Pan American Health Organization

World Health Organization
REGIONAL OFFICE FOR THE Americas

HIGH-LEVEL MEETING ON INFORMATION SYSTEMS FOR HEALTH

Advancing Public Health in the Caribbean Region

7-8 November 2016, Kingston, Jamaica

Meeting report

PAHO/WHO – January, 2017

The Caribbean Information System for Health

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Meeting report

Contents

Glossary

CARICOM	Caribbean Community
CARIFORUM	Caribbean Forum
CARPHA	Caribbean Public Health Agency
CSA	Country situation analysis
EU	European Union
HiAP	Health in All Policies
HIS	Health information systems
HLM	High-Level Meeting
ICT	Information and communication technology
IS4H	Information systems for health
MoH	Ministry of Health
NCDs	Non-communicable diseases
OECS	Organization of Eastern Caribbean States
PAHO	Pan American Health Organization
PHC	Primary health care
SDGs	Sustainable Development Goals
SDoH	Social determinants of health
SOPs	Standard operating procedures
TWG	Technical Working Group
UAH-UHC	Universal access to health and universal health coverage
UNAIDS	United Nations Joint Program on HIV/AIDS
WHO	World Health Organization

Country name abbreviations

BHS	The Bahamas
BLZ	Belize
BRB	Barbados
GRD	Grenada
JAM	Jamaica
LCA	Saint Lucia
TTO	Trinidad and Tobago
VCT	St. Vincent and the Grenadines
VGB	British Virgin Islands

Executive Summary

The Pan American Health Organization/World Health Organization (PAHO/WHO) and the Ministry of Health (MoH) Jamaica collaborated to convene a High-Level Meeting (HLM) on Information Systems for Health (IS4H) in Kingston, Jamaica, 7-8 November 2016 (*Annex 1*).

The approximately 70 participants from 16 Caribbean countries, regional and international agencies, and international development partners, included 6 Ministers of Health (Barbados, Belize, Grenada, Jamaica, St. Vincent and the Grenadines, and Suriname); senior CARICOM officials; representatives of CARICOM institutions, UN agencies – including PAHO/WHO – and international financial institutions; and technical personnel from the countries.

Meeting participants from 16 Caribbean countries, CARICOM, PAHO/WHO and other International Organizations

The HLM recognized the need for timely, accurate, quality information on health to inform decision- and policy-making, program interventions, monitoring, and evaluation, in the context of countries' progress to universal access to health and universal health coverage; ongoing national e-governance initiatives; Open Data and Big Data solutions; and the 2030 Sustainable Development Goals, which focus on addressing inequities and a whole-of-government, whole-of-society, health-in-all-policies, multisectoral approach to health development. This approach mandates that IS4H include mechanisms to capture, analyze, report, and use data from both health and non-health sectors, with the participation of government, civil society, and the private sector.

Through presentations, guided group work, plenary discussions, and validation of summaries of agreements reached, the HLM identified immediate, medium-term, and long-term outcomes for IS4H in the Caribbean, strategies to achieve them, and possible roles and responsibilities of various entities. The meeting highlighted ongoing initiatives and interventions in countries, and lessons and experiences to be shared, with the commitment to analyze, consider, and build on them in the production of regional public goods that would contribute to advances in national and regional IS4H.

The discussions were held in the framework of a draft Caribbean IS4H Strategic Plan developed by PAHO/WHO in collaboration with Caribbean countries (*Annex 2*), which identified 4 strategic goals: data management and information technologies, management and governance, knowledge management and sharing, and innovation and performance.

Key agreements and recommendations addressed legislative frameworks and regulations for IS4H, focusing on collection of data from the private sector, privacy, confidentiality, and security; regional standards aligned with international standards; information and communication technology (ICT) infrastructure, with access to both structured and unstructured data; capacity building and change management strategies at all levels; national – rather than health sector – approaches to IS4H, in order to facilitate and enable the participation of all sectors; formal and informal mechanisms for sharing information, lessons learned, and experiences among countries; and the Caribbean IS4H Strategic Plan, with a regional proposal for strengthening IS4H in the Caribbean based on work done at the HLM, to facilitate resource mobilization.

PAHO/WHO committed to work with countries, the CARICOM Secretariat, and development partners in IS4H initiatives at both regional and national levels, facilitating dialogue and encouraging expansion from the current priority area of client management systems to other areas critical to health, involving prevention, rehabilitation, and overall improvement of the health system.

Timely, accurate, and quality information on health is critical for decision-making, to enable the development, implementation, monitoring, and evaluation of appropriate health policy, programs, and interventions for population and individual health. Disaggregated health data permit identification of vulnerable populations and health inequities, and facilitate the implementation of strategies to address them.

Systems that provide such information have long been a priority for health policy makers and planners, and the Caribbean has a lengthy history of work on health information systems (HIS). Member States of the Caribbean Community (CARICOM) are at varying stages in the development of HIS, moving from predominantly manual to automated systems.

Building on existing actions, taking into consideration a 2015 Country Situation Analysis (CSA) of HIS, and considering the framework of the renewed model on Information Systems for Health developed by the Pan American Health Organization/World Health Organization, PAHO/WHO collaborated with the Ministry of Health, Jamaica, to convene a High-Level Meeting on IS4H in Kingston, Jamaica, in November 2016. The meeting presented a draft strategic plan for a Caribbean Information System for Health, with the vision of strengthening universal access to health and universal health coverage, thus advancing public health in the Caribbean region, strengthening national and regional health development, and addressing the 2030 Sustainable Development Goals.

This report summarizes the discussions, agreements, main conclusions, and recommendations.

Introductory session

Dr. Douglas Slater, Assistant Secretary General, CARICOM, Dr. the Hon. Christopher Tufton, Minister of Health, Jamaica, and Dr. Carissa Etienne, Director of PAHO, made remarks during this session.

Dr. Slater asked for consideration of the difference in this approach from previous efforts and emphasized the importance of information from non-health entities and the private sector. He also highlighted the importance of political will as a success factor.

Dr. Tufton noted that a request made to PAHO/WHO for technical cooperation in this area was

made at the September 2016 meeting of the CARICOM Council on Health and Social Development (COHSOD), and congratulated the Organization for its timely response. He noted that the participation of his colleague Ministers of Health was a testament to the priority being given to IS4H at the highest level. The Minister indicated that Jamaica is advancing in addressing e-health and electronic medical records, and welcomed PAHO/WHO's guidance to ensure success and compatibility with regional efforts and standards.

