the development of digital health by the government is achieved through collaboration with digital health provider companies for health education through the apps.

**Data security.** This cyber threat is getting more complicated by the absence of specific regulations regarding information security in the health sector. These scattered regulations make it more difficult for any institution to manage, let alone find a solution if undesirable things happen. Currently, Indonesia does not have rules or regulations for digital health care systems. Apart from medical records, data protection in the health sector should be enforced as per the general data protection laws for electronic systems. There is no specific regulation on data protection for digital healthcare technologies. This is unfortunate that any regulation regarding patient confidentiality and safety has not been launched yet. Indonesian legislation does not stipulate the definition of ‘anonymised data’ as well as ‘anonymised health data’. Nevertheless, the common understanding is that anonymised data means data stripped of person-identifiable information and therefore cannot be used for identifying certain individuals. The Indonesia cybersecurity regulatory framework is currently undeveloped. Although there is no standalone cybersecurity law in Indonesia, some Indonesian laws touch on cybersecurity issues, including the EIT Law.

### **Workforce**

The quality of information pertaining to medical diagnosis is far from satisfactory. Presently there is inadequate training for staff in coding, disease classification and record management. There is also a need to train doctors in documenting accurate information to facilitate diagnosis coding.

Insufficiently trained health workers and incentivized to utilize health data Health workers are often not sufficiently trained and incentivized to utilize health data for responding to gaps in services or local inequities in health. With the high turnover of staff, who are already trained, it will influence the quality and sustainability of recording, data collection, reporting and analysis of data. The tasks are limited to production of reports for Health Management.

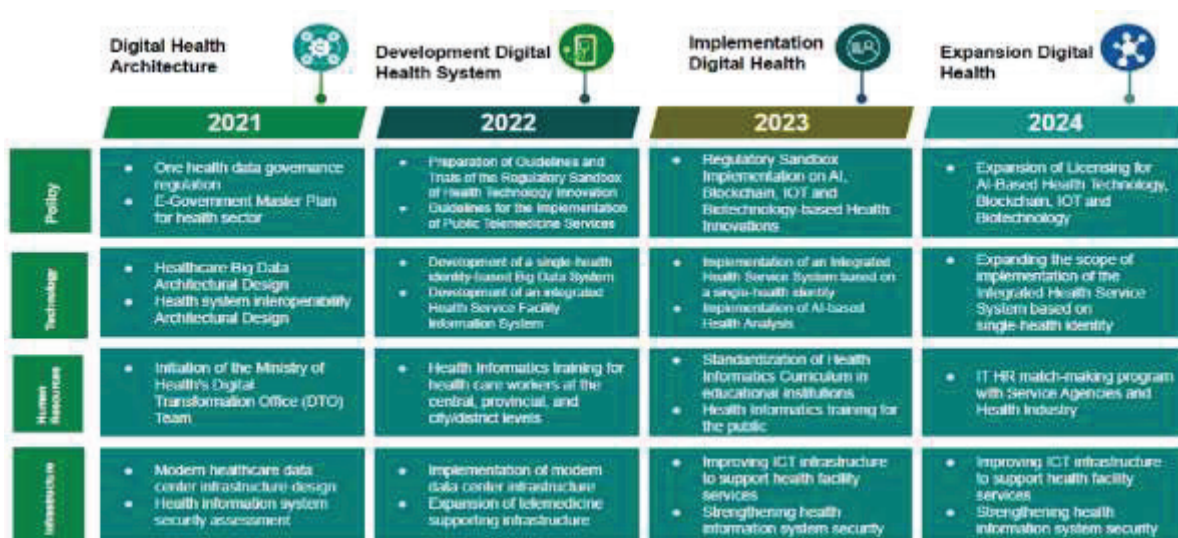
While in the 4.0 era, all systems were integrated online to facilitate health workers to provide services and collect data, including in remote areas. The challenge is how to prepare qualified human resources (and facilities and infrastructure) that are able to support health services in the 4.0 era, especially in isolated areas.

### 4.2. Digital Health Transformation Roadmap

In March of 2021, the Ministry of Health established the Digital Transformation Office and launched the Digital Health Transformation Roadmap 2021-2024. And launched the Blueprint for Digital Health Transformation Strategy 2024 to “achieve a Healthy Indonesia in collaboration with all actors of the health industry under the Indonesia Health Services (IHS) Platform”<sup>21</sup>. This transformation strategy shifts the focus of digital health from reporting to officials towards serving the community.

