

Country Name

Country Context [9-17, 37]

Population size, 2017	XXX,XXX	Physician density (number per 10,000), 2015	8
Population density (persons per square km), 2017	XX	Hospital bed density (per 1,000 population), 2011	2
Population growth (annual %), 2017	0.7	# of national hospital(s), 2011	4
Rural population (% of total population), 2017	45	%Health workforce based at the national hospital(s)	Don't know
Life expectancy at birth (years), 2016	70	%Doctors based at the national hospital(s)	Don't know
GDP per capita (current US\$), 2017	XXXX	Age standardized outpatient department service utilization (visits per capita), 2016	7
Income level	Upper middle	Average travel time to a health facility* (mins), 2011	90
# of total operational health facilities, 2011	XXX	%Overseas medical cost (%current health expenditure), 2016	0.5
# of hospitals, 2011	XX		

*Average travelling time from a nursing station to the nearest health center by land or sea

Key Messages

Country Context:

This is one of the most urbanized Pacific Island Countries (PIC). Accompanied with urban migration, the health system faces increasing demands with primary health care services, whose quality has been put under stress by underfunding (health expenditure, two-thirds of which is publicly financed, is low compared to other Pacific Island countries) [16]. The health strategic priorities aim to improve health service delivery, health promotion and disease prevention. It also aims to strengthen health systems through key priority areas – one of which is to establish evidence-based management using health information [2, 16].

Digital Health Readiness:

- Submarine connections provide progressively cheaper and higher-speed international backbone capacity for development of the Internet. Introduction to the mobile market has boosted penetration, brought down prices, expanded coverage and driven wireless broadband services [21]. This country is currently a hub for international fibre-optic connectivity in the South Pacific, which provides the country a unique position for ICT development, including digital health, in partnership with other PICs.
- The country has many key enablers and early digital health development in place – the country developed a clear digital health strategy, established a National Health Number (NHN), and currently have a variety of digital health applications being institutionalized such as a common EHR, a laboratory information management system that is interoperable with the EHR, a well-used public health information system to capture complete and timely data, and other systems including mobile apps, inventory management system and disease registries.
- For the most part, the health information systems are data silos with little connectivity and electronic sharing. National strategy recognizes the limitation and aims to expand the EHR systems in health facilities and develop an integrated system for surveillance and registries [6]. A recommendation is to improve the data quality and draw on the large amount of data being collected for decision making, beyond limited reporting and use made of that data.
- Information sharing is the cornerstone of building an integrated health information system. Its key elements such as interoperability framework are currently under-developed.
- Owing to the early development, an increasing number of health workers and staff are trained for digital health applications. Resources for research and training curriculum/programs are also available (e.g., at post-secondary institution) to enhance the capacity required for sustained development.



Country's Priorities towards UHC [2]

- Preventive, curative and rehabilitative health services (in three priority areas)
- Health systems strengthening (in five priority areas)



Country's Priorities of Digital Health [6]

Evidence-based policy, planning, implementation and assessment:

- Expand coverage and functionality of electronic patient management info systems
- Develop an integrated systems for disease surveillance and registries
- Establish interoperability between health information systems
- Collaborate with partners to improve key health data and statistics

ICT Infrastructure [9, 19-24]

Digital Health Readiness Assessment

† PIC Average is calculated based on available Country values.

