Health Information Systems
in the Pacific at a Glance 2016

World Health Organization
Western Pacific Region

Health Information Systems in the Pacific at a Glance 2016

World Health Organization
Western Pacific Region

ISBN 978 92 9061 819 5

Suggested citation. Health information systems in the Pacific at a glance 2016. Manila, Philippines: World Health Organization Regional Office for the Western Pacific; 2017. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. 1. Database management systems. 2. Health information systems. 3. Pacific Islands. I. World Health Organization Regional Office for the Western Pacific. (NLM Classification: W26.55.I4)

Sales, rights and licensing. To purchase WHO publications, see http://apps.who.int/bookorders. To submit requests for commercial use and queries on rights and licensing, see http://www.who.int/about/licensing.
For WHO Western Pacific Regional Publications, request for permission to reproduce should be addressed to Publications Office, World Health Organization, Regional Office for the Western Pacific, P.O. Box 2932, 1000, Manila, Philippines, Fax. No. (632) 521-1036, email: wpropuballstaff@who.int

For inquiries and request for WHO Western Pacific Regional Publications, please contact the Publications Office, World Health Organization, Regional Office for the Western Pacific, P.O. Box 2932, 1000, Manila, Philippines, Fax. No. (632) 521-1036, email: wpropuballstaff@who.int

Contents

Acknowledgements v
Abbreviations vi
Executive summary vii
1. Background 1
2. Methodology 2
3. Results 3
HIS resources – coordination, planning and policies 3
Financial and human resources 6
Infrastructure 8
Indicators 9
Data sources 10
Data management 12
Data quality 13
Dissemination and use 15
Other comments 20
4. Discussion 25
5. Recommendations 28
References 29
Annexes 31

List of Tables

Table 1 – HIS committee membership 4
Table 2 – HIS department skills and qualifications 6
Table 3 – National surveys conducted 10
Table 4 – Barriers to subnational information reported to national HIS unit 11
Table 5 – Examples of reports generated since 2014 by country 15
Table 6 – Country examples of circumstances in which senior management demands HIS information 16
Table 7 – Suggestions for ensuring health information is used for decision-making 18
Table 8 – Outcomes ministers should expect when investing in HIS 21
Table 9 – Information that could be available in five years 22
Table 10 – Assistance to health minister's role 24
Table 11 – High-priority challenges 27

List of Figures

Fig. 1 – Challenges in implementing HIS activities by country and category 5
Fig. 2 – Type of skills and training word cloud 7
Fig. 3 – HIS budget line item by country and category 8
Fig. 4 – Number of indicators by country 9
Fig. 5 – Barriers from vertical reporting systems to the national HIS 12
Fig. 6 – Warehousing challenges by country 13
Fig. 7 – CRVS assessment findings – key challenges by country 14
Fig. 8 – HIS unit reporting frequency to senior managers 17
Fig. 9 – Issues and challenges to address HIS 20

Acknowledgements

This publication, *Health Information Systems in the Pacific at a Glance 2016*, is based on a technical report written by Ms Nilva Egana, engaged by the WHO Regional Office for the Western Pacific as a health information systems (HIS) consultant. Ms Egana contributed to the assessment design, data collection, data analysis and writing. Dr Kunhee Park, WHO Regional Office for the Western Pacific, Mr Sunia Soakai, Pacific Community (SPC), and Mr Shivnay Naidu, President of the Pacific Health Information Network, contributed to the concept of the assessment and review of the findings. Mr Ivan Low, an intern at the WHO Regional Office for the Western Pacific, assisted with the data analysis and writing. Numerous staff members from WHO and partner organizations also contributed to the report.

The publication reflects the views of those who compiled the report and does not necessarily represent the policies or decisions of the World Health Organization. The draft findings of this publication were presented during the Pacific Health Information Network meeting on 30 May 2016.

Abbreviations

CRVS	civil registration and vital statistics
DHS	Demographic and Health Surveys
HIMF	Healthy Islands Monitoring Framework
HIS	health information system
ICD	International Classification of Diseases
ICT	information and communication technology
NCD	noncommunicable disease
PHIN	Pacific Health Information Network
SDG	Sustainable Development Goal
SPC	Pacific Community
STEPS	WHO STEPwise approach to Surveillance
TB	tuberculosis
WHO	World Health Organization

Executive summary

Background

This report provides a 2016 snapshot of the status of national health information systems (HIS) in the Pacific. The Meeting on Strengthening Health Information Systems in the Pacific organized by the Pacific Health Information Network (PHIN), the Pacific Community (SPC) and the World Health Organization (WHO) was held in Nadi, Fiji, in May 2016. It was a timely meeting as the heads of health had ratified the *Healthy Islands Monitoring Framework* in April 2016, leaving HIS professionals to work out the mechanisms by which the indicators would be collected and reported. The PHIN meeting provided an opportunity for countries to reflect on some of the challenges and opportunities for strengthening HIS, with the end goal of being able to monitor accurately and report on the health of their nations.

Method

Invitations to attend the PHIN meeting were sent to 21 Pacific island countries and areas. Acceptances were received from 17. Once the participants had been nominated, they were invited to complete the HIS Hub Rapid Assessment tool. The data from the 15 countries that responded were analysed and presented on the first day of the meeting. All participants, irrespective of whether or not they had completed the HIS Hub Rapid Assessment tool, were given the opportunity to work with their colleagues in prioritizing the challenges that were identified in the reporting tool.

Results

The HIS Hub Rapid Assessment tool yielded results in eight domains: (1) HIS resources; (2) financial and human resources; (3) infrastructure; (4) indicators; (5) data sources; (6) data management; (7) data quality; and (8) dissemination and use. In total there were 31 questions, with an additional 50 subquestions. Of the questions available, 25 had binary options only. An overview of the binary responses may be viewed in Annexes 4a and 4b, but caution is required, as the affirmative responses may not reflect the true HIS status of a country.

Challenges identified by respondents were broadly categorized into People, Process, Technology and Other– People and Process being the most commonly experienced challenges. There were 116 different challenges in all: 40 were categorized as "People" challenges – that is lack of human resource capacity; 29 were categorized as "Process" challenges – that is lack of guidelines/policy/legislation; 25 were categorized as "Technology" challenges – that is lack of electronic information systems; and 22 were categorized as "Other" challenges – e.g. lack of funding.

Conclusion

The HIS Hub Rapid Assessment tool provided a regional picture of the gaps in HIS implementation. Through various plenary sessions and group work discussions during the PHIN meeting, a general consensus was reached regarding the common challenges that affect Pacific island countries in the implementation of HIS. These are: information technology infrastructure, HIS policy and legislation, human resources training and capacity-building, standards setting, geographic isolation, non-institutionalized data, data quality, data ownership and sharing, and data set coordination. Key areas to focus on in the Pacific region were identified as: governance and commitment; HIS policies, legislation and regulation; HIS focal points and workforce capacity-building; and better regional collaboration.


MALARIA?

1. Background

Globally since 1948, health has been defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" *(1)*. In the Pacific over 20 years ago, the vision of Healthy Islands was born. The *Yanuca Island Declaration*, which was reaffirmed in 2015 *(2)*, projected Healthy Islands to be a state in which:

- children are nurtured in body and mind
- environments invite learning and leisure
- people work and age with dignity
- ecological balance is a source of pride
- the ocean which sustains us is protected.[1]

This visionary declaration begs the question: "*How will Pacific island countries know their children are actually being nurtured in body and mind or that the oceans are actually being protected?*"

The answer lies in selecting key indicators that allow changes to be measured: a role the *Healthy Islands Monitoring Framework* (HIMF) and the Sustainable Development Goals (SDGs) hope to achieve. However, the success of any framework is greatly influenced by the robustness of a country's health information system (HIS).

The 2016 World Health Assembly reaffirmed the importance of health information systems in a variety of strategic domains *(3–14)*, for example, health-care workforce strengthening; addressing interpersonal violence; ensuring the needs of an ageing (2005) population are being met; and the promotion of front-line International Health Regulations core capacities.

It was with the improved health of the Pacific island countries and areas in mind that country representatives gathered in Nadi, Fiji, in May 2016 for the Pacific Health Information Network (PHIN) meeting. The PHIN meeting provided an opportunity for countries to reflect on some of the challenges and opportunities for strengthening HIS, with the end goal of being able to monitor accurately and report on the health of their nations. This report summarizes challenges and opportunities and proposes future recommendations.

[1] The ocean statement was added at the 1999 meeting in Palau.

2. Methodology

In March 2016, the ministries of health of 21 Pacific countries and areas were each invited to nominate one or two participants to attend the May 2016 PHIN meeting. The PHIN organizing committee discussed options for which HIS assessment tool would best capture a snapshot of the countries' HIS status without burdening the limited resources in each country. A decision was made to use the HIS Hub Rapid Assessment tool which was developed by the University of Queensland HIS Hub. This was based on the Health Metrics Network HIS Assessment tool and was available in an electronic Adobe Reader fillable format *(15)*.

The HIS Hub Rapid Assessment tool has eight sections: 1) HIS resources; 2) financial and human resources; 3) infrastructure; 4) indicators; 5) data sources; 6) data management; 7) data quality; and 8) dissemination and use. In total there are 31 questions, with an additional 50 subquestions (Annex 1).