The Ministry of Health strives to build an engaging environment for innovators, applications and health facilities to innovate and create good technology systems to serve the community. The Government is committed to digitalize the public health system all the way to the point of care at community based services. In 2022, the Ministry of Health will focus on building and completing a health platform. Thus, a clear blueprint for digital transformation in the healthcare industry is key. This roadmap governs digital health transformation in Indonesia, it outlines three priority areas with eight programs and activities of policy, technology, human resource and infrastructure by year.

Figure 4. DTO Technology Transformation roadmap



MoH’s Digital Transformation Office implementation plan remains on track as explained during an interview on 31 March 2022 with the NPC Transform Health Indonesia Team. MoH is preparing regulatory frameworks and technical platforms to standardized online procurement, inventory and reporting including identifying codes for patients, medical acts by hospitals and health facilities and other aspects to health services. The IHS platform is a digital health ecosystem from MoH to facilitate industry players to integrate to the health system one

<sup>21</sup> [ENG-Blueprint-for-Digital-Health-Transformation-Strategy-Indonesia 2024.pdf \(kemkes.go.id\)](https://kemkes.go.id/ENG-Blueprint-for-Digital-Health-Transformation-Strategy-Indonesia-2024.pdf)

health data and ensure all health transactions can be recorded and further utilized.

Citizen Health App provides information to the public Personal Health records. While Partner Systems is the application or platform currently used by the health industry, through Management Information Systems for Home, Health Center, Application Laboratory and others aspects.

This March development guidelines were formulated and by April 2022, MoH standards for the platforms are scheduled to be completed, while these have been tested but under restricted circumstances to enable trial and error. MoH works on monthly and yearly targets with DTO reporting to the President on a regular basis. So among others, this 2022 targets include:

- 8,000 integrated health services (target per year)
- 5,000 workers capacity building health informatics

The year will focus on regions where there are systems in place, to integrate Hospital Information System and Lab System. While, remote regions (DPTK regions) will be a focus next year (2023 onwards).

The process of digitizing health both at the national and sub-national levels requires carefully planning. It is designed in the health technology transformation roadmap depicted above.

The first part of Transformation Health Technology is Integration and Health Data Development, comprising System Integration Health and Development Data Health Big Data Analysis System. The main output is to improve the quality of policy, accurate data-based health, up-to-date and comprehensive.

The second part is the Integration and Development of Health Service Applications. This activity has 3 program activities, namely Developing Integrated Health Applications, Increasing Health Human Resources (HR) with health informatics skills, and establishing a centralized Help Desk at the Ministry of Health. This output is the efficiency of health services in health facilities in every line (FKTP/health service first line and FKRTL/Advanced Referral Health Facilities).

The third part is Development Health Technology Ecosystem. In this activity, the Ministry of Health has three main programs, namely Telemedicine Technology Expansion, Development of Health Technology Innovation Product Ecosystems and Health Biotechnology Research Integration. The output is to create collaborations and a health digital innovation ecosystem between governments, universities, industry, and the general public.

### 4.3. Human-centered Design Digital Health System

During the Transform Health Indonesia Partners Meeting in January 2022, HIRC from the Faculty of Public Health, University of Indonesia provided a human centered perspective to MoH's 2024 Blueprint to digital health transformation. In all, MoH's plan is comprehensive and covers a continuum of the healthcare service that is envisaged to be transformed to be digitally available for policy makers, service providers-public and private, users/patients and researchers/academicians. The strategy covers much of the organizational governance required to digitize the health system. Yet, HIRC emphasized that the role of people (human) as the actor and beneficiary targeted by this strategy is not yet a focus.

The digital transformation of health is not merely pertaining to information technology, but also humans/people. Direct human involvement should be the main priority, especially in personalized care in the era of Society 5.0. Therefore, the collaboration between the health sector and the community is important, including in building a supportive ecosystem. For example, improving literacy and skills in the development of digital health interventions among universities<sup>22</sup>.

Therefore WHO's Global strategy on digital health 2020-2025 can be used as a reference and guidance to ensuring that the digital transformation ongoing in Indonesia creates a human centered health system<sup>23</sup>. This university-based research center mapped strategic objectives and priorities from WHO's and Indonesia's digital health transformation strategic documents, as follows:

WHO Global Strategy on Digital Health 2020-2025	Health Digital Transformation Strategy 2024
Action begins with strategic objectives	Action begins with priority activities
SO1: Collaboration and knowledge transfer SO2: Digital strategy implementation SO3: Digital health governance SO4: Human-centered health system	1: Integration & development of health data system 2: Health application system integration & development 3: Integration & development of health technology ecosystem

<sup>22</sup> KeidanrenSDGs (2019). *Healthcare in Society 5.0*. <https://www.keidanrensdgs-world.com/healthcare-in-society-5-0-jp>

<sup>23</sup> World Health Organization (2021). *Global strategy on digital health 2020-2025*. Geneva: World health Organization. Licence: CC BY-NC-SA 3.0 IGO.

