



## Fifteenth Pacific Health Ministers Meeting

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# Advancing health information and digital transformation in the health sector

## At a glance

- Pacific Island countries and areas (PICs) have long understood the importance of strong health information systems (HISs) and their potential to deliver better health and well-being. In particular, they recognize that the roles played by digital health and by civil registration and vital statistics (CRVS) systems are vital to achieving the Healthy Islands vision and universal health coverage (UHC).
- However, sustainable progress in digital health and health data improvements have been impeded by:
  - a lack of coordinated country leadership and governance;
  - poor connectivity and infrastructure;
  - COVID-19 impacts;
  - insufficient resources; and
  - proliferation of siloed and unsustainable projects and systems which do not connect with each other and overburden health staff.
- Yet successful implementation of digital solutions during the pandemic signalled that a digital future for the Pacific is possible. This momentum should be leveraged to scale up investment in the foundations of sustainable HIS and digital health advancement (such as ICT infrastructure, human resources, data standards and institutional capacity) and foster a culture of data-driven decision-making.
- PICs need to be in the driving seat on decisions around HIS and digital transformation in the health sector. Rather than being driven by offers of tools and technology, the choice of interventions should be based on those that:
  - address immediate and emerging health system gaps;
  - align with national priorities and technical standards;
  - are interoperable with other systems;
  - are supported by appropriate change management processes; and
  - involve all stakeholders, within and outside ministries of health, throughout the process.

## Current situation

The PICs have long recognized the crucial roles of HISs and digital health in achieving the Healthy Islands vision, UHC and the Sustainable Development Goals. Each PIC has embarked on its unique path to implement HIS and digital health interventions based on national priorities. However, common regional challenges, such as siloed HISs, limited stable internet connectivity, and inadequate investment and resources have impeded sustainable advancement.<sup>1,2</sup> Most PICs have yet to take a multisectoral and cross-ministries approach, such as by leveraging the health sector to improve CRVS systems that generate high-quality vital statistics that are needed to inform health services planning over a life course. UHC cannot be achieved without universal birth and death registration. It is therefore crucial to ensure that integrated and meaningful action is taken to simultaneously improve HISs and CRVS systems. System interoperability is desirable, but it is a recognized challenge in all PICs regardless of income level.

PICs are leapfrogging to novel and advanced technologies, sometimes exceeding their current digital health maturity. As a result, there has not been sufficient investment in the foundational pillars of resilient HISs and digital health development (e.g. ICT infrastructure, human resources, digital health literacy, data standards and institutional capacity).<sup>1,2</sup> Most PICs do not have the enabling environment to sustain implementation of advanced digital health interventions. The lack of stable internet connection and basic ICT infrastructure are persistent challenges across the region, particularly in outer islands. Moreover, digital health solutions have been introduced on an ad hoc basis, resulting in a chaotic and unsustainable environment that offers quick-fix solutions rather than resolving health system gaps. This condition is exacerbated by the limited human resources in most PICs. Indeed, the already overwhelmed health staff there lack the time and resources to learn new systems and face difficulties in using multiple systems not designed specifically for their needs. While economic contexts differ across the Pacific, PICs with strong governance and leadership have made greater strides in advancing digital health by coordinating development partners' support and taking a whole-of-government approach.

Over the course of the pandemic, the needs for real-time, high-quality data became fully obvious. These ranged from informing effective emergency response to guiding efficient resource allocation and building trust among the general public. The pandemic also highlighted the need to improve the timeliness and completeness of death registration and notification systems, as well as the potential for using digital tools to fill in these gaps. Most PICs, however, lacked the technical capacity, human resources and infrastructure to generate real-time data and to translate data into evidence-based decisions.<sup>2</sup> Furthermore, most PICs did not have the infrastructure in place to support a national rollout of digital health solutions to ensure health service continuity.<sup>1</sup> More broadly, a culture of people-centred digital health implementation and data-driven decision-making was absent.

## Future vision

The vision over the next decade is for PICs to have the following:

1. Health information and digital health solutions that are people-centred and health-system-oriented. They should strengthen health systems and accelerate achievement of national health priorities. This would enable:

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<sup>1</sup> World Health Organization. The State of Health Information Systems and Digital Health in the Pacific: from Fragmentation to Interoperability. (Ahead of publication).

<sup>2</sup> World Health Organization. Regional Office for the Western Pacific (2017). Health information systems in the Pacific at a glance 2016.