PHIN meeting invitation acceptances were received from 17 countries and areas. As contact details of the nominees were received, they were invited to complete the HIS Hub Rapid Assessment within two weeks. The completed HIS Hub Rapid Assessment forms were entered into MS Excel for analysis. Completed HIS Hub Rapid Assessment forms were received from 15 out of the 17 countries attending the PHIN meeting – an 88% response rate. Of the 15 countries that completed the HIS Hub Rapid Assessment, 33% were from Melanesia, 33% from Micronesia and 33% from Polynesia (Annex 2). The occupations of the respondents are listed in Annex 3.

Several questions in the HIS Hub Rapid Assessment required free–text responses. In most instances, the author identified common themes, which enabled the results to be presented in a summarized format for the audience. In order to gain a better understanding of all the HIS-related challenges, barriers and issues facing Pacific island countries, the free–text answers to the six questions in bold and underlined in Annex 1 were analysed to produce the overall status.

Responses to the HIS Hub Rapid Assessment were not validated after submission other than when the data were presented at the PHIN meeting. Country representatives were able to query the data.

3. Results

Twenty-nine of the questions in the HIS Hub Rapid Assessment required yes/no responses. Summaries of the answers by country are available in Annexes 4a and 4b.

HIS resources – coordination, planning and policies

1. HIS policies or legislation

Nine respondents (60%) indicated that their country did not have any HIS policies or legislation, while the remaining six (40%) did. Of the countries that responded in the affirmative, the following examples were provided: health information policy; public health act; cause-of-death legislation; national HIS policy; e-health policy; HIS policy; vital statistics; and medical records.

Countries without HIS policies or legislation were asked to indicate whether they had any plans to develop them. The responses provided were: legislation related to establishment of an all-payer claims database; governance for health information exchange; civil registration and vital statistics (CRVS) strategic plan; and HIS policies. Planned policies included an emphasis on confidentiality, CRVS and information and communication technology (ICT) issues, SDGs, a national framework on how to use data from different sectors and programmes, and a plan for periodic monitoring of this policy through an HIS committee. Provision for private health sector reporting may require legislation.

2. HIS committee

Six countries (40%) indicated that they had a national HIS committee that met regularly, and nine (60%) indicated that they did not. Two countries that did not have a committee indicated that one would be set up later in 2016, while the other indicated that an attempt had been made to set up a committee in 2011–2012, but for various reasons (including a change of government), the efforts to set one up were discontinued.

Table 1 displays the professionals involved in HIS committees in countries that indicated they had one.

Table 1. HIS committee membership

Ministry of Health	CEO/directors	CEO-Health Director Health Information & Research Analysis Director Epidemiology
	Managers	Health Information Manager Policy and Planning Manager National health programme managers Information Technology (IT) Manager
	Advisers	National advisers (communicable & noncommunicable diseases, Family Health, Divisional Chairperson for Health Information Committee)
	Senior medical & nursing staff	Senior nurses Divisional medical officer Medical superintendent
	Performance and research	Statisticians Health Research Officer Performance Monitoring Sub-Committee
	ICT	ICT Subcommittee, software administrators
	Other	Health Sector Support Programme Grants Management Unit
Non-Ministry of Health	Ministry of Education Civil registration Donor partners Ministry of ICT	

Of the six countries with HIS committees, four (67%) had terms of reference, and five (87%) indicated that their HIS committee produced reports. The following report examples were provided:

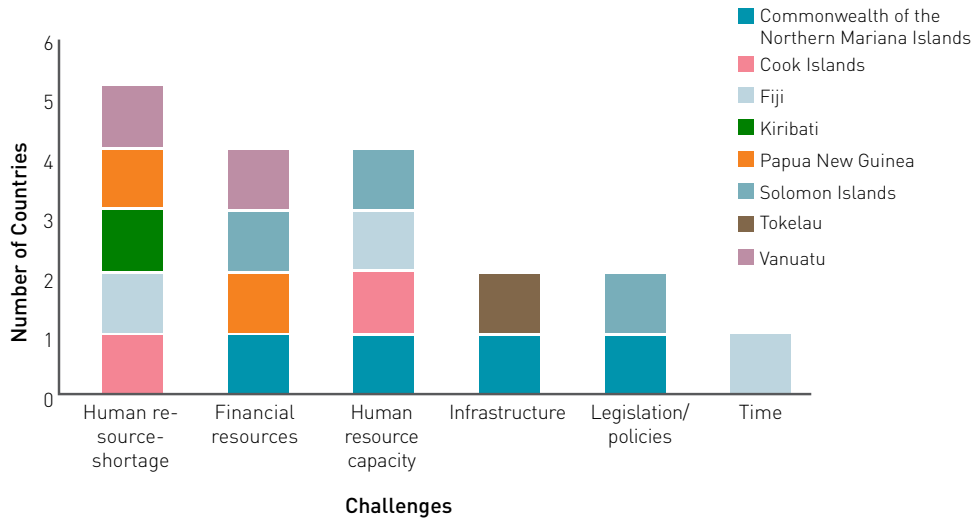
- National Health Information Strategy;
- National Health Information Committee meeting minutes and action items to strengthen HIS, and for endorsement of forms, instructions and guidelines for filling in forms for routine health information by the health facilities;
- Sector Performance Annual Review;
- draft HIS Strategic Plan;
- endorsement of the e-Health Strategic Plan;
- annual reports, survey reports, inventory reports, work plans, corporate plans, specialist visit mission reports;
- Monthly Bulletin of Health Statistics, October and November; and
- publication of the Annual Health Bulletin.

3. HIS strategy

Nine countries (60%) answered that they had an HIS strategy, while six did not. Two countries had their HIS strategies incorporated in their national health department overall work plans. Of the nine countries that indicated their country had an HIS strategy, six provided dates for when it was developed: Commonwealth of the Northern Mariana Islands, 2008–2009; Papua New Guinea, 2012–2013; Kiribati, 2012–2015; Cook Islands, 2014; Vanuatu, 2015; and Fiji, 2015–2020.

In terms of HIS strategy implementation, two countries indicated that it had yet to be implemented; four had been partly implemented or were in progress; and three indicated that their HIS strategy had been implemented. Eight countries identified several challenges with implementing HIS activities, which can be categorized into: human resource shortage; financial resources; human resource capacity; infrastructure; legislation/policies; and time (Fig. 1).

Fig. 1. Challenges in implementing HIS activities by country and category



Of the six countries that did not have an HIS strategy or one embedded in another plan, two did not indicate whether they had a plan for HIS activities or a plan to develop an HIS strategy.

4. HIS in annual health plan

Fifteen countries (100%) provided a response to this question. All but one respondent indicated that an HIS strategy was included in the annual health plan.

Financial and human resources

5. Training

Eleven of the countries (73%) indicated that there were not enough appropriately trained people in the HIS department. Only four (27%) countries indicated otherwise. Table 2 displays the skills and qualifications for the four countries that indicated they had appropriately trained staff in the HIS department.

Table 2. HIS department skills and qualifications

Country	Skills and Qualifications
Fiji	- Coders, epidemiologist, data analysis programmers, DBAs, system analysts, statisticians, public health
Micronesia (Federated States of)	- Data collection, management and analysis
Samoa	- Analytical, databases, data analysis reporting, system administration, website maintenance
Vanuatu	- 6 HIS officers in Vanuatu with formal qualifications. - 3 with Bachelor's Degree in Public Health from Fiji School of Medicine. - 2 with Diploma in General Nursing - 1 has completed 3 years in environmental science at Cavite State University in the Philippines - In total, there are 10 HIS staff across all of Vanuatu - WHO temporarily funds 2 positions - 1 provincial HIS officer position is currently vacant - Of the 10 staff, 4 have no formal qualifications

Fig. 2 displays a word cloud of the training and skills identified by the 11 countries that indicated their HIS department did not have adequately trained staff. The bigger words indicate more frequently mentioned words.

Fig. 2. Type of skills and training word cloud

6. HIS capacity-building activities

All countries except one indicated that HIS capacity-building activities had taken place in the past two years. The activities could be categorized into three broad areas:

- targeted training – International Classification of Diseases (ICD) coding, DHIS2, Medtech32, Cause of Death;
- accredited education – Healthcare Informatics Graduate Certificate programme; and
- workshops – data for decision-making, CRVS, Pacific Health Information Network.