Dr. Etienne stated PAHO's commitment to working with countries in IS4H. She noted that the region

has made progress in attaining the Millennium Development Goals (MDGs) and is moving to address the SDGs. Health as a human right is a priority and UAH-UHC is a major contributor to the progressive realization of this right; in turn, IS4H are important for the achievement of UAH-UHC, to ensure that vulnerable and underserved populations are counted and reached. The PAHO Director emphasized the need to build on what exists in countries, involve those working in the system at all levels in its development, and resist the superimposition of externally developed systems on systems that are already in place. She noted that funding for IS4H is a challenge, but given its importance, innovative strategies will have to be found.

The introductory session ended with a presentation of Dr. Marcos Espinal, Director, Department of

Communicable Diseases and Health Analysis (CHA). Dr. Espinal, in his keynote presentation on **Strategic vision and key messages on IS4H in the Caribbean** characterized this initiative as a mini-marathon rather than a 100-meter race, in which a common understanding and common vision among countries and partners are critical, notwithstanding the different levels of development and progress in the region. He noted that both structured and unstructured data are of value, the latter being available through search engines and social media, and encouraged a broader vision of IS4H that considered e-health, not just e-medical, records. Countries' interventions should build on existing actions and lessons learned, follow good practices, and take into account other countries' experiences.

Presentations and discussions

Meeting objectives, sessions, methodologies, and roadmap to the target

Dr. de Cosio summarized the meeting objectives, sessions, methodologies, and roadmap to the target, this last involving agreements on vision and goals; identification of challenges and opportunities; and decisions regarding priorities. He noted the reasons for having IS4H, including monitoring progress on health indicators; measuring impact of health strategies; supporting decision and policy making processes; and accountability.

Session 1: A renewed vision of information systems for health

The Honourable Patrick Pengel, Minister of Health, Suriname, introduced session 1. He stated the importance of having a renewed vision composed by a very comprehensive framework developed by PAHO supported by a concrete strategic plan of action for the region.

PAHO's renewed framework on ISH: Regional Project and Plan of Action on IS4H

Mr. D'Agostino, Senior Advisor, Knowledge Management, Department of Communicable Diseases and Health Analysis, summarized PAHO's renewed framework on ISH: Regional Project and Plan of Action and advised on the context, including e-governance, big data, open source, and current technologies and platforms in the information society; the rules of the game, which emphasized agreement on the foundation and rules (mandates, outcomes, processes, and procedures), rather the players (technology); PAHO's renewed model, which involves a network of information sources, and interconnected and interoperable health-related systems; the draft regional project, with strategic goals and expected results; and the way forward, with prioritization (what); implementation strategies (how); networking and partnerships (who); and now and forever (when).

Health information in the context of health systems

Dr. Del Riego, Amalia del Riego, Unit Chief, Health Services and Access, Department of Health Systems and Services, presented Health information in the context of health systems, highlighting the importance of information in advancing towards UAH-UHC, and noting challenges and opportunities for improving IS4H. Challenges include diversity in understanding of the information needed, where IS4H may be seen only as medical records, though they also involve risk factor surveys, demographics, and "learning to connect the dots"; limited analysis of existing data; weak monitoring and evaluation; and limited health system research. Opportunities include commitment to UAH-UHC and SDGs; current efforts of Member States; and frameworks prepared by PAHO/WHO and other stakeholders, such as Health in the Americas, Health Equity Analysis, and the IS4H Framework.

Discussion

- In introducing new systems, supporting resources have to be identified, especially in resource-constrained environments. There is need for a self-assessment tool and an economic model to help those asking for assistance to present their case.

- IS4H may not be an attractive model for investment, if they are simply presented as information systems. However, if they are put in the framework of Open Data or Big Data, banks and other entities that are supporting those initiatives may provide resources.
- Cost-efficiency considerations are important in health, and data can contribute to improving efficiency, making the best investments possible to be able to provide better access to the population, not linked to providing services at lower cost.

- Data to show the value of health care is needed; while there is a limit to cost-efficiency in health care, adding value has no limit. Thus, there should be greater emphasis on return on investment than on cost-efficiency.

- IS4H should be approached from a national, rather than a health, perspective; the incorporation of other sectors into the IS4H strategy will improve its chances of success.

Session 2: IS4H in the Caribbean: Current situation, challenges, and opportunities

IS4H in the Caribbean: Challenges and opportunities

Ms. Sheralin Monrose, Co-Chair of the Technical Working Group (TWG) on IS4H in the Caribbean and Mr. Daniel Doane, PAHO Consultant, summarized the history and work of the TWG, which was formed in 2015 at a Subregional IS4H Technical Meeting and endorsed by the COHSOD in that year. She noted the 10 priority areas defined by the TWG: HIS strategic plans; advocacy for country ownership; data documentation; knowledge-sharing platform; change management; human resources; legislation, policies, and standard operating procedures (SOPs); regional architecture/strategy; private-public partnership for financing; and HIS performance system.

Country situation analysis

Mr. Doane presented the draft findings of a country situation analysis involving 16 countries in the Caribbean region, looking at 6 key areas: strategy, leadership and coordination; legislation and policy; human resources; information management; information products, dissemination, and use; and information technology. Highlights included the following:

a) Most countries have completed some type of formal assessment of their IS4H and have national health system strategic plans in place to guide alignment with IS4H priorities.

b) The majority of countries also have some type of e-governance strategy or initiative in place. While most countries have identified IS4H within the national or MoH budget, only 20% have specifically identified operational budgets to ensure sustainability.

c) The dissemination and use of information products is also a challenge. It is important for the information to be used not only at policy level, but also at an operational level by the persons who generate the data, to improve quality.

In summary, investments and interventions in countries are ongoing, but there is need to consider interoperability, policy and legislative frameworks, information use, and increased investment.

Four working groups subsequently considered the four strategic goals of the draft Caribbean Regional Project and Plan of Action, using the outcome mapping method to identify immediate ("expect to see"), medium-term ("like-to-see"), and long-term ("love-to-see") outcomes.

The results of the four working groups are summarized in Annex 3.

Session 3: Plan of action for IS4H in the Caribbean

Three countries – Barbados, Belize, and Jamaica – shared their experiences with IS4H, highlighting achievements, challenges and critical factors for success, and Mr. Marcelo D'Agostino presented the main findings and next steps of a rapid situation analysis of HIS conducted in Jamaica.

The countries' presentations highlighted the importance of phased implementation, legislative framework, SOPs, data dictionary, human resources, capacity building, and the participation of the private sector, the last to provide a more complete picture of the health situation. A legislative framework that would expand required private sector reporting to include health data other than notifiable communicable diseases – as currently obtains – would be highly desirable. In addition, determination of national requirements and standards for recording patient visits, whether in the

public or private sector, would facilitate reporting and analysis. Barbados identified funding as a priority and Belize requested an external evaluation of its system, while Jamaica highlighted electronic medical records, reduction in Accident & Emergency and surgical waiting times, and telemedicine as priorities to be addressed through IS4H.