Indicators	Country	PIC Average†	Indicators	Country	PIC Average†
ICT development index (IDI) rank, 2017	107	132.7	Individuals using internet (%population), 2016	46.5	30.6
Access to electricity (% of population), 2016	98.65	82.7	Percentage of households with a mobile phone, 2015	93	70.2
Mobile-cellular subscriptions (per 100 inhabitants), 2017	114.18	68.4	Percentage of households with computers, 2016	41.7	26.8
Fixed-broadband subscriptions (per 100 inhabitants), 2017	1.34	3.7	Percentage of households with internet access, 2016	33.6	29.2
Active mobile-broadband subscriptions (per 100 inhabitants), 2016	131.8	24.3	Number of existing submarine fibre-optic cables	4	1
Fixed-broadband prices (%GNI pc), 2016	3.9	34.7	Number of planned submarine fibre-optic cables	1	1
Mobile-broadband prices 500 MB (%GNI pc), 2016	2.8	5.3	Number of mobile cellular service providers, 2016	2	2
Internet bandwidth per user (KB/s), 2016	23.7	34.3	Number of internet service providers, 2016	2	4
3G coverage (%population), 2016	96	71.8	ICT goods imports (% total goods imports), 2016	3.3	3.6
LTE/WiMAX coverage (%population), 2016	90	34.6	ICT goods exports (% total goods exports), 2016	3.3	0.7
			Secure internet servers, 2017	131	54.0

Public Health Information Based



Country's Current Digital Health Programs [3, 6, 27]

CMRIS (PHIS & Hospital MCH)

Consolidated Monthly Routine Information System, is a monthly data collection system for Public Health Information System (PHIS), Maternal and Child Health, a Nutrition Module, PHIS Narrative – Community Births and Deaths and School Health Summary.

Surveillance & Registries

There are a National Notifiable Disease Surveillance (NNDS) system, a cancer registry and a diabetes registry, etc.; however, they are all separate systems with no integration and no use of National Health Number (NHN).

Digital Health Readiness Analysis

Country's Current Digital Health Programs [3, 6, 27]

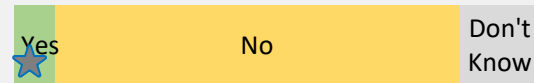
Hospital Information Based

PATISPlus	A custom-built application for patient record management. It is the current Hospital Information Systems used by Government hospitals in the country.
STARLIMS	A laboratory info management system that is interoperable with PATISPlus.
RIS/PACS	Implemented in three divisional hospitals to provide interface for PATISPlus with radiology.
EPICOR	An inventory management and warehousing system.

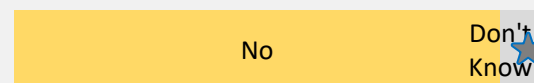
Readiness of Information Sharing

Interoperability framework

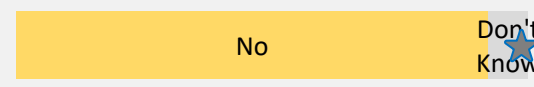
At least guidance¹ to business and technology in health information exchange was given on a case-by-case basis



At least an initial health interoperability framework² (reference on technical compatibility) is adopted on the regional or national-level



A broad health interoperability framework³ (reference on technical and organizational interoperability) is adopted on the regional or national-level



★ Country's value

Standards [35]

Indicators

Indicators	Country
National interoperability standards defines available, relevant minimum data set for exchange for care coordination	Don't know
Industry-based technical standards ⁴ for data exchange, transmission, messaging, security, privacy and hardware (e.g., HL7, ISO/TC215, DICOM and SNOMED CT) are adopted on the regional or national level	Don't know
National interoperability standards are developed, maintained, updated and enforced	Don't know
Evidence of health-related local content being implemented in the health information systems on a regional or national level	✓

Architecture/Blueprint [6]

Indicators

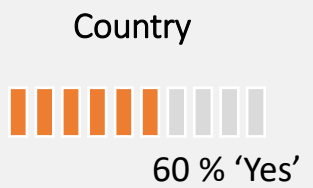
Indicators	Country
At least key architecture characteristics incl. vision, principles, business linkages, baseline, architecture standards and target architecture are identified on the regional or national level	✓
Nation enterprise architecture ⁶ of the digital health system is established	Don't know
National digital health architecture is periodically reviewed and updated to meet the needs of the changing digital health architecture	Don't know
Management team awareness or involvement in the architecture development process on the regional or national level	Don't know

Legal frameworks [36-39]

Indicators

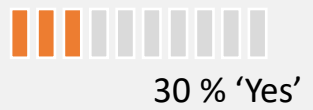
National legal framework:

- ✓ For cybercrime is established/passed
- ✓ For data security and privacy is established/passed
- [Don't know] For data security and privacy is operationalized and consistently enforced
- ✓ For medical-product regulation¹⁴ is established/passed
- × For digital health services¹⁵ is established/passed



National legal framework for data security and privacy that addresses:

- × Privacy of personally identifiable data
- × Privacy of individuals' health-related data
- × Civil registration and vital statistics
- × National identification management systems
- × Sharing of digital data between health professionals in the health services through the use of an eHR
- × Sharing of personal and health data between research entities
- ✓ Individual's electronic access to their own health-related data
- ✓ Individuals to demand their own health-related be corrected
- ✓ Individuals to demand the deletion of health-related data
- × Individuals to specify which health-related data can be shared with health professionals
- × Cross-border data security and sharing¹³



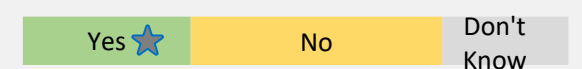
Essential Digital Health Tools

Unique ID [3, 26]

Unique identifier (ID) of individuals on the regional or national level



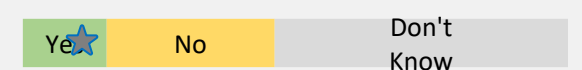
Unique ID of individuals for health⁷ on the regional or national level



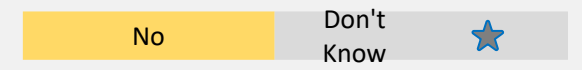
Unique ID of individuals is at least partially used through the course of care delivery for residents on the regional or national level¹¹



Unique ID of individuals is used by at least one other sector than the health sector on the regional or national level



Unique ID of authorized providers is used at least partially through the course of care delivery on the regional or national level



Unique ID of authorized health care facilities is used at least partially through the course of care delivery on the regional or national level



Health Info System/eMR/eHR [6, 27]

At least one health information system on the regional or national level



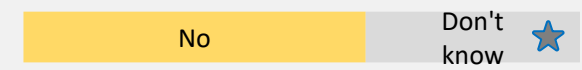
At least health information systems on the regional level are partially integrated with the national-level health information system



At least evidence of point-to-point exchange of eMR/eHR data between hospital systems



At least nationally standardized minimum eMR/eHR data sets are exchanged between hospital systems



Fully standardized and exchange eMR/eHR data linked with data from other digital health applications for health services



★ Country's value

Regional Response (%)

Snapshot of the country's eMR/eHR systems [3, 6, 27-29]

1 national eMR/eHR system

(or %population) of registered patients in the national eMR/eHR system

36 health care facilities using eMR/eHR systems, 2015

Information system(s) at a health facility (specify if it is integrated with the eMR/eHR systems):

- ✓ Laboratory info system (**Integrated**)
- ✓ Radiology/PACS system (**Integrated**)

[Don't know] Pharmacy info system

- ✓ Drug procurement info system

[Don't know] Electronic medical billing system

- ✓ Human recourses for health info system

Snapshot of the country's network-based reporting [6, 25, 27]

70.8% of total population completed birth registration in Civil Registration and Vital Statistics (CRVS) system

- ✓ Regional and/or national vertical disease/health program(s)¹⁶ uses their own electronic patient registries

[Don't know] Immunization information reporting system

- ✓ Electronic notifiable disease surveillance system(s)

[Don't know] Electronic syndromic surveillance system(s)

- ✓ Regional and/or national electronic reporting system(s) for public health information

Digital Health Readiness Analysis

Essential Digital Health Tools (continued)

Telemedicine & mHealth [3, 30-31]

Indicators	Country
At least one telemedicine program ⁸ for health service is in use on a regional or national level	✓
At least one telemedicine program is integrated with the eMR/eHR system at least on a regional or national level	Don't know
At least one mHealth program ⁹ for health services is in use on a regional or national level	✓
At least one mHealth program for health information ⁵ is in use at least at one region	Don't know

Social media [32-34]