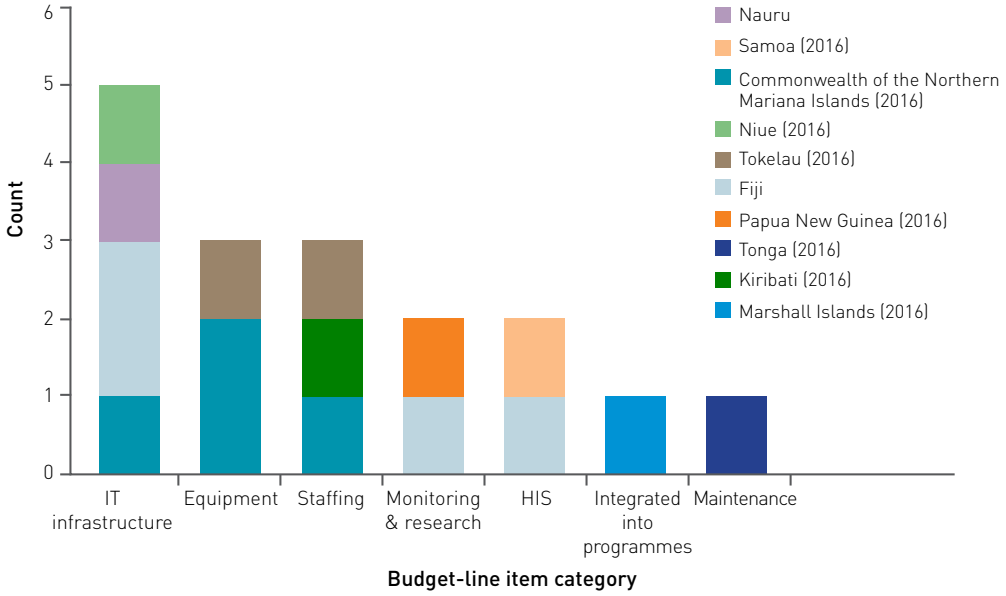
7. Assistance

Assistance was available to health and HIS staff at the subnational level in 12 countries (80%). Three countries (20%) indicated that assistance was not available.

8. Budget items

An HIS budget line item was reported to be in the national budget in 11 countries (73%), while four countries (27%) did not have one. One country selected "no", but qualified it by saying that "there are funding allocations for its activities". Fig. 3 displays the budget line items nominated by countries. They can generally be categorized as follows: equipment; HIS; integrated into programmes, that is cancer grant, tuberculosis (TB), leprosy, epidemiology and laboratory capacity grant; IT infrastructure – software, hardware, servers, desktop, networking, licences; maintenance; monitoring and research; and staffing.

Fig. 3. HIS budget line item by country and category



Infrastructure

9. Supplies

Fourteen countries (93%) provided a response to this question. The majority (11, or 73%) of respondents indicated that they had enough supplies. The three countries (20%) indicating that they did not have adequate supplies proposed supplies such as a photocopying machine to be made available and for there to be an adequate budget allocation.

In one of the countries, if supplies do run out, staff are encouraged to enter data into a database or to use a Citizens' Band (CB) radio to transmit monthly data. Staff will also inform the national office and steps will be taken to obtain supplies. This may mean incurring freight costs to outer islands.

10. Regular IT support

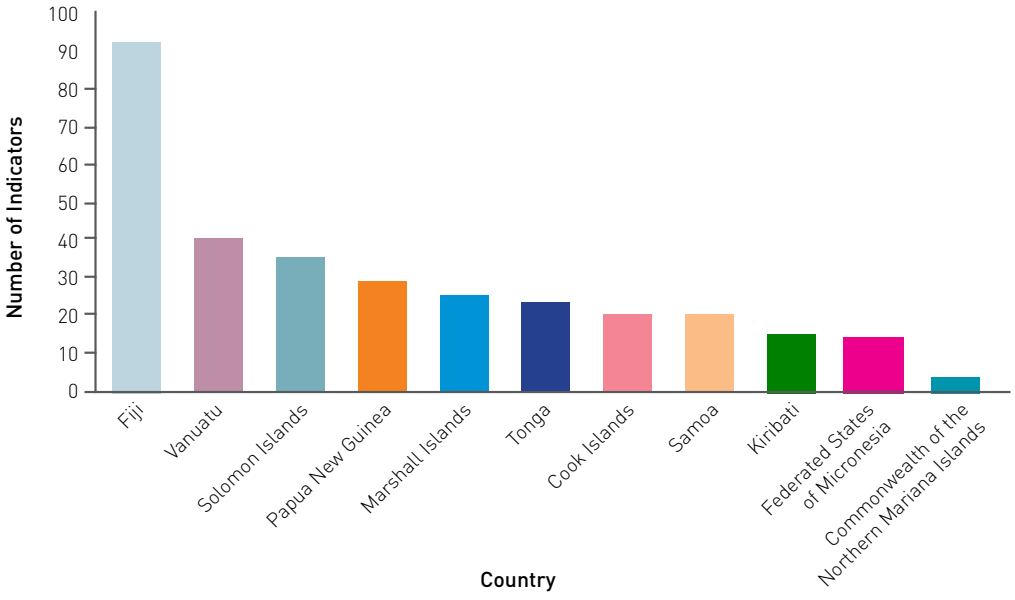
Regular IT infrastructure support was available in 11 countries (73%). The type of support required includes: ongoing IT support at national and subnational levels; database upgrades for interoperability; regular maintenance and dedicated IT support staff for health-care operations; and cloud platforms for dashboard reporting.

Indicators

11. Indicators

Fourteen countries (93%) provided a response to indicate whether they had a national minimum set of core indicators that were being regularly reported on. All 14 countries answered in the affirmative. Fig. 4 displays the number of indicators for the 11 countries (73%) that responded. Four countries stated that their indicators were being determined or did not know how many indicators their country reported on. Approximately 17 different reports have been produced on the indicators.

Fig. 4. Number of indicators by country



Data sources

12. Census

Thirteen countries (87%) responded to the question on whether their country's census had morbidity and mortality questions. Eight countries (53%) answered in the affirmative, five (33%) in the negative, and two (13%) did not provide an answer.

13. Civil registration and vital statistics

Fifteen countries (100%) responded to the question about a functioning CRVS system. Twelve countries (80%) answered in the affirmative, and three (20%) in the negative. Collecting cause of death information is a challenge for Papua New Guinea and Vanuatu.

14. International Classification of Diseases

Fifteen countries (100%) responded to the question about the use of ICD for coding mortality and morbidity. Thirteen countries (87%) answered in the affirmative, and two (13%) in the negative. Ten countries that used ICD coding indicated that these statistics were included in regular reports.

15. Surveys

Fifteen countries (100%) responded to the question on whether or not their country had conducted nationally representative health and demographic surveys in the past two years. Twelve countries (80%) had conducted a survey. Of the three countries (20%) that had not, one intended to complete a WHO STEPwise Approach to Surveillance (STEPS) survey in 2016 and the other a survey for the Expanded Programme on Immunization. Table 3 shows the national surveys conducted, country and year.

Table 3. National surveys conducted

Country and Areas	Survey Type
Cook Islands	- STEPS
Fiji	- STEPS Survey 2011, Community Profile 2011, Oral Health - Survey, National Nutrition Survey, Census 2017
Kiribati	- STEPS survey 2015
Micronesia (Federated States of)	- Behavioural Risk Factor Surveillance Survey, STEPS Survey 2011
Nauru	- STEPS November 2015, March 2016
New Caledonia	- The health agency began a nationally representative survey at the end of 2015 - The results will be available in mid-2016

Table 3. (conti.)

Country and Areas	Survey Type
Northern Mariana Islands the (Commonwealth of)	- STEPS survey assessment is ongoing, but the plan needs to be revisited - Several training courses have been conducted
Papua New Guinea	- Currently conducting 2016 DHS
Samoa	- DHS and STEPS conducted in 2014
Solomon Islands	- STEPS and DHS were both conducted in 2015
Tokelau	- STEPS Survey
Tonga	- STEPS, DHS, census (November 2016)

16. National health data dictionary

Only five countries (33%) indicated that they had a data dictionary. Fiji is developing one. Ten countries (67%) answered in the negative. Answers to the question about health-care workers using the data dictionary varied between "yes", "not sure" and "to some extent".

17. Subnational reporting

Twelve countries (80%) responded in the affirmative to the question about subnational information being reported to the national HIS unit, and three (20%) in the negative. Table 4 displays barriers identified to subnational information being reported to the national HIS unit.

Table 4. Barriers to subnational information reported to national HIS unit

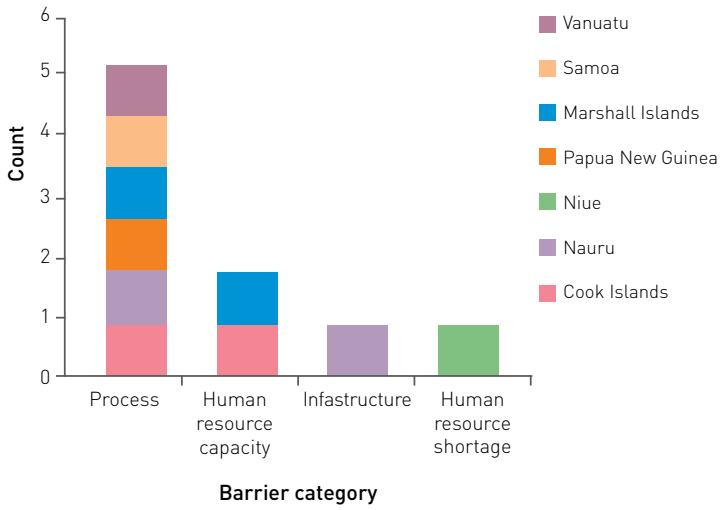
Country and Areas	Barriers
Nauru	Reporting schedule not well established
New Caledonia	Lack of time; lack of personnel; lack of processes; lack of automation
Niue	Some staff members get overprotective of their data
Papua New Guinea	Logistics; transportation

18. Vertical programmes

Eight countries (53%) did not identify any barriers to sharing data between vertical reporting systems and the national HIS unit; and six countries (40%) identified process-related barriers. Human resource capacity was identified as a barrier by two countries (13%); and one country (7%) identified infrastructure and a human resource shortage as a barrier.