Main highlights of the presentations are summarized in *Annex 4*.

Session 4: Partnerships in IS4H

Moderated by Dr. Jessie Schutt-Aine, Coordinator, PAHO's Caribbean Sub regional Program,

representatives of selected agencies gave their perspectives on IS4H in the Caribbean: Ms. Tonia Frame, Project Officer, Health, Delegation of the European Union (EU) to Barbados, the Eastern Caribbean States, the OECS, and CARICOM/CARIFORUM; Mr. Eduard Jan Beck, Senior Advisor, Strategic Information and Policy, Joint United Nations Program on HIV/AIDS (UNAIDS); and Ms. Angela Hinds, Head, Health Information and Data Analysis, CARPHA.

European Union (EU)

Ms. Frame noted the EU's work with selected countries in the Caribbean and with CARPHA, as well as the absence of a subregional approach, to date, given the EU's bilateral engagement with the entities. However, efforts are ongoing to correct this at both Caribbean regional and subregional (OECS) levels. The EU also wishes to collaborate with PAHO/WHO in exploring how countries' IS4H platforms can speak to each other to support UAH-UHC and the movement of people in the region, including the establishment of centres of excellence. She commended the broadening of perspectives on IS4H from the relatively narrow "health sector-only" view, to embrace a cross-sectoral approach. Though the 11th European Development Fund (EDF) program 2014-2020 does not specifically address health, there is scope for work around IS4H under the area of regional integration – this is being explored with the OECS and would be a useful discussion at the CARICOM level also.

UNAIDS

Mr. Beck highlighted UNAIDS' work in the area of guidelines to protect the security and confidentiality of HIV information and efforts to apply that work to other areas, looking at the health system as a whole. In order to properly follow-up people with HIV, efforts beyond the HIV care continuum or HIV treatment cascade are necessary. UNAIDS is discussing issues related to unique national health identifiers with WHO, and has had workshops in other WHO regions in an effort to develop a roadmap that countries can adapt to their situation. Work is also being done with other partners, such as the US President's Emergency Plan for AIDS Relief (PEPFAR), regarding national guidelines to protect personal health information.

CARPHA

Ms. Hinds drew on CARPHA's work with countries on surveillance to identify lessons learned, which include: a) Variance in thinking between decision-makers and technical advisors regarding the purchase of HIS, often resulting in systems that cannot be used or made fully operational; b) Realization that HIS implementation is not just an IT project, but a health project involving many stakeholders that need to be consulted, with establishment of a cross-functional team; c) Importance of behavioural change issues, from persons on the ground to upper management; d) Need for intergovernmental, interministerial agreements and collaboration, with identification of

data sources outside of the health sector; e) Feedback of information to the level of data collection to promote "buy-in" at that level, and support and improve day-to-day operations; f) Need for realistic, not overly-long time frames for project initiation, given the relatively rapid pace of changes in ICT and related issues; and g) Benefits of analyzing lessons learned and solutions in other countries.

Session 5: Executive summary of previous day

General introduction

The Honourable Robert Browne, Minister of Health, St. Vincent and the Grenadines introduced Mr. Peter Ricketts, Information Technology Specialist, Dominica, and noted that HIS in VCT had made progress; the same software used in BLZ and BRB is operational in approximately 70% of public health facilities in that country.

Executive summary of day 1

Mr. Ricketts presented an executive summary of the previous day's work and reiterated the participants' agreement on the importance of IS4H that integrate multisectoral information and facilitate appropriate action. He stated the main conclusions and agreements reached and highlighted the usefulness of partnerships with other countries and with specialized entities such as the Caribbean Telecommunications Union (CTU)1 and the Regional Federation of Health Informatics for Latin America and the Caribbean (IMIA LAC)2. He emphasized that public-private partnerships and partnering with other sectors are important strategies, since other sectors may use the same ICT structure, thus facilitating shared services.

Discussion

- Director of PAHO: The Organization is committed to working with countries in this priority area, given its importance for the achievement of UAH-UHC and attention to underserved and vulnerable populations.

- Minister VCT: An assessment in VCT showed that the functioning of HIS provides a strong indicator of the overall health system's functioning. This is not an isolated issue – it is being done to advance UAH-UHC and speaks to systemic issues.

- UNAIDS: Access to codes and private-public partnerships will be a challenge. Countries need outside expertise, but relevant private sector companies may be transient, and national strategies for these partnerships are critical, as exemplified by LCA, which is acquiring a commercial system; JAM, which has commercial plus open source systems; and BLZ, which wants to address its commercial system with its Canadian partners.

[1] http://www.ctu.int/
[2] http://imia-medinfo.org/wp/imia-lac-regional-federation-of-health-informatics-for-latin-america-and-the-caribbean/ N.B. IMIA = International Medical Informatics Association

- British Virgin Islands: Internet availability and sufficient and stable bandwidth are needed to facilitate the IS4H being discussed, and relevant technological information is critical. There are several issues that can be solved through common standards and protocols, given that IT providers in the region are private, and the same companies serve most Caribbean countries. There can be collaboration among countries to address these issues, particularly for the establishment of repositories and centres. There are also cultural issues to be dealt with; some older persons are not comfortable with modern ICT and a proportion of the population fears storing data in "the cloud". However, these advances have the potential to reduce costs, and should be dealt with through change management.

- Trinidad and Tobago: Without embracing "the cloud" as a technology that can enhance health care, the region will be left struggling. TTO is exploring linkages between private providers and hospitals through this means, since the country's ICT infrastructure is quite strong. Other important factors for "future-proofing" the Caribbean regarding the viability and sustainability of IS4H and the provision of patient-centered health services include:

    - Leadership skills for transforming the system
    - Capacity building
    - Change management, especially since many clinicians do not appreciate the health-transforming aspects of IS4H, which are often seen as IT only
    - Exchange and partnerships with countries that have progressed in certain areas; and
    - Sharing knowledge, successes, and challenges.

- CARICOM Assistant Secretary General: Tertiary institutions in the Caribbean should be involved in this effort. Although older health care professionals tend to prefer paper records, almost all those under 40 years of age are willing to embrace IT; change management strategies are needed for the former group. There is a Human Resources Development (HRD) Commission in CARICOM that will be conducting an assessment of the region's HR needs, and collaboration with this Commission will be important.

- LCA: LCA has a similar IS4H solution to BRB and BLZ, though the country does not have access to the source code and is carrying out the development in-house, having severed ties with the vendor. Thus, there are 4 countries with the same solutions that have taken different paths, but have not shared their experiences. LCA has also acquired a proprietary system for the hospital, so it has two experiences to share. Sharing is of great value, especially since most countries report to the same agencies and are working towards similar health outcomes. It is important to know what is to be accomplished, what the desired outcomes are, what information should be obtained from the system, what the regional standards are, and how proprietary or other software can help, rather than simply focusing on technology.