- expansion of the reach of health care specialists via telehealth, to address human resource and health service gaps;
  - reduction in stock-outs and wastage through efficient management of medical supply chains;
  - greater continuity of health service delivery by connecting hard-to-reach populations; and
  - timely exchange of information to support evidence-based decision-making with neighbouring specialists.
2. Interoperable HISs, with connection across health facilities at all levels and with systems beyond health (e.g. statistics and justice sector for vital registries) that can generate high-quality and timely information to improve people's health and ensure that health systems are future-proof. This includes the use of integrated health data by:
- ministers, to uphold accountability and transparency;
  - administrators at all levels, to manage population health programmes and address social issues;
  - clinicians, to effectively monitor patients over their life course;
  - researchers, to better understand diseases and population health patterns to create innovative solutions; and
  - citizens, to make informed lifestyle choices.

To achieve this vision, governments must lead an evidence-based approach to HIS and digital health transformation. By developing a strategic blueprint based on their digital health maturity, PICs can take informed incremental steps towards their national priorities while ensuring appropriate use of health technologies. Government stewardship is critical to steer this digital transformation process – from strengthening coordination and oversight of HIS and digital health implementation, to unifying stakeholders' commitment to fostering a culture of evidence-based decision-making and people-centred digital health implementation. PICs should also leverage innovations and “grounds up” solutions, including by scaling up local digital health initiatives.

For PICs to reap the full benefit of digital health advancement, governments must collaborate and act beyond ministry confines. To do so, they should take such actions as engaging all stakeholders within and outside of ministries of health throughout the transformation journey and simultaneously strengthening HISs and CRVS systems to improve data quality and achieve interoperability. As a whole-of-government approach is essential to achieving digital transformation, the health sector can play a leading role in coordinating across sectors beyond health within (e.g. finance, civil registry, ICT) and outside of the government, to ensure immediate and consistent investment in strengthening the foundations of HIS and digital health development.

Improvement of digital health literacy across governments, development partners and the general public is also needed in order to make informed decisions at all levels. Similarly, effective change management processes are required to support all end users so that they can adapt and thrive in this new digital environment. This includes providing safe platforms to provide feedback and discuss implemented interventions. Robust monitoring mechanisms are also needed to ensure that deployed digital solutions are achieving their intended impact, such as reducing the burden placed on health care workers.

## Examples of recent progress

PICs have continued to make progress in strengthening the foundations of HIS and digital health and in utilization of health information. In doing so, they have overcome challenges brought on by the COVID-19 pandemic.

### Development of evidence-based digital health strategic plans

Several PICs have developed or are updating their national digital health strategic plan. **Fiji** recently completed a two-year process to update their national digital health strategy. This initiative started with an in-depth situation analysis to identify digital health strengths, weaknesses, opportunities and threats; it consisted of multiple rounds of technical expert reviews and broad stakeholder consultations across sectors and government ministries. The final strategy will guide Fiji in using digital health solutions for health system improvement by focusing on strengthening digital health foundations, governance, architecture, digital systems and change management. This process is resource intensive but vital: it is the encouraged path towards sustainable digital transformation. **Kiribati** and **Samoa** have endorsed national digital health strategies. Meanwhile, several other PICs (**Cook Islands, Marshall Islands, Papua New Guinea, Solomon Islands and Vanuatu**) are beginning on this journey.

### Strengthening telecommunications to improve health service delivery

Investments in digital health foundations, such as ICT infrastructure, may have spillover effects on the health system and yield quick and heightened return on investment. This was evident in the installation of the Very Small Aperture Terminal (VSAT) in **Tuvalu** to connect the sole hospital in the country, Princess Margaret Hospital (PMH), to primary health clinics on the eight outer islands. This VSAT system enabled reliable real-time or near real-time direct communication between outer island health workers and medical staff at PMH, resulting in more clinically meaningful consultations and improved patient management. The system also reduced the number of domestic and overseas medical referrals, thereby cutting health care costs and wait time for appropriate intervention. Another spillover effect of VSAT is the increased access to formal and informal health workforce education and training through the connection of outer island nurses to medical doctors at PMH. However, its successful implementation required capacity-building to strengthen the fundamental information technology skills and digital health literacy of health workers. Additional and consistent investments in infrastructure (e.g. stable electricity) and in maintenance of equipment (e.g. computers) are also required to avert VSAT disruptions.

In the **Federated States of Micronesia (FSM)**, a telemedicine hub for live synchronous teleconsultations was set up to pilot the connection of Pohnpei State Hospital to a dispensary. While the aim was to improve remote management of patients diagnosed with chronic noncommunicable diseases, the teleconsultations also reduced unnecessary domestic referrals. Beyond procurement and installation of equipment, establishment of the hub required hospital clinicians and outer dispensary assistants to undergo a series of simulation training.

In addition, a two-way short messaging service (SMS) system is in development in **FSM, Marshall Islands** and **Palau** to improve routine immunization coverage and child development. Following registration (during child delivery or the first antenatal care visit), a caregiver would receive periodic

reminders on the routine immunization schedule, antenatal care visits, and important tips for nutrition and parenting.