Fig. 5 displays the type of barriers encountered by countries between vertical programme reporting systems and the national HIS unit. The majority of countries did not identify any specific barriers, but among the ones that did, process-related barriers were the most common.

Fig. 5. Barriers from vertical reporting systems to the national HIS



Data management

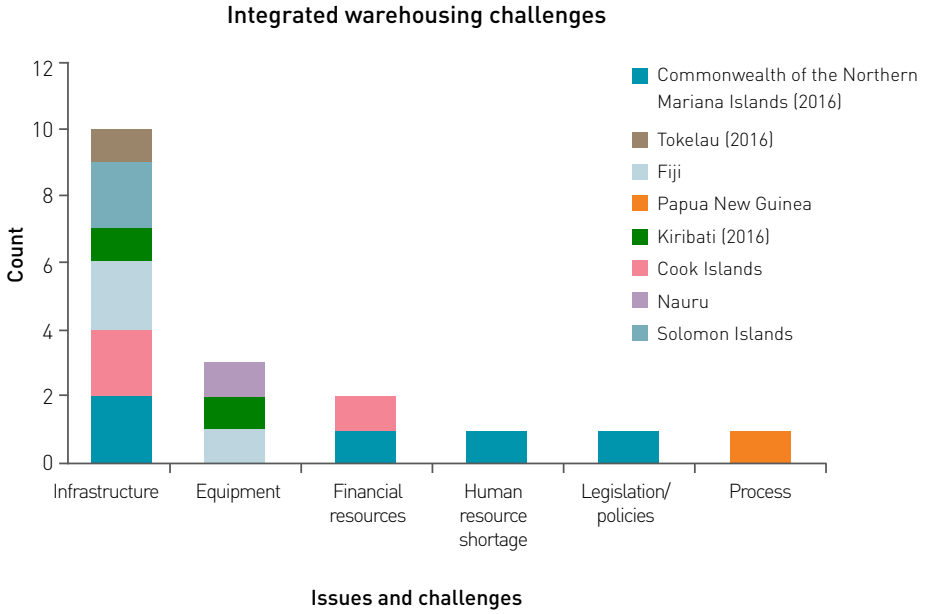
19. Procedures

Five countries (33%) indicated that a written set of procedures was available in their country for data management purposes. Ten countries (67%) responded in the negative. Three countries (20%) indicated that the procedures were in various stages of implementation.

20. Data warehouse

Six countries (40%) answered in the affirmative to the question about the presence of an integrated data warehouse in their country, and nine (60%) in the negative. The six countries with a data warehouse thought it worked well – except for Tokelau, where Internet connectivity is an issue. Fig. 6 displays the challenges identified, mapped to six categories by country.

Fig. 6. Warehousing challenges by country



21. Metadata dictionary

An overwhelming 14 countries (93%) do not have a metadata dictionary. Fiji, the only country with a metadata dictionary, indicates that the dictionary is available across the country and is used widely.

Data quality

22. Data collection processes

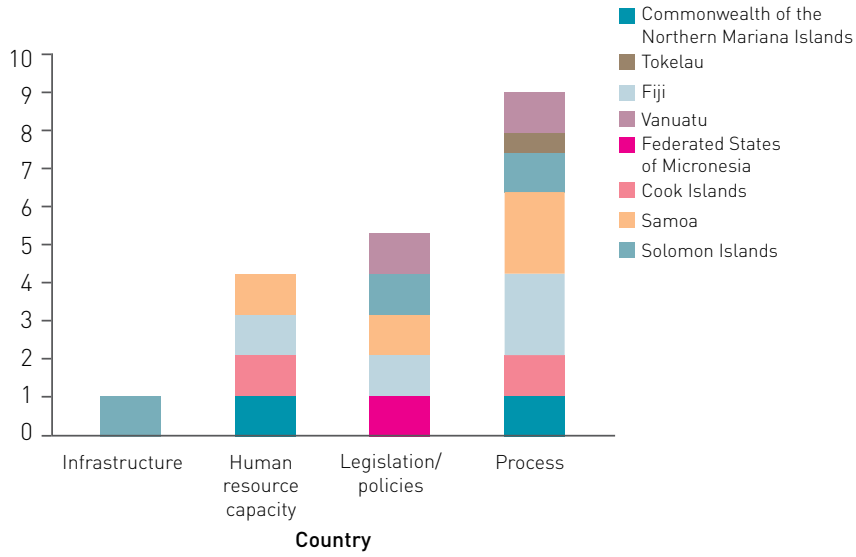
All except two countries indicated that data collection process improvement activities had taken place in the past two years. The activities mentioned were broadly categorized into 10 areas: cross-sectorial commitment; recruitment; implementation of electronic system(s); improving electronic system functionality; improving interfaces between electronic health systems; needs assessment; policy introduction; quality improvement; training; and use of health information exchange. Quality improvement, training and improving electronic system functionality were the most commonly mentioned process improvement activities.

Country examples of quality improvement include hospital data format standardization, review of data reports, checking database information, and submitting data report analysis review to programmes for changes and confirmation. Country examples of training are data collection, analysis and reporting on training. One country example of improved electronic system functionality is finalization of the new DHIS2 database to accommodate new forms. Together with increased training and support, this has led to dramatic increases in reporting rates.

23. CRVS assessment

Ten countries (67%) answered in the affirmative to the question on whether their country had undertaken a CRVS assessment, and five (33%) in the negative. Of the countries that had carried out assessments, eight identified key challenges, which can be broadly categorized as follows: infrastructure; human resource capacity; legislation/policies; and process (Fig. 7). Countries indicated that steps were being taken to address these challenges.

Fig. 7. CRVS assessment findings – key challenges by country



24. Data quality checks

Twelve countries (80%) responded to the question on national-level data quality checks on subnational-level data submissions. Various mechanisms for ensuring data quality were implemented: centralized coding; auditing; regular communication with counterparts; verification and endorsement by senior staff; and data are compared across different settings – for example, hospital data checked against laboratory data.

Dissemination and use

25. Reports

Table 5 lists examples of the reports generated by the HIS unit since 2014 for each country.

Table 5. Examples of reports generated since 2014 by country

Country and Areas	Report Examples
Cook Islands	- Cook Islands 1999–2013 CRVS Report.
Fiji	- Annual Report, Health Information Quarterly Bulletin, NNDSS Monthly Bulletin.
Kiribati	- Kiribati Monthly Bulletin (KMB) and the Kiribati Annual Health (KAH) Bulletin. The KMB only started in October/November; and the KAH for 2015.
Micronesia (Federated States of)	- Annual reports.
Marshall Islands	- Ministry of Health Annual Report 2013 and 2014.
Nauru	- Annual programme and health reports.
New Caledonia	- Annual report describing the health situation in New Caledonia (available from: http://www.dass.gouv.nc/).
Niue	- Health annual reports.
Northern Mariana Islands (Commonwealth of)	- Community Health Assessment (morbidity and mortality data).
Papua New Guinea	- Sector Performance Annual Review.
Samoa	- Annual reports, National Health Account, Health Sector Plan.
Solomon Islands	- Core Indicator Report.
Tokelau	- Data on hospital admissions and discharge were analysed in a 12-month period to look at the medical conditions and reasons for admission, plus the use of hospital resources. - A quarterly report of outpatient records to assess what type of ailments or most common complaints, and pharmaceutical supplies.
Tonga	- Inpatient/outpatient/clinic reports.
Vanuatu	- HIS summary attached to the 2015 Ministry of Health Annual Report as an appendix.

26. Demand

Fifteen countries (100%) indicated that senior managers and policy makers demanded complete, timely, accurate and relevant HIS information. Twelve countries (80%) provided examples, as shown in Table 6.

Table 6. Country examples of circumstances in which senior management demands HIS information

Country and Areas	Examples
Fiji	In senior management we have many advocates of a robust HIS such as our Minister, Permanent Secretary, Deputy Secretaries and National Advisers, National Health Executive Committee (NHEC), National Health Information Committee (NHIC). Annual Planning Process of the Ministry and the Planning and Policy Unit also requesting quality data for decision-making. We regularly send out internal circulars and memos to remind divisional managers on submission of quality reports.
Kiribati	All departments are required to write reports on a quarterly basis. HIU provides the Kiribati Monthly Bulletin.
Marshall Islands	NCD-related diseases and communicable diseases such as leprosy and TB because these need to be reported so that Ministry of Health funding can be released.
Micronesia (Federated States of)	Reports are due on certain set dates and are therefore required to be submitted.
Nauru	To support or inform Cabinet decisions; to give an account to donor agencies.
Niue	Government expects annual reports on an annual basis and it is difficult to compile data that are not already on a standardized data system that is easily accessible.
Northern Mariana Islands (Commonwealth of)	Management supportive of establishing standard operating procedures (SOP) for enforcement of mandates related to Vital Statistics administration, improved clinical documentation within the electronic health and medical records systems to comply with Federal Regulation Standards, health conditions responsible for medical referral expenditures to determine alternative means to reduce cost (i.e. hire specialist, acquire equipment, etc.).
Papua New Guinea	Only for meetings and on an ad hoc basis.
Samoa	Trying to get reports done on time. Ad hoc reports, i.e. how many patients admitted with respiratory issues. Sector Wide Approach Programme – implementation, completion of report. That is: total number of visits to primary health-care facilities by year and average cost per visit (2008/2009–2014/2015), etc.