## 4.4. Access and Literacy of Marginalised Groups

### Youth

With over 110 million Indonesians who are under 25 years old, Indonesia's youth population accounts for more than 40% of the total population. In the Indonesian digital landscape, young people also make up the majority of the country's digital users profile. Young Indonesians are more likely to be internet users, with internet penetration of 91% among 15–19 year olds and 88.5% among 20–24 year olds. A recent report done by Indonesia Internet Providers Association in 2019 found similar results. Young people spend over 3 hours per day on social media and youth aged 13-24 make up 45% of Indonesia's social media audience.

Given this data, substantial opportunities exist to tap into the creativity, leadership and capacity of young people to further Indonesia's digital health transformation. This is evidenced by the myriad of youth-led innovative products and projects that have utilized technology to better design and deliver health services to the country's population. However, upon further observation, these innovative projects are more often sporadic, work in silos, and more importantly, lacking the necessary uptake and support from government and other regulatory bodies.

This can be understood given the fact that, despite their huge role in Indonesia's digital ecosystem, young people are still often overlooked as co-designers and equal partners in the digital health transformation. Seen as early adopters of innovation, many digital health solutions target young people as beneficiaries, seeking to improve their access to crucial health information and services, but do not meaningfully engage them in the design and implementation of said solutions. Young people face significant barriers, such as: (i) lack of engagement opportunities with policy makers and stakeholders; (ii) lack of capacity building opportunities to build their skills on advocacy for digital health; (iii) lack of resources to support youth-led innovation and advocacy efforts on digital health; (iv) lack of high quality research and data about young people and digital health; (v) lack of awareness and capacity regarding meaningful youth engagement among digital health policy makers and stakeholders; and (vi) concerns about digital safety, rights and well-being, including data privacy, among others.

## Women

By 2020, there are 270,20 million people in Indonesia with 49,42% being women, of which 53,6% are women in productive age<sup>24</sup>. The National Socioeconomic survey 2019<sup>25</sup> noted that in urban areas 77,36% women are using cellphone users while in rural areas, there are 65,81% women users. Meanwhile, the SUSENAS 2019 also recorded a large gap of population using the internet with 56,02% women in urban areas and 31,13% in rural places.

While overall, despite the growing number of women owning cell phones from 53,8% in 2017, 57,19% in 2018 to 58,35% in 2019, yet akses to the internet remains low. The survey noted the growth between men and women being quite different:

**Table 5. Access to Internet (SUSENAS 2019)**

Gender	2017	2018	2019
Women	30,15%	37,79%	44,86%
Men	34,51%	42,31%	50,50%

During the DHW 2019 conference, the Women Talk invited the National Commission for the Protection Against VAW that highlighted factors affecting women's use of the internet:

1. Women have more responsibilities, so they have less time to access the internet. Women do housework 3.8 hours/day, while men only 1.5 hours/day
2. Opportunities for women to find, create and share relevant content. Even though there is a lot of content and communities such as blogs, videos, audio, social media, but women have a hard time finding relevant content
3. Privacy, whether women can control their online and offline identities. Some women report full name identity can lead to online and offline stalkers. Others worry that friends or family members will react negatively if the device they are using shows they have/viewed sensitive information
4. Security, many women gave statements that they experienced or heard of someone committing harassment in the digital space. In the digital space 52% of women have experienced physical security-related incidents in the form of stalking, obscene comments, non-consensual physical contact, and more.

<sup>24</sup> 2020 Population Sensus, BPS

<sup>25</sup> The National Socioeconomic Survey (SUSENAS) is a series of large-scale multi-purpose socioeconomic surveys initiated in 1963-1964 and fielded every year or two since then. Since 1993, SUSENAS surveys cover a nationally representative sample typically composed of 200,000 households.

Therefore the challenges to accessing internet and information technology can be surmise as follows: (i) the women are not experiencing direct benefit to their wellbeing, when also facing socio, cultural and financial pressure contributed by the patriarchal culture and values; (ii) Literacy to device/gadget remains low; (iii) Lack of time to learn the use of devices/gadgets due to a lot of time and workload.