Indicators	Country
Social media is used to promote health messages and learn about health issues on a regional or national level	✓
Social media is used to assist in the clinical management process (e.g., appointment scheduling) on a regional or national level	Don't know
Social media is used by health care organizations to collect feedback from individuals/communities on a regional or national level	✗
Social media is used by health care organizations to make general and/or emergency announcements on a regional or national level	✓

Health System Adoption

Strategy & Governance [6, 35, 40-41]

Indicators	Country	PIC Average (%'Yes')
National e-Government plans	Yes	38.5
National policies and/or plans includes ICT in multiple sector(s)	Yes	61.5
National policies and/or plans includes ICT in health	Yes	53.8
A multi-sectoral governance (e.g., committee) including the health sector is articulated in the ICT plan	Yes	15.4
National digital health strategy and/or plans with identified priorities	Yes	46.2
National digital health monitoring and evaluation framework	No	0.0
Multi-stakeholder partnership ¹⁰ is identified in national strategy for digital health	No	15.4
A separate department/agency/national working group for health info system on the national level	Yes	76.9
A separate department/agency/national working group for digital health on the national level [8]	Don't know	30.8
A national data governance framework that identifies key elements of governance for digital health ¹⁷	No	0.0
A national governance framework for assessing and managing data quality for digital health ¹⁸	No	0.0

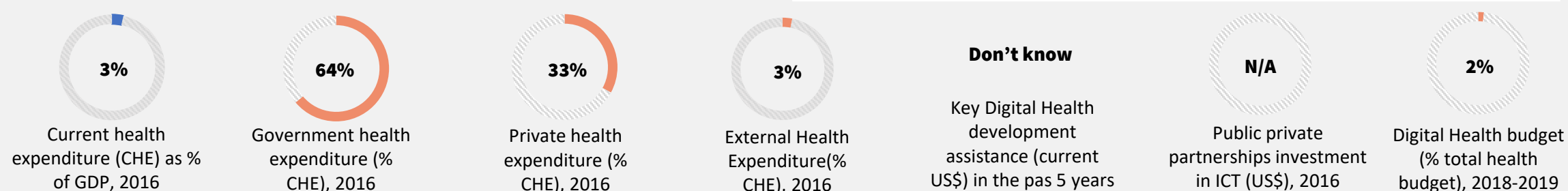
Capacity building [7, 18, 28, 44-46]

Indicators	Country
Conducted needs assessment ^{##} of current technological capabilities for digital health on a regional or national level <small>## Health Metrics Network HIS Assessment Report in 2009 and HIS situation analysis in 2011</small>	✓
Conducted needs assessment of current workforce capabilities for digital health on a regional or national level ¹²	Don't know
Training programs to produce trained digital health work force on a regional or national level	✓
Established pre-service / onboarding training curriculum for digital health on a regional or national level	✓
Established in-service training for digital health on a regional or national level	✓
Established continuous capacity development curriculum for digital health on a regional or national level	Don't know

Snapshot of the country's capacity

- 50% of health facilities connected to the internet, 2011
- Number of technology companies
- Number of ICT/STEM specialists
- 46% population with secondary education, 2017
- 11% population with tertiary education, 2017
- % population with vocational/professional qualification, 2017
- 0.53 E-Government development index

Funding [9, 42-43]



Country Readiness Summary

Strengths

- This country is a hub for international fibre-optic connectivity in the South Pacific.
- Submarine connections provide progressively cheaper and higher-speed international backbone capacity for development of the Internet.
- High **mobile** market penetration and affordability owing to the introduction of competition.
- key enablers (e.g., National Health Number, digital health strategy) and early digital health development are in place.
- A variety of health information systems, although mostly are separate systems, are implemented in the country.
- A number of health workers and staff are trained for digital health applications. Capacity building programs can be provided.

Challenges

- Health systems faces challenges in meeting increasing demands but is stressed by financial constraints.
- Existing information systems are separate systems that can only capture fragmented and partial coverage of information from health facilities.
- Key elements for information sharing, such as interoperability framework and standards, are underdeveloped in this country, which could pose a major challenge the Country's strategic plan of building an integrated health information system.