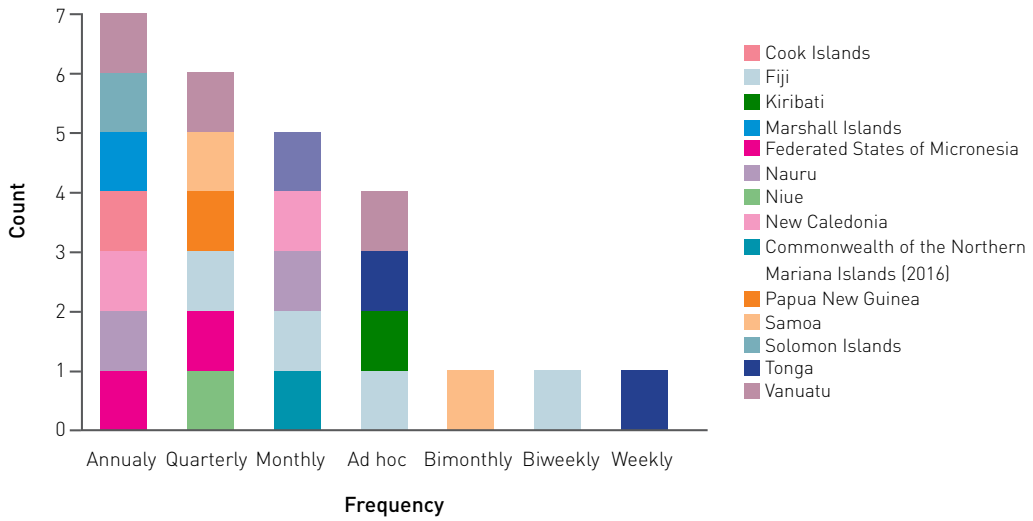
Table 6. (cont.)

Country and Areas	Examples
Solomon Islands	At the moment the demand for data, in general, often comes from funder-driven programmes such as malaria.
Tokelau	This is work in progress.
Vanuatu	Public health programme managers to write report, to be used as information for projects or workshops; external donors demand information for reports on funding projects.

27. HIS summary reports

Fig. 8 displays the 14 countries (93%) that stipulated how often the HIS unit reports were provided to senior managers and policy-makers.

Fig. 8. HIS unit reporting frequency to senior managers



28. Decision-making

Fourteen countries (93%) provided examples of the activities undertaken to ensure health information is used when making decisions at the national and subnational levels (Table 7).

Table 7. Suggestions for ensuring health information is used for decision-making

Country and Areas	Examples
Cook Islands	- Health information needs to be consolidated, edited and checked before it can be published for use.
Fiji	- Presentation of information needs to be clear, understandable and attractive. - Graphical representation of information is often preferred. - Interpretation of the data in the form of narratives helps. - Meaningful rates rather than absolute numbers allow for comparisons for drawing conclusions. - Providing time trends assists in describing progress and potential for projections using baselines.
Kiribati	- More advocacy to senior health officials on the importance of HIS units. - In order to do this, the committee should be comprised of senior management officials from Ministry of Health and Medical Services and other key stakeholders.
Marshall Islands	- When creating work plans and strategic plans, health information/ indicators are included in the plans. - Decisions will be made based on the health information provided.
Micronesia (Federated States of)	- Improve data collection, interpretation and dissemination.
Nauru	- Promote demand and use of data among key decision-makers.
New Caledonia	- Change legislation to allow the assessment of subnational structures and improve communication with the public about health topics.
Niue	- Get someone trained on HIS.
Northern Mariana Islands (Commonwealth of)	- Involve key stakeholders in the discussion. - Identify all assets including workforce. - Availability of programmes and services. - Information systems and registries. - Strengths and limitations of available data (i.e. integrity, accuracy, timeliness and completeness). - Determine financial resources allocated to HIS for data collection and reporting.

Table 7. (cont.)

Country and Areas	Examples
Papua New Guinea	- Develop culture for evidence-based decision-making.
Samoa	- Need to have confidence in the data provided. - Improvements required in coding, collection, recording and processes.
Solomon Islands	- It should be demanded as well as made available on a regular basis.
Tonga	- Consultation/training.
Vanuatu	- Need to produce information from data collected and circulate often to all sections and health workers in a form that is understandable and user-friendly for health workers to start using the health information effectively. - For example, we started producing infographics with information from routine the health information system and provided it to health workers to print and post on clinic walls to inform communities and other health workers on health information. - Further workshops on the interpretation and use of health information for planning and decision-making is required at all levels.

29. Feedback

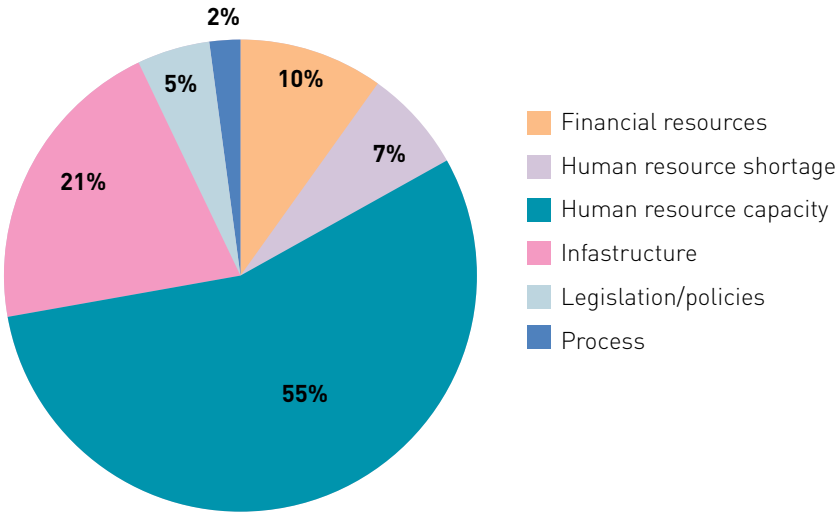
Fourteen countries (93%) provided an answer on whether or not the HIS unit receives feedback from senior managers/policy-makers on the information it produces. Nine (60%) responded in the affirmative; five (33%) in the negative; and one (7%) did not know. Examples of feedback received include: clarification about the data; the source of the data or methodology used; and appreciation for having received the data. Three countries (20%) indicated that regular feedback was received.

Other comments

30. Issues and challenges

Thirteen countries (87%) identified issues and challenges. Original responses are available in Annex 5. The original responses were mapped to the six categories presented in Fig. 9.

Fig. 9. Issues and challenges to address HIS



31. Quality of health services

31a. Outcomes

Fourteen countries (93%) nominated outcomes that their health minister should expect if they invested in HIS. There are various responses (Table 8).

Table 8. Outcomes ministers should expect when investing in HIS

Country and Areas	Outcomes
Fiji	- An improved HIS will provide the means for enhancing our monitoring systems to identify gaps where interventions need to take place. - It will guide policy-makers and implementers on the action areas through sound evidence.
Kiribati	- Very good quality data and evidence-based information. - Ministers will be confident in the data they present from their country and better budget allocations for health-related costs.
Marshall Islands	- Complete, timely, accurate, reliable and usable information to be able to create and implement strategies that will improve the services we can provide to the people of the Marshall Islands.
Micronesia (Federated States of)	- Clear health policy directions.
Nauru	- The right information at the right time that is accurate and complete.
New Caledonia	- Minister could find out about the impact of his health programme, compare data with those of other countries, and assess the quality of health care on offer.
Niue	- Easier access to health information, better and timely reporting on disease outbreaks and trends, better planning processes and budgeting based on clearer data for forecasting purposes. - Money will be saved on purchasing supplies, as we will know who the target populations are.
Northern Mariana Islands (Commonwealth of)	- An integrated health system will substantially improve the accuracy, timeliness and reporting of health indicators and enable the ministers better to understand the overall health status of the community writ large. - Information acquired will help determine priority areas and develop appropriate responses to these concerns.
Papua New Guinea	- Quality health information, better/improved outcomes.
Samoa	- Improve the health-care service and delivery in Samoa, by providing accurate information to the health sector and relevant government agencies.
Solomon Islands	- Better allocation of resources.

Table 8. (cont.)

Country and Areas	Outcomes
Tokelau	- Tokelau Government, through the National Health Department, has invested in HIS in the last three years. - Outcomes would be a better big picture of where health services are at in the next 10 years. - This would give a clearer path to the direction that health services should take and better allocation of limited health funds.
Tonga	- Reliable, timely, relevant HIS services.
Vanuatu	- A well-improved HIS that provides reliable health information in a timely manner for evidence-based decision-making.

31b. Type of information

Table 9 shows 13 countries (87%) that provided examples on the type of information their health minister could expect in five years as a result of investing in HIS.