### **Underdeveloped Area (Remote, Border and Small Islands)**

An area is designated as an underdeveloped area based on the following criteria: community economy, human resources, facilities and infrastructure, regional financial capacity, accessibility, and regional characteristics. President Jokowi has designated these 122 districts as underdeveloped areas for 2015-2019. This determination is contained in Presidential Regulation (Perpres) Number 131/2015 concerning the Determination of Underdeveloped Regions for 2015–2019. The Presidential Decree was signed on 11 April 2015. In the Presidential Decree, it is stated that underdeveloped areas are regencies whose regions and communities are less developed than other regions on a national scale.

The situation in DTPK is very different from other regions. The availability of health workers and infrastructure is the main problem that occurs in the field. MoH's evaluation and monitoring identified obstacles, namely communication facilities that are not adequate, for example there is no signal that hinders the process of sending information, transportation that is difficult to reach the destination area and tiered bureaucratic processes at the central or regional level.

Meanwhile, the current capital city – Jakarta, remains the central locus of Indonesia's digital health ecosystem, since most established access to human capital, infrastructure and investment opportunities needed by digital health companies are better available. This situation was confirmed by the Ministry of Information and Communication that estimated 75% of Indonesia's 200 co-working spaces are located in Jakarta. The Ministry of Information and Communication of Kominfo is creating the space for digital health lead by MoH to take off as planned.



# 5. STAKEHOLDER ANALYSIS

A stakeholder analysis conducts stakeholder mapping that identifies stakeholders based on their role and current activities relating to digital health for achieving UHC by 2030. The stakeholders are grouped into nine groups that consists of government, political sectors, research institutions, non-governmental sectors, private sectors, and international development partners<sup>26</sup>.

**Matrix 1. Stakeholder Mapping**

Stakeholder Group		Primary Focus	How they focus on health and digital health	How the platform intends to interact with them on digital health acceleration
Government	MOH, BAPPENAS, MOCI, BKKBN	Stewardship on policy, guidance,	Health program implementation	Maintain communication
	MOE, MOHA, MOV, MOF, MOSA, BSSN	Stewardship on policy, guidance	Health program implementation	Maintain communication
	KSP, TNP2K	Monitoring & Evaluation	Monitoring & evaluation	Maintain communication
Political Sectors	DPR, DPRD	Legislation	Political support	Dialogue, discussion
	Caucus for Health, Political Parties			
Non-Government Sectors	PKMK UGM, HIRC, Knowledge Hub	Research, advocacy	Community engagement	Coalition member
	AIPTKMI, ADINKES, APKESMI,	Associations relating to health institutions	Advocacy for health workforce	Coalition member
	HAKLI, IAKMI, PAEI, PAKKI, PPPKMI, PERSAGI	Health-professional competency	Advocacy and community mobilization for health workforce	Coalition member
	IDI, IBI, PNNI			To be invited
	CISDI	NGOs, CSOs, Community-based Organizations	Advocacy and community mobilization	Coalition member
	Nahdatul Ulama,	Community-based	Advocacy, community	Collaborating partner

<sup>26</sup> Health Policy Project. USAID, PEPFAR, CDC, University of Washington. Road Map for Implementing and Monitoring Policy and Advocacy Interventions (<http://www.healthpolicyproject.com?zp=322>)