### *Establishing digital health architecture building blocks to accelerate data collection and use*

Initiatives to strengthen the building blocks of digital health architecture are being implemented to enable digitalization of data collection that supports integrated health care delivery. **Tonga** launched its National Health Information System (NHIS) in October 2019 to improve the delivery of health services nationwide. Because it is an integrated system, health care professionals can access vital information instantaneously, regardless of where they may be across maternal clinics, health centres and hospitals throughout Tonga. This will improve the efficiency of patient management and care, and it will provide reliable and timely data for planning and policy-making purposes. The NHIS “go live” took place at Vaiola Hospital in Tongatapu on 1 December 2021. It was later implemented at the Niu’eiki Hospital in ‘Eua on 9 August 2022 and at seven health centres in Tongatapu on 19 September 2022. The rollout shall continue until the NHIS is operational at the rest of the health care facilities in the outer islands. The NHIS has demonstrated its resilience, as it was able to continue its intranet use when Tonga lost internet connectivity for several weeks after a volcanic eruption and tsunami severed a submarine cable on 15 January 2022.

In **Fiji, Kiribati and Solomon Islands**, the Master Patient Index is being introduced to support implementation of national unique health identifications and interoperability of HISs within health care (e.g. immunization registry) and outside health care (e.g. civil registry and vital statistics systems). An electronic immunization registry platform, which is open-source and standard-based, is also being implemented to link the expanded programme on immunization (EPI) with other vaccination programmes such as those for vaccination against COVID-19 and human papillomavirus. Digital data collection and visualization tools for supportive supervision have been deployed for EPI and cold chain equipment in **FSM, Fiji, Solomon Islands and Vanuatu**, in order to facilitate accurate documentation of supervision outcomes, real-time data sharing and faster evidence-based decision-making.

## **Why urgent action is needed now**

HIS and digital health solutions hold immense potential to advance the health of the Pacific population and to accelerate progress towards attainment of the Healthy Islands vision and UHC. Successful implementation of digital interventions during the pandemic demonstrates that a digital future is possible for the Pacific, despite known infrastructure challenges. This momentum should be strategically leveraged to ensure that investments made during the pandemic are built upon in an interoperable and sustainable manner. Interoperable HIS and digital health solutions can also alleviate stresses on the health care system, for example by lightening the burden on the health workforce. With ICT infrastructure becoming more widely available thanks to increasing investment in the region, PICs must be forward-thinking and maximize this opportunity. Pacific governments must thus lead urgent actions to prevent HIS and digital health interventions from remaining siloed and unable to meet emerging health system needs.

Moreover, the foundations for sustainable health information and digital health advancement require consistent investment and effort to foster continued progress over time. Developing digital enterprise architecture is also a complex challenge requiring long-term planning and coordinated efforts. Incremental steps, informed by each PIC’s digital health maturity, must be taken to develop



ICT infrastructure, human resources, interoperability, digital health literacy and institutional capacity. This must be done cohesively and sustainably, in order to successfully support implementation and uptake of increasingly advanced interventions. As health information and digital health interventions become more complex, additional investment is required to ensure that people are protected by appropriate privacy and security mechanisms. PICs must also ensure that advancements ameliorate existing inequities and do not widen the digital divide. Each PIC should embark on its journey to health information and digital health transformation without delay.

## Recommendations

Recommendations for health ministers:

1. Direct **collaboration with other ministries** to steer health information systems and digital health advancement and its integration into **overall country digital enhancement plans**. This includes collaboration with ministries of finance and economy to establish sustainable financing mechanisms, ministries for communication and information technology to develop national infrastructure to support health information and digital health foundations, as well as collaboration across ministries to enforce data standards and system interoperability.
2. **Assert leadership and governance** to direct a country-owned health information and digital health transformation process, by establishing institutional mechanisms that enforce adherence to technical standards and alignment with national priorities by all health information and digital health interventions being introduced.
3. **Advocate for sufficient and consistent funding** to strengthen digital health foundations and to implement evidence-based digital health and HIS strategies and operational plans that align with their national priorities.

Recommendations for development partners:

1. Ensure that **Pacific governments are in the driver's seat**, by implementing health information and digital health interventions only if they adhere to technical standards and align with health system needs defined by each PIC. Use each PIC's digital health maturity assessment as the basis for initiatives in strengthening HIS and CRVS, advancing digital health systems and developing digital health road maps that are country specific.
2. Prioritize the **interoperability** of health information systems by coordinating technical assistance and donor resources across development partners, including:
  - a. convening annual coordination meetings with all development partners and key stakeholders investing in and implementing HIS and digital health interventions in the region, including Ministries of Health;
  - b. providing cohesive support to develop interoperable HISs and digital health interventions that enable PICs to collect, produce and utilize data at all levels of the health system.
3. Support the **development of regional solutions to common challenges** by developing Pacific benchmarks and creating platforms for PICs to share case studies and best practices.