Table 9. Information that could be available in five years

Country and Areas	Type of Information
Fiji	- The vision is for reliable information that integrates data from the various subsystems, surveys and research. - Information should be timely and accessible, hence available when and where needed. - Information should include service statistics, human resource indicators, financial indicators and should provide ways of detecting gaps.
Kiribati	- All required indicators for Kiribati. - Evidence- and quality-based information.
Marshall Islands	- Health indicators that can be used to improve the health of the population.
Micronesia (Federated States of)	- Quality health information.
Nauru	- User-appropriate dashboard on key performance indicators.
New Caledonia	- The trend of mortality and morbidity data.

Table 9. (cont.)

Country and Areas	Type of Information
Niue	- A more comprehensive indication of what the disease situation has been like in Niue for the past five years.
Northern Mariana Islands (Commonwealth of)	- Developing correlation between social, economic and health factors. - Better understanding of cost and treatment of health conditions, timely detection of notifiable diseases and possible outbreaks, prescription monitoring data to curtail abuse of controlled drugs.
Samoa	- Death rates, infant mortality rate. - Health facility utilization rate by year for primary/secondary/tertiary care facilities, rheumatic fever/rheumatic heart disease and more.
Solomon Islands	- Better health information on health outcomes, coverage of service delivery, mortality and morbidity. - They will have better information on the burden of disease in the country.
Tokelau	- A report on the health of the country is called for. - Information includes health service utility, people visiting nurses and doctors, NCD clinics, immunization coverage, maternal & child health, maternal health, pharmaceutical use in Tokelau. - Notifiable diseases must be accounted for, and this is one avenue to highlight and work towards reducing disease burdens.
Tonga	- Quality HIS services.
Vanuatu	- A reliable HIS able to provide health information for decision-making.

31c. Impact on the health minister's role

Table 10 shows the 14 countries (93%) that provided examples of how investing in HIS would be of assistance to the health minister's role.

Table 10. Assistance to health minister's role

Country and Areas	Examples of Impacts on Health Minister's Role
Fiji	- They will be able to develop policies and programmes and monitor their efforts by being well informed.
Kiribati	- Better decisions for government budget, where the budget in terms of diseases should be focused on immunization, family planning, NCD and much more. - Kiribati will be at the top of the list of good HIS.
Marshall Islands	- They can present the needs of the Ministry of Health to provide quality and affordable health care. Ultimate goal is for HIS to act as a tool to save lives.
Micronesia (Federated States of)	- Improved decision-making in health.
Nauru	- Sound public health-care decisions.
New Caledonia	- They can decide to provide more budget for one disease or for a health programme or for health prevention.
Niue	- They can support future health programmes and activities to address the information that will be provided.
Northern Mariana Islands (Commonwealth of)	- Better allocation and utilization of resources from a workforce, financial and services perspective to achieve the greatest return on investment.
Papua New Guinea	- Informed decision-making.
Samoa	- Decision-making and improvements to information systems.
Solomon Islands	- Will help them make better decision when it comes to resource allocation.
Tokelau	- Such a report will give them a clear picture of the current quality of health service delivery in Tokelau in terms of accountability of the Health Department. - This picture would hopefully put them in a position to forecast and determine health priorities of the country.
Tonga	- Evidence-based decision.
Vanuatu	- Better decision made on health system. - Better allocation of funds appropriately. - Better allocation of human resources accordingly. - They are happy, we are happy, the population is happy.

4. Discussion

Nearly 30 years ago, the WHO Sub-Committee of the Regional Committee on Programmes and Technical Cooperation reported that an increasing number of Member States were beginning to purchase information technology as it was becoming more affordable *(16)*. It observed that the quality of the data being entered into the so-called automated systems were unreliable, and called for improved training and procedural manuals to be made available *(16)*. Additionally, the Sub-Committee stated "the need for national policy and plans for integrated health information and health informatics development; the need for focal points agencies or institutions for developing a network of centres of excellence for the exchange of information and experience; and the need for guidelines for national health information systems development utilizing the latest and most appropriate informatics technology" *(16)*. Then in 1997, the *New Horizons in Health* indicators were introduced at a Workshop on Management Information Systems in the Context of District Health Systems held in Manila *(17)*.

Health information systems appear to have had a long and symbiotic relationship in the Western Pacific Region. The 2016 HIS Hub Rapid Assessment results attest to Member States' continued effort to strengthen HIS. The majority of the responses to the binary questions indicate that countries continue to invest in HIS. Six countries that completed the 2016 HIS Hub Rapid Assessment had also done so in 2013 (Annex 6). When the 2013 and 2016 responses are compared for each country, four of the six countries reported an improvement (that is fewer "no" responses), one country remained the same, while another did slightly worse. When the 2013 and 2016 data are analysed together, six indicators appear to present a constant challenge for the six countries: HIS policy; trained staff; budget items; data dictionary; data management procedures; and metadata. As per Annex 7, when the responses are compared between 2013 and 2016 to ascertain whether or not there has been some improvement, HIS policies, strategies, HIS in plans, trained staff, budget items, census, data management procedures, assessment, demand and feedback are HIS areas that have improved somewhat. HIS areas that appear not to have improved from 2013 to 2016 include terms of reference, assistance, regular information technology, indicators and metadata. HIS areas that remained unchanged include HIS committees, supplies, CRVS, ICD, surveys, data dictionary, subnational, warehouse, collection and reports. Caution needs to be exercised when interpreting the 2013 and 2016 data, as only a small number of countries participated in both years. Additionally, different people may have answered the questions from one year to the other.

The 2016 HIS Hub Rapid Assessment results indicate that the development of HIS policies or legislation appears to be an area that needs support. Policies/legislation can drive change; without them, HIS strengthening can be difficult. The greatest challenges appear to be shortages in human resources, financial resources and human resource capacity. In relation to HIS committees, not all of them produce reports as such, but their work is integral to the process of moving the HIS agenda forward, such as in endorsing documents.

A robust HIS requires professionals to be appropriately trained, and most countries need support in this area. The types of skills and training emphasized were epidemiology biostatistics and health data analysis.

Creating and maintaining a national health data dictionary requires resources, and this could be why the majority of countries report not having one. Data dictionaries are critical for data quality and assist with interoperability *(18).* Just under half of the countries experienced difficulties sharing information, primarily due to process-related barriers– perhaps the use of data dictionaries might have enabled the sharing of information. Additionally, lack of written procedures, as reported by most respondents, would also have contributed to less information sharing. Not surprisingly, the majority of countries do not have a data warehouse.

All the challenges identified by respondents in the HIS Hub Rapid Assessment were broadly categorized into People, Process, Technology and Other. People and Process were the most commonly experienced challenges. On the first day of the PHIN meeting in May 2016, country representatives and observers were asked to break up into four working groups to prioritize the challenges identified. There were 116 challenges in total:

- 40 were categorized as "People" challenges, for example lack of human resource capacity;
- 29 were categorized as "Process" challenges, for example lack of guidelines/ policy/legislation;
- 25 were categorized as "Technology" challenges, for example lack of electronic information systems; and
- 22 were categorized as "Other" challenges, for example lack of funding.

The four working groups were given the opportunity to discuss a mixture of the "People", "Process" and "Technology" challenges. The working groups did not prioritize the challenges categorized as "Other", as they were deemed to be challenges beyond the current participants' span of influence. Each working group had 23 or 24 challenges to prioritize in two hours. Table 11 displays the high-priority challenges each group nominated. All the high-priority challenges had been an issue for more than 10 years.

Table 11. High-priority challenges

Group	Prioritized Challenges	Category
1	▪ Telecommunications infrastructure	Technology
	▪ Transportation	Technology
	▪ HIS policies	Process
	▪ HIS legislation	Process
	▪ CRVS	Process
	▪ Human resource capacity	People
2	▪ Policy, legislation and enforcement	Process
	▪ Human resource development	People
	▪ Geographical challenges	Technology
	▪ Coordination of reports	People
3	▪ Infrastructure (computers and Internet)	Technology
	▪ Data quality (accuracy, completeness, timeliness)	Process
	▪ Adoption of electronic systems	People
	▪ Coordination of data sets	Process
4	▪ Technical capacity	People
	▪ Human resources	People
	▪ Training	People
	▪ Sharing data within health sector	Technology
	▪ Strengthening data sharing	Process

5. Recommendations

The HIS Hub Rapid Assessment was a useful tool to ascertain the HIS status of participating countries and should continue to be offered if the resources are not available to complete the Health Metrics Network HIS Assessment tool. The binary questions in the HIS Hub Rapid Assessment tool were useful to compare HIS development regionally as per Annexes 4a and 4b. However, some respondents felt the "yes" and "no" options to be too restrictive. One alternative could be trenary answers (yes/partially/no). A country should allocate at least four weeks to complete an HIS Hub Rapid Assessment and a copy could be stored centrally with the HIS focal point for the country.

Based on discussions during the PHIN meeting in May 2016, the actions below were recommended for consideration by countries and partners.

Proposed actions for countries:

- To formulate HIS country action plans based on their challenges in HIS development and prioritized HIS competencies. The WHO-International Telecommunication Union National eHealth Strategy Toolkit was presented as a good reference for countries in designing their road maps for HIS implementation and capacity-building.
- To participate in regional capacity-building programmes including online courses.