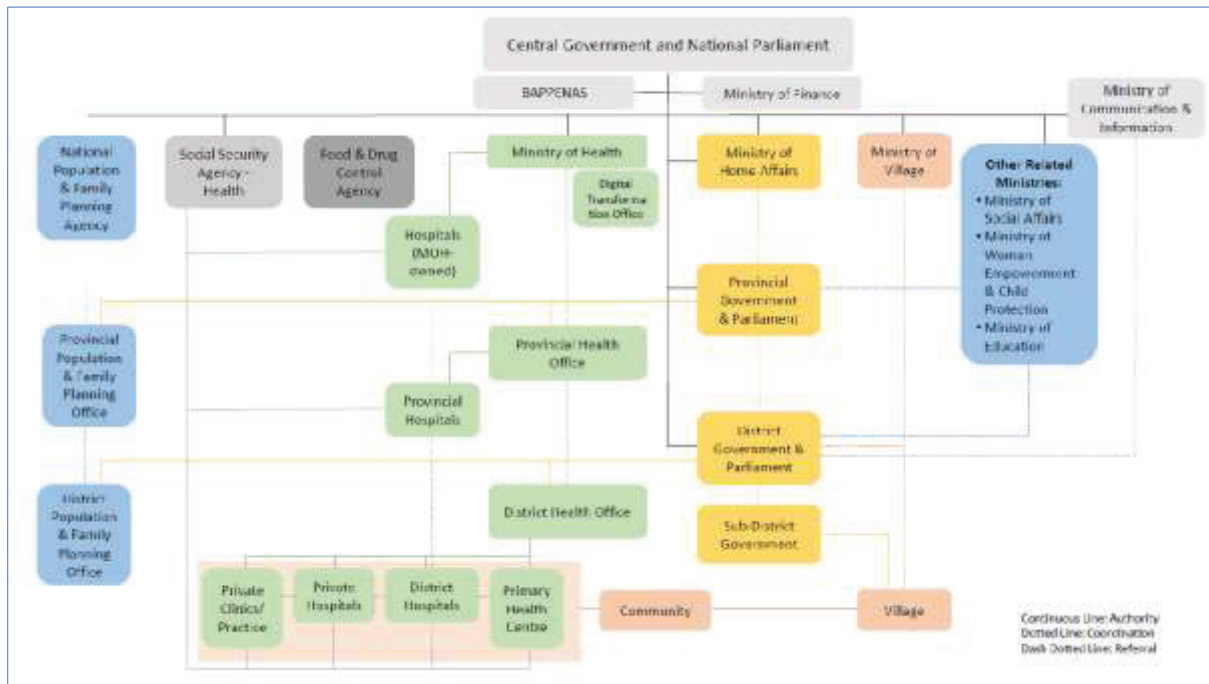
	Muhammadiyah	interventions	mobilization	
	INFID, PRAKARSA, PKBI, IAC, YKIS	Advocacy	Advocacy	Collaborating partner
	Indonesian Women Coalition (KPI)	Advocacy and interventions on women-issues	Advocacy, community mobilization	Coalition member
	Kapal Perempuan, YAKKUM	Advocacy and interventions on women and marginal group-issues	Advocacy, community mobilization	Collaborating partner
	Tabu.id, ISMKMI, PAMI, Jago Preventif, CIMSA	Advocacy and interventions on youth-issues	Advocacy, community mobilization	Coalition member
Private Sectors	PLN, TELKOM, XL, Telkomsel, Indosat	Infrastructure in electricity and telecommunication	Infrastructure support	Partnership
	Philips Indonesia	Medical equipment	Capacity building and funding	Coalition member
	Siloam	Health service delivery	Healthcare services, health data, health record	Partnership
International Development Partners	WHO, UNDP, UNICEF, UNFPA, UNAIDS	Technical assistance, consultancy, research, international good practices, pilot project	Capacity building and funding	Maintain communication
	USAID, DFID, DFAT, JICA			
	World Bank, ADB			

A stakeholder mapping (Matrix 1) was developed which relates the role and current activities. The assessment also mapped the stakeholders' characteristics based on primary focus, how they focus on health and digital health; and how the platform intends to interact with them on digital health acceleration. In the context of the National Coalition establishment, the analysis includes stakeholders that represent community perspectives, youth, women and the most marginalized groups.

**Coalition Member:** As of January 31, 2022, 20 organisations joined the Transform Health Indonesia Coalition, including three research institutions, six health-professional organisations, three health-related associations, one civil society organisations, one community-based organisation, one private sector, five youth organisations, and one women organisation.

**Existing Network.** The assessment also identified the existing networks related to digital health in Indonesia, namely Indonesian Medical Technology Association (IMTA), Indonesia Health-tech Association (AHI), National Forum for Information and Communication Technology of Health (FORKOMTIKNAS), PERDIGTI (Indonesian Integrated Digital Medicine Association) and ATENSI (Indonesia Telemedicine Association).