- The Bahamas: All information systems in BHS are proprietary. However, in implementing a surgical IS, the country held an extensive requirements gathering session, with subsequent editing and validation by stakeholders, development of a request for proposals, detailed evaluation of the proposals, and site visits to shortlisted providers before the final selection. As a result, the surgical IS was delivered on time and on budget, with stakeholder ownership due to the participatory process.

- IDB: The meeting has identified problems, and solutions exist; the IDB has supported the work in BHS. Financing strategies are important, and should be priorities. However, from the IDB's

perspective, if health is not in the country strategy, the Bank cannot support it. Therefore, health has to be prioritized in the national budget as a determinant of growth. Ministers of Health should lobby Cabinet to put health high on the agenda, given its positive effect on productivity, and advocate for additional funding.

Session 6: Strategic and political analysis

Four working groups were asked to consider the following questions in the frameworks of UAH-UHC, eGovernment, Open and Big Data, and HiAP:

- As you envision where you want your country to be in 10 years on IS4H, which of the IS4H goals do you see your institution achieving?
- In order to achieve IS4H goals, what innovative ideas and strategies did you have to come up with?
- What challenges (external or internal) will you have to defeat along the way to achieve your IS4H goals?
- Imagine it is 5 years from now. What are other countries "envying" the most about your IS4H?

Main highlights of the group discussion:

- The confidentiality and security of IS4H are paramount, especially regarding patient-sensitive data and vetting of persons with access to the information.

- Patients can be empowered to protect themselves and be aware of who may be accessing their data.

- Privacy and security are separate from the format of the data. The public should be sensitized to the fact that records are being digitized, and despite the threat of cyber-attacks, they are still more secure than manual records.

- There are opportunities for countries through sharing of successes and good practices. Collaboration outside of the health sector itself, with other ministries, academia, and international development partners can be advantageous.

- Opportunities must be found and/or created for sharing countries' practices and products.

- The terms of reference of the Caribbean TWG on IS4H include review and promotion of learning experiences in countries. In addition, security concerns require differentiation between sharing of statistical data, which does not have personal identifiers, as opposed to patient records. The latter is seen mainly by physicians, and include security features.

- Consideration should be given to the spheres of influence within an audience. At regional level, there could be a community management framework comprised of multisectoral, high-level, strategic thinkers and public relations practitioners. This could be coupled with, at a lower level, a social media strategy to determine social sentiments around health care. These could be distilled into a set of management concepts to identify successful approaches and challenges.

- Social media cannot be ignored; they may be useful in surveillance, and there are agencies with expertise and free tools that can help.

- Discussions in the meeting have shown consistency in terms of the IS4H vision, especially countries' desired outcomes. Collaboration, communication, and partnerships are important strategies; partnerships with telecommunication entities and the establishment of communities of practice can be facilitated by the IS4H TWG.

Annex 5 summarizes the group reports.

Session 7: Prioritization and the way forward

During this session, moderated by Dr. Irad Potter, Chief Medical Officer (CMO), VGB, four working groups again convened to identify strategic priorities for IS4H in the Caribbean. Dr. Potter, CMO since 1995, gave his perspectives on the history of HIS in the Caribbean, noting that:

- Previous major initiatives did not achieve their desired outcomes because of inadequate analysis of the environment. Some countries had good manual paper-based HIS, but left the foundation and good practices behind in the computerization of the HIS, without considering sustainability issues.

- An enabling environment must be put in place and mechanisms for sharing information among countries need to be more robust.

- Much of what needs to be done is common to all countries, such as legal frameworks, memoranda of understanding, partnership agreements, governance and leadership, data dictionaries, and specific indicators. Countries can coordinate and cooperate to get these done and create regional public goods for IS4H that will be useful at the national level, considering that health situation analysis has moved beyond simply looking at health services; water, sanitation, and other social and environmental determinants of health must be included.

In their strategic prioritization exercise, the working groups were asked to define mechanisms for sharing and creating enabling environments, and to identify opportunities for cooperation and

collaboration, and roles and responsibilities of countries, individually and collectively; regional institutions; and international agencies and development partners such as PAHO/WHO. The tool provided to the groups facilitated the definition on actions to be done now (Do), to be scheduled (Decide), to be done by someone else (Postpone/Delegate) and to be eliminated (Delete).

Main highlights of the group discussion:

- Legislation should be managed at national level, since it usually takes a long time and would be difficult to achieve at regional level. However, some countries already have drafts and some countries can use model legislation, while others can refer to legal briefs. Key content of the legislation should be developed and shared.

- There should also be mechanisms to institutionalize the legislation, for its implementation. National privacy programs should be established and institutionalized in each facility, with relevant metrics.

- The outputs of the Caribbean Knowledge Learning Network (CKLN) project and the OECS eGovernance for Regional Integration Project (E-GRIP) would be useful to the IS4H initiative, and should be revisited.

- There were benefits from both projects, which were based on technology, but lessons learned are that countries run the risk of implementing obsolete technology by the time all project details are settled, and that there must be a domestic budget to continue and sustain the gains from externally-funded projects.

- Best practices from various countries can be captured through government-to-government initiatives, as well as through a knowledge-sharing platform.

- There are many resources available that can be shared, and mechanisms for this to take place must be established. The outputs of the working groups will be organized in a more formal strategic way and presented to the participants for feedback, before their integration into the draft Caribbean IS4H Strategic Plan and associated proposal(s) for resource allocation and mobilization.

- It is very evident that participants wish to continue sharing information and resources in order to advance the initiative, and a coordinated process that takes advantage of technological advances should be put in place.

Final remarks and main conclusions

The PAHO/WHO Representative in Jamaica, Dr. Noreen Jack, presented and executive summary of the major conclusions and recommendations from the meeting. Dr. Jack reiterated and highlighted the participants' commitment on the importance of IS4H that integrate multisectoral information and facilitate appropriate action. She emphasized the importance of the adoption of the Regional Project and Plan of Action on IS4H for advancing public health in the Caribbean trough interoperable information systems for health with a holistic and integrated framework and vision.

The Director of PAHO noted that all countries need to be committed to the overall IS4H vision and concept, not only addressing client management systems, but also going beyond, to national HIS, to give information for policies, programs, monitoring, and evaluation, and address preventive and rehabilitative, as well as curative, services. IS4H are meant to contribute to efficiencies but there must not be false expectations of those systems; countries should be aware of other mechanisms that will also contribute to increased efficiencies, and IS4H can identify the areas for attention.