Proposed actions for partners:

- PHIN to provide technical assistance, advocate pro-HIS policies, provide direction and assistance to members in designing executive country action plans, and serve as a regional HIS hub. WHO, in collaboration with SPC, to serve as the Secretariat organization for PHIN as SPC and WHO continue to serve as the Secretariat for the biennial Pacific Health Ministers Meeting.
- To discuss HIS capacity-building requirements and mechanisms for the Pacific region.
- To form a partnership with the Global Health Collaborative initiative.
- Jointly to provide country support for e-health and HIS.

References

1. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19–22 June 1946; signed on 22 July 1946 by the representatives of 61 states. Official records of the World Health Organization, No. 2:100. Geneva: World Health Organization; 1948 (entered into force on 7 April 1948).
2. 2015 Yanuca Island Declaration on health in Pacific island countries and territories: Eleventh Pacific Health Ministers Meeting, 15–17 April 2015. Manila: World Health Organization. Regional Office for the Western Pacific; 2015.
3. Multisectoral action for a life course approach to healthy ageing: draft global strategy and plan of action on ageing and health. A69/17. Geneva: World Health Organization; 2016.
4. Implementation of the International Health Regulations (2005). Report of the Review Committee on the Role of the International Health Regulations (2005) in the Ebola outbreak and response. A69/21. Geneva: World Health Organization; 2016.
5. Draft global health sector strategies – HIV, 2016–2021. A69/31. Geneva: World Health Organization; 2016.
6. Draft global health sector strategies – viral hepatitis, 2016–2021. A69/32. Geneva: World Health Organization; 2016.
7. Draft global health sector strategies – sexually transmitted infections, 2016–2021. A69/33. Geneva: World Health Organization; 2016.
8. Health workforce: update. A69/36. Geneva: World Health Organization; 2016.
9. WHO programmatic and financial report for 2014–2015. A69/45. Geneva: World Health Organization; 2016.
10. Third report of Committee A – draft. A69/72. Geneva: World Health Organization; 2016.
11. Fourth report of Committee B. A69/75. Geneva: World Health Organization; 2016.
12. Draft global plan of action on violence. A69/9. Geneva: World Health Organization; 2016.
13. The global strategy and action plan on ageing and health 2016–2020: towards a world in which everyone can live a long and healthy life. WHA69.3. Geneva: World Health Organization; 2016.
14. Strengthening integrated, people-centred health services. WHA69.24. Geneva: World Health Organization; 2016.
15. Health Information Systems Knowledge Hub. HIS Hub Rapid Assessment tool; 2013.
16. Health information systems and health informatics. Manila: World Health Organization. Regional Committee for the Western Pacific; 1989.

17. Workshop on management information systems in the context of district health systems. Manila: World Health Organization. Regional Committee for the Western Pacific; 1997.

18. Egana N, Bruinsma F. Data dictionaries: what do they have to do with public health? Australian and New Zealand journal of public health. 2008;32(3):286–7.

Annexes

Annex 1 – HIS Hub Rapid Assessment questions

HIS resources

1. Does your country have any HIS policies or legislation?
    a. If yes, please describe them.
    b. If no, are there any plans to develop them?
2. Does your country have an HIS committee that is meeting regularly?
    a. If yes,
        i. What is the membership of the committee?
        ii. Does it have a terms of reference?
        iii. Has it produced any reports or documents?
    b. If yes, what were they?
3. Does your country have an HIS strategy?
    a. If yes,
        i. When was it developed?
        ii. Has it been implemented?
        iii. Have there been challenges with implementing the activities?
    b. If no, does your country have a plan of activities for HIS or a plan to develop a strategy?
4. Is HIS included in the annual health plan?

Financial and human resources

5. Are there enough appropriately trained people in the health information department?
    a. If yes, what skills and formal qualifications do they have?
    b. If no, what types of training and skills are required?
6. What HIS capacity-building activities have taken place for HIS staff over the past two years? (This can include on-the-job training, overseas training or workshops.)
7. Is assistance available to health and HIS staff at subnational (provincial, facility, outer island, etc.) level?
    a. If yes, what assistance is provided?
    b. If no, what assistance is required?
8. Are there specific budget line items for HIS in the national budget?
    a. If yes, what are they?

Infrastructure

9. Are there enough forms, papers, pencils and other supplies that are needed for recording health information at the national and subnational level?
    a. If no, what is needed?
    b. What happens when these supplies run out?
10. Is regular support provided for IT infrastructure (phones, computers, database software)?
    a. If no, what support is most needed?

Indicators

11. Does your country have a national minimum set of core indicators that are being regularly reported on?
    a. If yes,
        i. How many indicators are there?
        ii. What do they cover?
        iii. How many reports have been produced on them?
    b. If no, are there any plans to produce a core set?

Data sources

12. Were there any questions on morbidity or mortality in your country's last census?
    a. If yes, please describe.
13. Does your country have a functioning civil registration system (i.e. one that is producing timely information on births, deaths and causes of death)?
    a. If no, are other sources used to estimate births, deaths and causes of death?
14. Does your country use the International Classification of Diseases (ICD) for coding mortality and morbidity?
    a. If yes, are these statistics included in any regular reports?
15. Has your country conducted any nationally representative surveys in the past two years (e.g. STEPS, DHS, GBHS)?
    a. If yes, please describe which ones.
    b. If no, are there any plans to conduct surveys soon?
16. Does your country have a national health data dictionary that explains case definitions for diseases?
    a. If yes,
        i. When was this developed?
        ii. Do health workers use it?
17. Is subnational information reported to the national HIS unit regularly?
    a. If yes, please explain the mechanisms and processes to facilitate this.
    b. <u>If no, what are the barriers to regular reporting?</u>

18. **How well are data from vertical reporting systems (e.g. on tuberculosis or immunization) communicated to the national HIS unit? (What are some of the barriers to communicating and sharing data?)**

Data management

19. Does your country have a written set of procedures for data management (including collection, storage, cleaning, quality control, analysis and dissemination)?
    a. If yes,
        i. When were these developed?
        ii. Are they implemented throughout the country?

20. Does your country have an integrated data warehouse (such as PATIS or DHS) containing data from population-based and institution-based sources?
    a. If yes,
        i. How well does this system work?
        ii. What are some of the issues and challenges?

21. Does your country have a metadata dictionary that provides definitions about data (including collection methods, periodicity of collection, analysis techniques used)?
    a. If yes,
        i. Is this available to the whole country?
        ii. Is it widely used?

Data quality

22. Have there been any activities to improve processes for data collection in the past two years?
    a. If yes,
        i. Please describe.
        ii. Have they been successful?

23. Has your country undertaken an assessment of its CRVS system in the past two years?
    a. If yes,
        i. What were some of the key findings?
        ii. Have any steps been taken to address the challenges?

24. What data quality checks are done at the national level to assess the quality of data from the subnational level?

Dissemination and use

25. Have any reports been generated from your HIS unit in the last two years?
    a. If yes, what were they?
    b. If no, what were the barriers?

26. Are senior managers and policy-makers demanding complete, timely, accurate and relevant HIS information?
    a. If yes, please provide an example.
27. How regularly are HIS summary reports provided to senior managers and policy-makers?
28. What needs to be done to ensure health information is used when making decisions at the national and subnational level?
29. Does your HIS unit receive feedback from senior managers and/or policy-makers on the information it produces?
    a. If yes,
        i. What type of feedback is received?
        ii. Is it received regularly?

Other comments

30. What area some of the issues and challenges that still need to be addressed for HIS in your country?

31. How will addressing these issues and challenges affect the quality of health services in your country?
    a. What outcomes should ministers expect if they invest in HIS?
    b. What type of information could they be getting in five years' time?
    c. How will this help them in their role?

Annex 2 – Countries responding

Geographic & Cultural Groupings	Country and Areas
Melanesia	1. Fiji
	2. New Caledonia
	3. Papua New Guinea
	4. Solomon Islands
	5. Vanuatu
Micronesia	6. Kiribati
	7. Marshall Islands
	8. Micronesia (Federated States of)
	9. Nauru
	10. Northern Mariana Islands (Commonwealth of)
Polynesia	11. Cook Islands
	12. Niue
	13. Samoa
	14. Tokelau
	15. Tonga

Annex 3 – Occupation of respondents

- Acting Manager of HIS
- Acting Manager – Performance Monitoring & Research
- Assistant Health & Hospital Manager
- Chief Medical Statistician
- Data Processor/Clerk
- Director, Health Information Research & Analysis
- Director of Public Health
- Disease Surveillance Officer
- Health Assistant Statistician
- IT Director
- Manager Health Information Unit
- Medical Coder
- National Health Information Officer
- National Health Planner
- Principal, Health Information Systems
- Senior Statistician
- Statistician in Public Health Service