**Figure 5. the Government's Organization for UHC and Digital Health**



## 6. RECOMMENDATIONS FOR THE COALITION

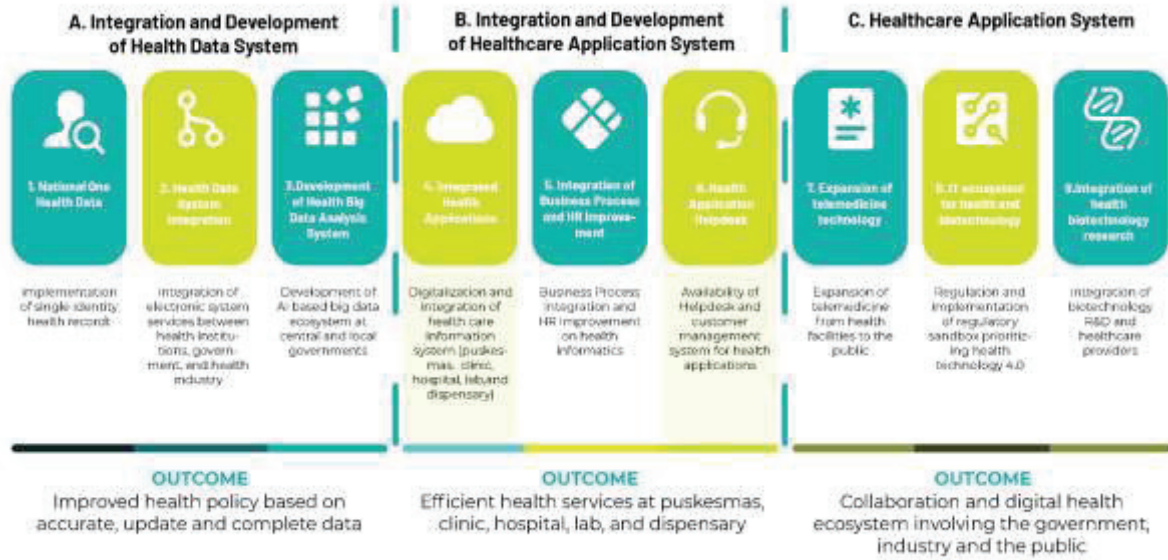
### 6.1. Context: Digital Technology for Universal Health Coverage

The achievement of universal health coverage (UHC) depends on a strong primary health-care system that can provide essential health services for the entire population. Primary health care is especially important for people who have limited access to high-quality health care because they are socially or geographically disadvantaged. Although primary health care offers a feasible and equitable route to UHC, success depends on expanding primary health care at community and household levels because local health facilities are still too far away to ensure convenient access to basic health services.

Digital technology has the potential to expand the coverage of primary healthcare, strengthen health systems, reduce costs, improve quality of care and accelerate UHC. This opportunity is greater now than ever, with the increasing penetration of mobile and digital technology offering opportunities to expand healthcare services in remote settings and to include those who were previously excluded. Digital technology also has the potential to put people at the centre of the healthcare system, giving them more control over their own health outcomes. The adoption of human-centred design principles and approaches to ensure tailored solutions for different sets of beneficiaries could address access and control issues. To achieve this, all communities, including women, youth, and the most marginalised groups must be fully engaged in an inclusive and participatory manner to ensure the digital age supports health for all.

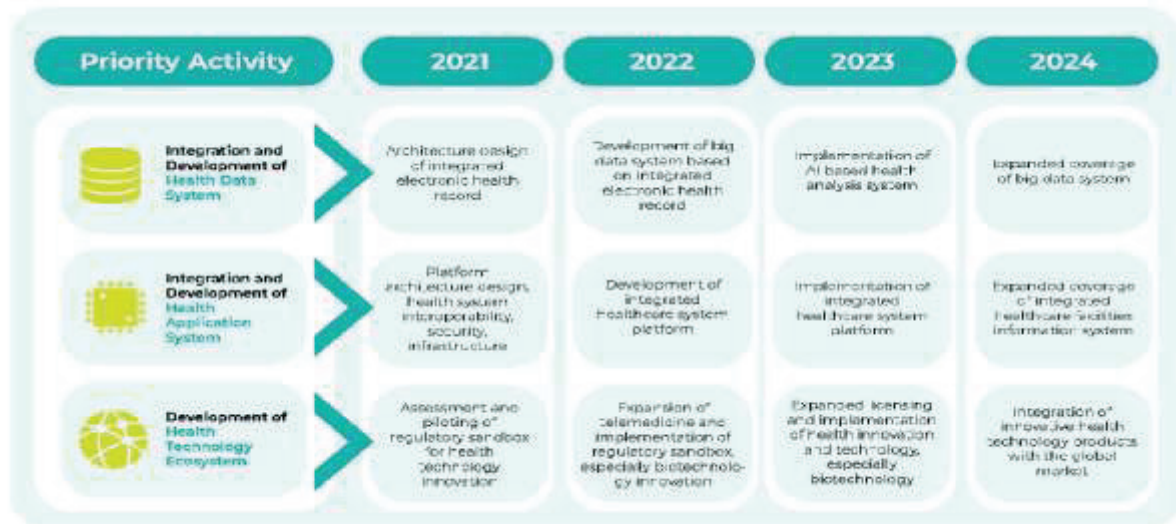
The Government of Indonesia strongly supports and encourages the use of digital technology for public health in the future. Digital transformation is an important agenda to encourage the realisation of a Healthy Indonesia through the use of data and technology. The Ministry of Health launched the blueprint, entitled “Blueprint of Digital Health Transformation Strategy 2024”.