The Organization is committed to working with countries in this priority area, given its importance for the achievement of UAH-UHC and attention to underserved and vulnerable populations.

The Ministers of Health; the Assistant Secretary General of CARICOM; and the Director of PAHO gave their reflections on the HLM.

Main conclusions

- Adoption of a holistic framework for IS4H in Caribbean, with identification of components amenable to joint work by countries.

- Adoption of the draft regional strategic plan for advancing public health through interoperable IS4H.

- Identification of electronic medical records and hospital management systems as short-term IS4H priorities for Caribbean countries.

- In introducing new systems, supporting resources have to be identified, especially in resource-constrained environments. There is need for an economic model to help those asking for assistance to present their case.

- IS4H may not be an attractive model for investment, if they are simply presented as information systems. However, if they are put in the framework of Open Data or Big Data, banks, academia and other entities that are supporting, researching and building capacity in those initiatives may provide resources

- Cost-efficiency considerations are important in health, and data can contribute to improving efficiency, making the best investments possible to be able to provide better access to the population, not linked to providing services at lower cost. However, data to show the value of health care are needed; while there is a limit to cost-efficiency in health care, adding value has no limit. Thus, there should be greater emphasis on return on investment than on cost-efficiency.

- IS4H should be approached from a national, rather than a health, perspective; the incorporation of other sectors into the IS4H strategy will improve its chances of success.

- There is need for an economic/business model to help those asking for assistance to present their case as being feasible in the national and Sub Regional contexts.

- Three countries – Barbados, Belize, and Jamaica – shared their experiences with IS4H, highlighting achievements, challenges and critical factors for success, and Mr. Marcelo D'Agostino presented the main findings and next steps of a rapid situation analysis of HIS conducted in Jamaica.

- The countries' presentations highlighted the importance of phased implementation, with clear and concrete investments regarding legislative framework, SOPs, data dictionary, human resources, capacity building, and the participation of the private sector, the last to provide a more complete picture of the health situation. A legislative framework that would expand required private sector reporting to include health data other than notifiable communicable diseases – as currently obtains – would be highly desirable. In addition, determination of national requirements and standards for recording patient visits, whether in the public or private sector, would facilitate reporting and analysis. Barbados identified funding as a priority and Belize requested an external evaluation of its system, while Jamaica highlighted electronic medical records, reduction in Accident & Emergency and surgical waiting times, and telemedicine as priorities to be addressed through IS4H. While Jamaica highlighted electronic health records at the Primary Care and Hospital levels, reduction in Accident & Emergency Triage and surgical waiting times, Class I Notifiable Diseases Reporting, and telemedicine among the initial priorities to be addressed through IS4H.

  The countries' presentations highlighted the importance of phased implementation, with clear and concrete investments regarding legislative framework, SOPs

- There is a need for different levels of relationships between paper and electronic records, since it is almost impossible to put everything on an electronic platform, and both systems could cooperate

- IS4H should be seen in context of health system reform, and the role of the MoH should be clarified for the nation – it is regulatory, and reporting on patients should be part of the regulations. There are many conditions, other than communicable diseases, that should be mandated for reporting to the national health authority.

- There is a movement from services to systems, and the systems approach should be implemented in the context of e-governance initiatives; this would be opportune to obtain collaboration from other sectors.

- Digitization of medical records should be done prospectively, rather than retrospectively, and a phased approach to IS4H development should be adopted – by priority areas, geographic areas or institutions, based on priorities and resources – that would identify permit add-ons at a later stage.

- For success, Open Source Solutions may thrive best in the context of a national supporting Policy and depends upon the Business Model developed for its long-term and sustainable implementation. It is important to note that open source and proprietary solutions could interoperate and exchange information if appropriate standards are used.

- A Caribbean regional proposal should be developed and presented to development partners, to build on what has been done and what is available at country level.

- **C**onfidentiality and security of IS4H are paramount, especially regarding patient-sensitive data and vetting of persons with access to the information.

- There are opportunities for countries through sharing of successes and good practices. Collaboration outside of the health sector itself, with other ministries, academia, and international development partners can be advantageous.

- Consideration should be given to the spheres of influence within an audience. At regional level, there could be a community management framework comprised of multisectoral, high-level, strategic thinkers and public relations practitioners. This could be coupled with, at a lower level, a social media strategy to determine social sentiments around health care. These could be distilled into a set of management concepts to identify successful approaches and challenges.

- Social media cannot be ignored; they may be useful in surveillance, and there are agencies with expertise and free tools that can help.

- Discussions in the meeting have shown consistency in terms of the IS4H vision, especially countries' desired outcomes. Collaboration, communication, and partnerships are important strategies; partnerships with telecommunication entities and the establishment of communities of practice can be facilitated by the IS4H TWG.

- Legislation should be managed at national level, since it usually takes a long time and would be difficult to achieve at regional level. However, some countries already have drafts and some countries can use model legislation, while others can refer to legal briefs. Key content of the legislation should be developed and shared.

- The outputs of the Caribbean Knowledge Learning Network (CKLN) project and the OECS eGovernance for Regional Integration Project (E-GRIP) would be useful to the IS4H initiative, and should be revisited.

Prioritization and the way forward

- Adoption of a holistic framework for IS4H in Caribbean, with identification of components amenable to joint work by countries.

- Adoption of the Regional Strategic Plan for advancing public health through interoperable IS4H.

- Identification of electronic medical records and hospital management systems as short-term IS4H priorities for Caribbean countries.

- Develop a regional Plan of Action and proposal that address identified priority actions for presentation to national Cabinets and potential funders, to facilitate, respectively, resource allocation and resource mobilization.

- Negotiate to put health and IS4H on the eGovernment agenda.
- Update legislation for, and associated with, IS4H, using model legislation, legal briefs, and/or examples from countries.
- Develop instruments such as an IS4H self-assessment tool, regional guidelines and standards for interoperability, privacy, confidentiality and security.
- Develop National Health Information architecture.
- Update the country IS4H situation assessment in coordination with the Caribbean IS4H TWG.
- Formalize the TWG and its functions, with review of its terms of reference as appropriate.
- Implement formal collaboration mechanisms for information sharing among countries.

Annexes

High-Level Meeting on Information Systems for Health – Advancing Public Health in the Caribbean

Kingston, Jamaica, November 7, 8, 2016

Pan American Health Organization

World Health Organization
Americas

Ministry of Health, Jamaica

High-Level Meeting on Information Systems for Health
Advancing Public Health in the Caribbean Region

Objectives

Present a conceptual model on Information Systems for Health (IS4H) that responds to the needs of the Caribbean sub-region by building on existing actions and resources

Establish a common understanding of the IS4H model in the Caribbean sub-region and create a general framework of operation by strengthening the infrastructure for Information and Communication Technologies (ICT); and

Develop an IS4H Plan of Action for the Caribbean.