Annex 4a – Summary of binary answers to questions 1–14

Geographic & Cultural Group	Country and Areas	Q1. Policies	Q2. Committee	Q2b. TOR	Q3. Strategy	Q4. HIS in plan	Q5. Trained	Q7. Assistance	Q8. Budget items	Q9. Supplies	Q10. Regular IT	Q11. Indicators	Q12. Census	Q13. CRVS	Q14. ICD
Melanesia	Fiji	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y
	New Caledonia	Y	N	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y
	Papua New Guinea	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N	Y
	Solomon Islands	N	Y	Y	Y	Y	N	Y	N	N	N	Y	Y	N	N
	Vanuatu	N	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y
Micronesia	Kiribati	N	N	N	Y	Y	N	N	Y	Y	N	Y	Y	Y	Y
	Marshall Islands	N	N		N	Y	N	Y	Y	Y	N	Y	N	Y	N
	Micronesia (Federated States of)	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Nauru	N	N		N	Y	N	Y	Y	Y	N	Y		Y	Y
	Northern Mariana Islands	N	N	N	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y
Polynesia	Cook Islands	N	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y
	Niue	N	N	N	N	Y	N	Y	Y	Y	Y	Y	N	Y	Y
	Samoa	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
	Tokelau	Y	N		Y	Y	N	Y	Y		Y			Y	Y
	Tonga	Y	Y	N	N	Y	N	Y	Y	N	Y	Y	Y	Y	Y

Annex 4b – Summary of binary answers to questions 15–29

Geographic & cultural group	Country	Q15. Surveys	Q16. Dictionary	Q17. Sub-national	Q19. Procedures	Q20. Warehouse	Q21. Metadata	Q22. Collection	Q23. Assessment	Q25. Reports	Q26. Demand	Q29. Feedback
Melanesia	Fiji	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
	New Caledonia	Y	N	N	N	N	N	Y	N	Y	Y	N
	Papua New Guinea	Y	Y	Y	Y	N	N	N	N	Y	Y	N
	Solomon Islands	Y	N	Y	N	Y	N	Y	Y	Y	Y	N
	Vanuatu	N	N	Y	N	N	N	Y	Y	Y	Y	N
Micronesia	Kiribati	Y	N	Y	N	N	N	Y	Y	Y	Y	Y
	Marshall Islands	Y	N	Y	N	N	N	Y	Y	Y	Y	Y
	Micronesia (Federated States of)	Y	N	Y	N	Y	N	Y	Y	Y	Y	Y
	Nauru	Y	N	N	N	N	N	N	N	Y	Y	Y
	Northern Mariana Islands	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y
Polynesia	Cook Islands	Y	Y	Y	N	Y	N	Y	Y	Y	Y	N
	Niue	N	N	Y	N	N	N	Y	N	Y	Y	Y
	Samoa	Y	N	Y	Y	N	N	Y	Y	Y	Y	Y
	Tokelau	Y	N	N	Y	Y	N	Y	Y	Y	Y	
	Tonga	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y

Annex 5 – Issues and challenges to be addressed for HIS

Country and Areas	Issues
Cook Islands	Capacity-building for those involved with HIS and to provide some training courses to more people, plus follow-ups.
Fiji	Despite having contributed significantly towards the Ministry's Annual Corporate Plan 2015, the Division went through many challenges and constraints in its implementation of the Business Plan 2015. These had been due to limited budget, human resource constraints, and availability of key stakeholders. Other challenges were due to external factors and procedures/processes in the government machinery. Some of the projects carried forward to 2016 due to these are: Health information (collaboration and coordination with both internal and external stakeholder challenges) 1. Review medical records policy (retention, archival, disposal; align registers to current international practice and legal requirements). 2. Develop guidelines and implementation plans to address breaches in health information policy. 3. Develop private and public health facility listings with service availability mappings for diverse diseases and combine into a single register or inventory, using standardized facility codes and accurate geographic information system (GIS) coordinates. Monitoring and evaluation (internal stakeholders, human resources and budget constraints) 4. Develop/update metadata (i.e. Peer-to-Peer Information Retrieval System – PIRS) for 2015–2020 National Strategic Plan (NSP) indicators to ensure annual monitoring. 5. Develop a supervisory visit tool for hospitals. Research (collaboration and coordination with both internal and external stakeholder challenge) 6. Research priorities for NSP 2015–2020 to be input into Health Information Strategic Plan. 7. Prepare/update 10-year prospective matrix of national surveys to be conducted to meet Ministry of Health medical supplies (MS) data needs. ICT (collaboration and coordination with external stakeholder challenge and budget constraints) 8. Design and establish a national e-health governing council (ITC, Ministry of Health MS, donors, PM's office). 9. Implementation of Warehouse Management System. 10. Provide technical guidance and assistance in the implementation of a picture archiving and communication system (PACS)/radiology information system (RIS) for the Radiology Unit. 11. Provide technical assistance in the scoping of the Medical Supplies Information System. Other generic challenges that affected routine work were the failure of reporting units to submit their reports on time, lack of enthusiasm and initiative from supervisors for monitoring, evaluating and learning from evidence to make necessary changes to routine work to make a difference. Generally, the focus is on compliance as opposed to results and impacts of programme implementation.

Annex 5 – (cont.)

Country and Areas	Issues
Kiribati	1. Use of the WHO-approved Medical Certificate of Cause of Death (MCCD). 2. Revision to Kiribati Health Information Systems (KHIS) and MS1 to accommodate MCCD. 3. The need for training. 4. The need for more staff. 5. The need for a direct budget for all HIU activities (e.g. for going to SKH Hospital and Kiritimati Hospital). 6. Doctor's diagnosis for morbidity and mortality.
Marshall Islands	Timeliness; accuracy; completeness; comprehensive information systems; skills development; financial aspect; knowledge on using the system; knowledge on maintenance contract or upgrade of systems.
Micronesia (Federated States of)	Policy and enforcement.
Nauru	Drive data demand and use of evidence to inform policies.
New Caledonia	A unique identifier for each patient: one file for each patient for use by all health workers; a national HIS committee with a national HIS budget; assessment of the health programme and of data quality.
Northern Mariana Islands (Commonwealth of)	Adoption of electronic systems to improve accuracy, timeliness and reporting of health indicators; workforce development to support infrastructure (i.e. system, network, and health-care analytics perspective); robust telecommunication infrastructure, policy and legislation to support HIS activities.
Samoa	Data management, security, accessibility and sharing data within the health sector.
Solomon Islands	There needs to be a demand for data at all levels of the health system. The culture to use health information needs to be nurtured.
Tokelau	Health indicators would have to be identified in accordance with national country plan and properly conveyed to all health service providers. Manual templates would have to be developed to extract that information while we are waiting for the database to work effectively.
Tonga	Management and technical capacity.
Vanuatu	Human resources; short training courses to build skill and capacity to do certain HIS tasks.

Annex 6 – 2013 and 2016 HIS Hub Rapid Assessments: binary responses of six countries

		Cook Islands (2013)	Cook Islands (2016)	Fiji (2013)	Fiji (2016)	Kiribati (2013)	Kiribati (2016)	Samoa (2013)	Samoa (2016)	Solomon Islands (2013)	Solomon Islands (2016)	Vanuatu (2013)	Vanuatu (2016)
1	Policies	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
2	Committee	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No
2b	TOR		No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No
3	Strategy	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes
4	HIS in plan	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
5	Trained	No	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes
7	Assistance	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes
8	Budget items	No	No	Yes	Yes	No	Yes	No	Yes	No	No	No	No
9	Supplies	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes
10	Regular IT	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
11	Indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	Census	Yes	Yes	No	No	No	Yes	No	Yes		Yes	Yes	Yes
13	CRVS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
14	ICD	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
15	Surveys	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No
16	Dictionary	Yes	Yes	No	Yes	No	No	No	No	Yes	No	No	No
17	Subnational	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	Procedures	No	No	No	No	No	No	No	Yes	No	No	No	No
20	Warehouse	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
21	Metadata	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No
22	Collection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	Assessment	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
25	Reports	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	Demand	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
29	Feedback	No	No	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No

Annex 7 – Comparison of HIS Hub Rapid Assessment binary question responses between 2013 and 2016

		2013 No	2016 No	2013 Yes	2016 Yes	Unknown
Q1	Policies	5	4	1	2	
Q2	Committee	2	2	4	4	
Q2b	TOR	1	3	4	3	1
Q3	Strategy	4	0	2	6	
Q4	HIS in plan	2	0	4	6	
Q5	Trained	5	3	1	3	
Q7	Assistance	1	2	5	4	
Q8	Budget items	5	3	1	3	
Q9	Supplies	2	2	4	4	
Q10	Regular IT	1	2	5	4	
Q11	Indicators	0	6	6	0	
Q12	Census	3	1	2	5	1
Q13	CRVS	2	2	4	4	
Q14	ICD	1	1	5	5	
Q15	Surveys	2	1	4	5	
Q16	Dictionary	4	4	2	2	
Q17	Subnational	0	0	6	6	
Q19	Procedures	6	5	0	1	
Q20	Warehouse	2	2	4	4	
Q21	Metadata	4	5	2	1	
Q22	Collection	0	0	6	6	
Q23	Assessment	2	0	4	6	
Q25	Reports	0	0	6	6	
Q26	Demand	2	0	4	6	
Q29	Feedback	4	3	2	3	

Legend:

Green – improved

Red – worsened

Yellow – no change

WHO Western Pacific Region
PUBLICATION

ISBN-13 978 92 9061 819 5