Figure 6. Priority Activity Diagram



The blueprint provides an overview to stakeholders and all health industry players regarding the direction and road map for Indonesia’s digital health transformation in the upcoming years. The blueprint has three priorities: (1) Integration and Development of Health Data System; (2) Integration and Development of Healthcare Application System; and (3) Development of Health Technology Ecosystem. The blueprint outlines a roadmap of health technology transformation by year for 2021-2024.

Figure 7. Roadmap of Digital Health Transformation



6.2. Challenges to implementation of digital health blueprint

The implementation of the Digital Health Blueprint 2024 is met with a number of challenges, as has been acknowledged by MoH’s Digital Health Office, includes human resources and technological capabilities, in its effort to create an integrated and technology-oriented health service transformation in the

country<sup>27</sup>. The Coalition also identified that the problem with human resources can be traced to the education system where health science students are not provided with adequate digital health training. Frontline health workers currently do not have good digital health skills and they have little or no IT support.

While, in terms of interoperability, the Coalition also noted that data is being scattered among health points of care, whether public and private. With decentralisation, each locality has its own regional application including for healthcare. This makes health data from one system to the other, from one region to the other not able to “talk to each other” or not interoperable. A patient’s personal health record from one locality to the other is also lacking standardisation.

On several occasions, the MoH and the Minister of Information and Communication has recognized that the current Blueprint is very technical thus not putting forward the social aspects impacting the public’s access to a digitised healthcare system, human rights, digital rights and equity as relates to access to primary health care and ownership, protection, security in the use of data in particular the youth, women and marginalised groups. Based on this condition, the Coalition aims to contribute in highlighting these social aspects, especially putting forward voices for these community-based groups.

### **6.3. Role of the Coalition**

The Ministry of Health has formulated the blueprint to achieve a Healthy Indonesia in collaboration with all actors of the health industry under the Indonesia Health Services (IHS) Platform. The IHS platform is a digital health ecosystem platform that provides data connectivity, analysis, and services to support and integrate various health applications in Indonesia. The IHS platform needs to be supported by people-centred design, digitally-enabled health and health information systems to accelerate UHC. The Coalition can take a role to influence the Government of Indonesia and others to ensure necessary changes and reforms are made to enable digital transformation of the health system.

Health Data Governance Principles is a critical milestone and contribution towards the development of a global framework for health data governance. The principles will support equitable and responsible health data management, while safeguarding data privacy, ownership, and security, creating an environment where all people and communities can share, use, and benefit from health data. The Coalition will ensure the global health data governance framework underpin and integrate the equity and human-right based principles and also is

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<sup>27</sup> [Ministry reveals challenges to digitize health services in Indonesia - ANTARA News](#)

subsequently adopted and adapted at national level to support the use of digital technologies and data for public good.

The Coalition will take advantage of Indonesia's active global engagement (G20, UNGA, WHA, etc) to amplify the message that digital health transformation is an imperative element of the health care system in the country and globally. The Coalition will also develop positions relating to digital health for the engagement at global events such as the UNGA, G20 presidency, and maintain ongoing dialogue with government and donors.

#### 6.4. The Coalition's Strategy

On 22-24 February 2022, IAKMI organised a 3-days workshop to develop the Coalition's Work Plan for the period from 1 April 2022 to 31 December 2023. The workshop used a theory of change approach to develop the work plan collectively, which enabled insights from a variety of perspectives from the private sector, academicians in public health, health analytics, health workers, women and young people. There were at least 42 participants representing 19 organisations including IAKMI.

In line with Transform Health's vision to achieve Universal Health Coverage (UHC) by 2030 by harnessing digital technology and the use of data, the Coalition set a goal to achieve the digitalization and integration of primary health care services in Indonesia by 2030. In order to achieve this goal, the Coalition defines five strategic impacts that include:

1. Integrated digital health curriculum;
2. Health workforce with adequate digital-skilled;
3. Integrated and interoperable health data;
4. Integrated and interoperable electronic personalised health record (ePHR); and
5. Enabled-digital literacy of youth, women and marginalised groups in particular populations living in the most remote areas in the country (referred as DTPK regions, meaning regions most remote, at the border and in small islands).

## Advocacy to policy change and investment

Impact	Policy Change and Investment to be achieved (in 2024)
Integrated digital health curriculum	Government adopts and allocate budget for implementing digital health curriculum for health sciences students
Health workforce with adequate digital-skilled	Government equips the frontline health workers with digital skill and IT support
Integrated and interoperable health data	Government review evidences presented by TH and commissions the development of operational regulation and guidance of standardisation and data exchange
Integrated and interoperable electronic personalised health record (ePHR)	Government adopts ePHR model that recommended by TH and the significant role of the parliament to legislate for laws supporting ePHR interoperability
Enabled-digital literacy of youth, women and marginalised groups	Increased critical awareness of community (youth, women, marginalised groups, in particular populations living in most remote areas or DTPK areas) on digital rights and role of digital health technologies in achieving UHC.