<table>
<tr><th colspan="4">EXCECUTIVE AGENDA</th></tr>
<tr><th colspan="2">Monday, 7 November 2016</th><th colspan="2">Tuesday, 8 November 2016</th></tr>
<tr><td rowspan="4">Morning session</td><td>Registration</td><td rowspan="4">Morning session</td><td>Session 5: Executive summary of the previous day</td></tr>
<tr><td>Opening Ceremony - Welcoming remarks</td><td>Session 6: Strategic and political analysis</td></tr>
<tr><td>Meeting objectives and Introductions</td><td></td></tr>
<tr><td>Session 1: A Renewed Vision of Information Systems for Health</td><td></td></tr>
<tr><td>Session 2: Information System for Health in the Caribbean: Current situation, challenges, and opportunities</td><td></td><td></td></tr>
<tr><td colspan="4">Lunch</td></tr>
<tr><td rowspan="2">Afternoon session</td><td>Session 3: Plan of Action on Information System for Health in the Caribbean:
• Data and information technologies
• Governance and management
• Knowledge sharing
Innovation and performance</td><td rowspan="2">Afternoon session</td><td>Session 7: Prioritization and the way forward</td></tr>
<tr><td>Session 4: Partnerships in IS4H</td><td>Session 8: Overall summary and recommendations
Closure of the Meeting</td></tr>
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High-Level Meeting on Information Systems for Health - Advancing Public Health in the Caribbean Region

ANNOTATED AGENDA

Monday, 7 November 2016 (Morning session)

Time	Topic	Objectives
Introductory session		
Master of Ceremony: Mrs. Elaine Foster Allen, Permanent Secretary, MoH, Jamaica		
8:30 – 9:00	Registration	
9:00 – 9:45	Opening Ceremony *. Dr. Carissa F. Etienne, Director PAHO* *. Dr Douglas Slater, Assistant Secretary-General, Directorate for Human and Social Development, CARICOM* *. Dr. the Hon. Christopher Tufton, Minister of Health, Jamaica*	Welcoming of participants
9:45 – 10.00	Keynote: Strategic vision and key messages on Information System for Health for the Caribbean *. Dr. Marcos Espinal, Director Department of Communicable Diseases, Health Analysis, PAHO*	To provide PAHO's strategic vision and key messages on Information System for Health for the Caribbean
10.00-10.10	Meeting objectives and Introductions *. Dr. Gerardo de Cosio, Unit Chief Health Information and Analysis, Department of Communicable Diseases and Health Analysis, PAHO*	To share the meeting's terms of reference, methodology, objectives and expected results.
10.10 – 10.30	**COFFEE BREAK**	
Session 1: A Renewed Vision of Information Systems for Health		
Moderator: The Honorable Patrick Pengel, Minister of Health of Suriname		
10:30 – 10:50	PAHO's renewed framework on Information Systems for Health. Project plan & road map *. Mr. Marcelo D'Agostino, Senior Advisor, Knowledge Management, Health Information and Analysis, Department of Communicable Diseases, Health Analysis, PAHO*	To introduce PAHO's renewed vision that helps the establishment of a general framework of operation To discuss the 4 strategic goals of the project: 1) Data and information technologies, 2) Governance and management, 3) Knowledge sharing, and 4) Innovation and performance To develop a common understanding of the specific components of Information Systems for Health and a general framework of operation and for its implementation To reflect on the position of Health Information in the Health System
10:50 – 11:00	Health Information in the context of Health Systems *. Dr. Amalia del Riego, Unit Chief Health Services and Access, Department Health Systems and Services PAHO*	

Session 2: Information System for Health in the Caribbean: Current situation, challenges, and opportunities		
Moderator: Dr. Rudolph Cummings, CARICOM		
11:00 – 11:30	Information Systems for Health in the Caribbean: challenges, and opportunities *. Ms. Sheralin Monrose , St.Lucia* *. Mr. Daniel Doane, PAHO consultant*	To provide an update on the Country Situation Analysis (CSA) developed by Caribbean Countries in 2015. To Identify key elements for monitoring the implementation of Information Systems for Health in the Caribbean. WG Method: **Outcome mapping** (*expect-to-see, like-to-see and love-to-see*)
11:30 – 12:15	The four strategic goals (working groups)	
12:15 – 13:00	Plenary discussion (Session 1 and 2)	
13:00 – 14:00	**LUNCH BREAK**	

Monday, 7 November 2016 (Afternoon session)

Time	Topic	Objective
Session 3: Plan of Action on Information System for Health in the Caribbean		
Moderator: the Honorable Nicholas Steele, Minister of Health Grenada		
14:00 –15:00	Lessons learned from countries: **Barbados** *. The Honorable John David Edward Boyce, Minister of Health* **Belize** *. The Honorable Pablo S. Marin, Minister of Health* **Jamaica**'s HIS Rapid situation analysis: Main findings and next steps *. Dr. Winston De La Haye, CMO/MoH Jamaica and Mr. Marcelo D'Agostino, PAHO*	To learn from real experiences from countries in the implementation of health information systems and to learn about the findings of the Jamaica's HIS Rapid situation analysis To obtain a more holistic view on countries lessons learned and challenges on the implementation of Health Information Systems.
15:00 – 15:30	Plenary discussion	
15.30-16.00	**COFFEE BREAK**	
Session 4: Partnerships in Information Systems for Health		
Moderator: Mrs. Jesse Schutt-Aine, Subregional Program Coordinator, Caribbean, PAHO		
16:30 – 17:15	Agencies' perspectives on IS4H Panel: *CARPHA, EU, IDB, USAID, UN Country Representative*	To present stakeholders perspectives on information systems for health in the Caribbean Executive summary, to be presented to the Honorable Ministers on the second day. Highlights from stakeholders will be recorded.
17:15 – 17:30	Plenary discussion	
17:30	Closing remarks	
WELCOME RECEPTION		

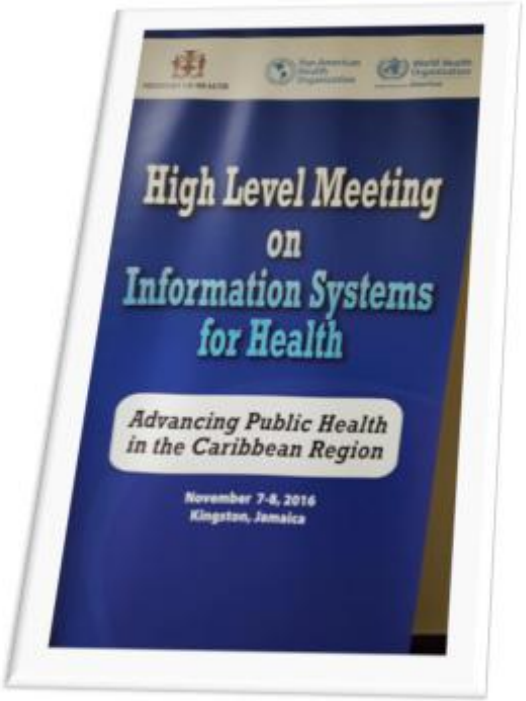
Tuesday, 8 November 2016 (Morning session)

Time	Topic	Objective
Session 5: Executive summary of previous day		
Moderator: The Honorable Robert Browne, Minister of Health Saint Vincent and the Grenadines		
9:00 – 9:15	Summary Day 1 *. Dr. Peter Ricketts, Dominica* *. Ms.Lisa Llewellyn, PAHO consultant IS4H/TWG*	To build on day 1 results
9:15 – 10:00	Plenary discussion	Reflections on the vision, goal and general framework of operation of the IS4H
Session 6: Strategic and political analysis		
Moderator: Dr. the Honorable Christopher Tufton, Minister of Health Jamaica		
10:00 -11:30	Political and strategic considerations to move forward. (Working groups)	To undertake technical, political, and strategic discussion about IS4H. Consensus on the main challenges and opportunities for national or regionally-based approaches and solutions. WG Method: **Strategic thinking**
10:30	COFFEE BREAK (during working groups)	
11:30 – 12:30	Plenary discussion	
12:30 – 14:00	**LUNCH**	

Tuesday, 8 November 2016 (Afternoon session)

Time	Topic	Objective
Session 7: Prioritization and the way forward		
Moderator: Dr. Irad Potter, Chief Medical Officer of The British Virgin Islands		
14:00 – 15:00	Strategic prioritization (working groups)	To address strategic priorities WG Method: **The Eisenhower Matrix** Identification and discussion on local, sub-regional and regional implementation strategies
15:00 – 15:30	Discussion	
15:30 -16:00	COFFEE BREAK	
16:00 – 16:30	Implementation strategies and the way forward Plenary discussion	

Session 8: Overall summary and recommendations		
Moderator: Dr. Noreen Jack, PWR Jamaica, Bermuda and the Cayman Islands		
16:30 – 17:00	Overall summary and recommendations	To summarize all outcomes, agreements, and implementation road map Formal meeting declaration highlighting the vision, agreements, and commitments.
Final session		
17:00 – 17:30	Closing remarks *. Dr Douglas Slater, Assistant Secretary-General, Directorate for Human and Social Development, CARICOM* *. Dr. the Hon. Christopher Tufton, Minister of Health, Jamaica* *. Dr. Carissa F. Etienne, Director PAHO*	



Pan American Health Organization

World Health Organization
REGIONAL OFFICE FOR THE Americas

Information Systems for Health

PAHO's position paper

There has been significant progress in the Caribbean regarding information systems for health. The strengthening of those systems is a critical factor of success to monitor and to evaluate progress toward universal access to health and universal health coverage, as well as the measurement of health outcomes, comprehensive health services, inequities, and social determinants of health.[1]

Built on existing actions, taking into consideration the Country Situation Analysis (CSA) developed in 2015, and considering the framework of the renewed model on Information Systems for Health developed by the Pan American Health Organization (PAHO), PAHO presents a proposal for the implementation of a **Caribbean Information System for Health Strategic Plan**. Its goal is to implement a better decision and policy making mechanism in the Caribbean Countries through interconnected and interoperable systems that ensure universal, free and timely access to quality and open data and strategic information using the most cost-effective ICT tools.

[1] Strategy for Universal Access to Health and Universal Health Coverage, PAHO's 53rd Directing Council, 66th session of the Regional Committee of WHO for the Americas

The main objective of this Strategic Plan is to introduce a renewed vision that helps the establishment of a general framework of operation and a common understanding of the specific components of Information Systems for Health. The plan seeks to define a comprehensive road map, strategies, policies, standards for interoperable and interconnected systems, ICT solutions, and best practices in health data and information management for improving decision making and well-being framed under four overarching strategic approaches: 1) Universal Access to Health and Universal Health Coverage, 2) Health in All Policies, 3) eGovernment, and 4) Open and Big Data Initiatives. This proposal will take into consideration the existing systems and structures; therefore, it will be based on the assumption of incremental strengthening, innovation, and improvement.

Preconceptions of Information Systems are mainly focused on software development, isolated electronic health records, or vital statistics. However, they must be conceived as an integrated mechanism of technologies, methodologies, databases and processes that ensure the convergence of data, information, knowledge, standards, people, and institutions. These preconceptions do not consider the current context established by the Information Society and the Data Revolution; therefore, they cannot provide a general and realistic framework for policy development and decision-making.

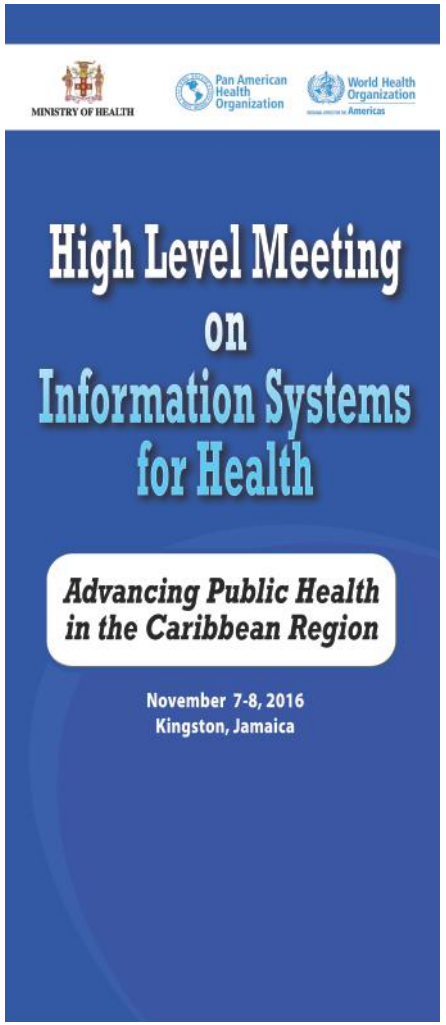
The Caribbean region is confronted with unique challenges on the adoption and implementation of a common vision and

approaches for having interconnected and interoperable information systems for health at National and Subregional levels. Given these challenges, Caribbean countries may benefit from taking a regional approach to the adoption of standards, technologies, solutions and methodologies not only for data, information and knowledge management but also for decision-making and informed-policy development.