Detailed proposed component the Coalition could undertake for the next two years (2022-2024):



### Integrated Digital Health Curriculum

At the current moment, health science students<sup>28</sup> at university and academy levels are still using conventional curriculum that is not yet compatible with the digital health transformation that is taking place in Indonesia. As MoH is preparing the current health workforce to be digitally adept, the future workforce must not be left behind.

Therefore the universities and academies that are set to prepare the future health workforces should include a digital-health adept curriculum, to be trialed for adoption not only in urban areas but also rural areas, in particular the DTPK regions of the country. Then to advocate for the Government to adopt and integrate this curriculum for all health sciences education institutions. The work should not only involve lecturers but also students and their association for ownership and to sustain the curriculum beyond the conduct of the project.

<sup>28</sup> This includes students from the faculty of medical, dental, nurse, midwives, public health, pharmacology.





### Health Workforce with Adequate Digital Health Skills

The decentralized governing system puts healthcare under the authority of the local government - provincial (led by a governor) and district/city (led by head of district or mayor). This area of work is under the purview of the Ministry of Home Affairs. The local government oversees planning, recruitment, retention and allocation of human resources within the respective working area (province, district/city).

Meanwhile, the digital health transformation is led by the MoH at central level (national). The coalition needs to generate evidence for advocacy to local governments to increase resources allocated into the deployment of local health workforce, especially for frontline health workers with adequate digital-skilled and IT support at district/city level. The coalition should work with government champions at the national and sub-national levels with a focus on DTPK districts (remote, border, and underserved areas) and facilitate technical meetings for planning and implementation in collaborating districts/cities. These meetings should highlight the importance of a health workforce with digital skills and adequate IT support.



### Integrated and Interoperable Health Data

As the Government is preparing an integrated and interoperable digital health platform for patients and users and health service providers, it is also important that an appropriate policy framework is in place to govern privacy, standardization and data exchange. Meanwhile, in relation to the global movement on health data governance, the coalition should advocate the government to support a resolution on health data governance underpinned by the health data governance principles at the WHA.

This work will require advocacy of not only the executive branch but also the legislative branch of the government, particularly at national level. Rounds of dialogues connecting the government with academics, researchers, NGOs and marginalized communities from youth, women and DTPK areas to share studies and their relevant experience on the use of digital-based health services currently available and what is needed to ensure the use and retention of use by society at large. The Coalition should work closely with MoH to produce regulations concerning interoperability, standardization and human-centeredness of digital-based health care. The work includes providing policy paper/policy brief/academic manuscript relating to standardization and data exchange. It is also important to check policy frameworks needed at sub-national levels that would enable these guidance to be fully implemented at point of care and user levels - which falls mostly at district/city levels.



### Integrated and Interoperable Electronic Personal Health Record

At the current moment, patients and users are not able to monitor their personal health history, especially when using multiple clinics and health services. This is due to the scattered nature of medical records among various health services (either public and private institutions). Meanwhile, even when a facility is providing e-personal-healthdata, it will not be operable when it needs to be connected with a different health clinic.

MOH as stated in the Blueprint is developing a Citizen Health App that is an integrated platform to store complete individual health data for all citizens and made accessible by the data's owners while being secured by MOH. The Coalition should work to advocate for e-PHR to be structured based on a human-centered approach to enable users to access their personal records from different health points of care with ease.



### Enabled Digital Literacy of Youth, Women and Marginalized Groups

The Coalition should put forward consultation and engagement of marginalized communities (especially youth, women, and DTPK groups) in planning and implementation of digital health programs. The current approach undermines community relevance and buy-in. Proposed list of activities includes:

- Capacity building for the coalition's youth, women and DTPK groups in advocacy for digital health
- Youth, women and DTPK regions-led research and data collection on their respective communities experiences, perspectives and expectations around digital health
- Dedicated dialogue sessions between advocates and governments and policy makers on issues around digital health from youth, women and DTPK regions communities
- Collaborative social media campaigns on youth, women and DTPK communities and digital health
- Youth, women and DTPK communities-led capacity building and awareness sessions for digital health policy makers and stakeholders on meaningful youth engagement principles
- Development of a digital health innovation repository, listing innovative digital health programs led and run by young people, women and coming from DTPK regions in Indonesia



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