The implementation of this strategic plan seeks also to enhance multi and bilateral collaboration and coordination across the Caribbean in utilizing international standards, emerging technologies, and innovations towards improved public health.

This Strategic Plan is developed by PAHO based on the results of the CSA conducted by the PAHO's Office for Caribbean Program Coordination (OCPC) in collaboration with the Caribbean Technical Working Group for the Strengthening of Information Systems for Health (TWG ISH). Although not a comprehensive review, the purpose of the CSA was to gather information on the current state of the National Information Systems for Health in countries of the Caribbean subregion in order to identify capacity gaps that require strengthening and technical cooperation.

PAHO is fully committed to this initiative and encourages all the Caribbean countries to agree on a common vision, goal, objectives and expected results. PAHO considers critical to establish governance mechanisms that ensure the implementation of the Strategic Plan as well as political commitment from countries, adoption of common interoperability standards, and the use of resources at a national and regional level to ensure long-term sustainability.



The Caribbean Information System for Health project

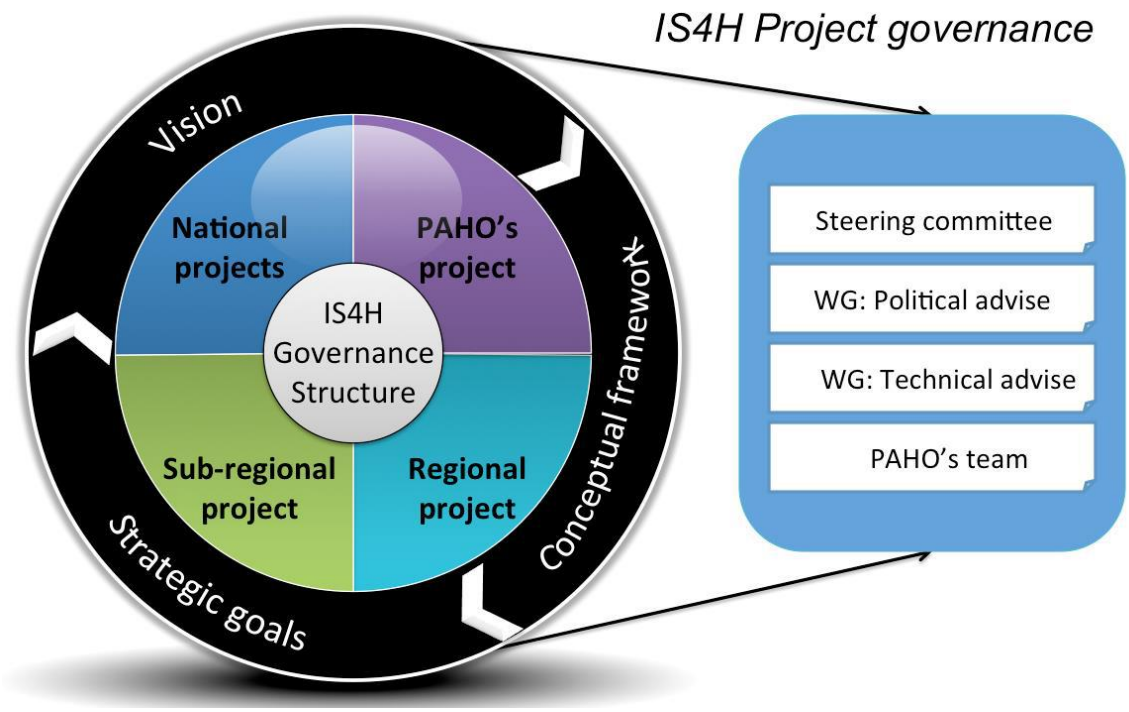
Advancing Public Health in the Caribbean Region

PAHO/WHO –Rev. 13 – November 22, 2016

The Caribbean Information System for Health

Strategic Plan for Advancing Public Health in the Caribbean Region

Contents



I. Executive summary

Building on existing actions, taking into consideration the Country Situation Analysis developed in 2015 (Annex 1) and considering the framework of PAHO's renewed model on Information Systems for Health (Annex 2), the organization presents a Caribbean Information System for Health Strategic Plan. Its goal is to implement a better decision- and policy-making mechanism in the Caribbean countries through health systems that ensure universal, free, and timely access to quality and open data and strategic information using the most cost-effective ICT tools.

The main objective of this Strategic Plan is to introduce a renewed vision that helps to establish a general framework of operation and a common understanding of the specific components of Information Systems for Health. The plan seeks to define strategies, policies, standards for interoperable and interconnected systems, and best practices in health data management for improving decision-making and well-being under the framing of four overarching strategic approaches: 1) universal access to health and universal health coverage, 2) health in all policies, 3) eGovernment, and 4) open and big data Initiatives. This proposal will take into consideration the existing systems and structures; therefore, it will be based on the assumption of incremental strengthening.

Preconceptions of information systems are mainly focused on software development, electronic health records, or vital statistics. However, they must be conceived as an integrated mechanism of interconnected and interoperable systems and processes that ensure the convergence of data, information, knowledge, standards, people, and institutions. These preconceptions do not consider the current context established by the information society and the data revolution; therefore, they cannot provide a general and realistic framework for policy development and decision-making. This document presents a project proposal that was developed based on the results of the Country Situation Analysis (CSA) conducted by the PAHO's Office for Caribbean Program Coordination (OCPC). Although not a comprehensive review, the purpose of the CSA was to gather information on the current state of the National Information Systems for Health in countries of the Caribbean sub-region in order to identify capacity gaps that require strengthening and technical cooperation.

Since 2011, PAHO/WHO and its Member States have been reinforcing the concept of health in all policies as an approach to promote health-related policies across sectors; therefore, it is critical to adapt the current concept of health information systems into information systems for health as a mechanism that facilitates the collection and use of health-related data from different sectors and sources. The conceptual model is based on an adaptation of Mario Bunge's[1] theory of systems, which includes four pillars—components, environment, structure, and mechanisms—and considers the use of structured and unstructured data under the already-mentioned four overarching strategies.

The implementation of this model seeks to enhance collaboration and coordination across main actors who have responsibilities within national health systems. The strengthening of information

[1] Mario Bunge has been distinguished with sixteen honorary doctorates and four honorary professorships by universities from both the Americas and Europe (https://www.mcgill.ca/philosophy/people/faculty/bunge).

systems for health is a critical factor of success as an essential measurement element to conduct monitoring and evaluate progress toward universal access to health and universal health coverage, including the measurement of health outcomes, comprehensive health services, and inequities and social determinants of health.[2]

II. Vision

Universal access to health and universal health coverage is strengthened in the Caribbean sub-region through the implementation of interconnected and interoperable health-related systems that assure effective and efficient access to quality data, strategic information, and ICT tools for informed decision-making and well-being.

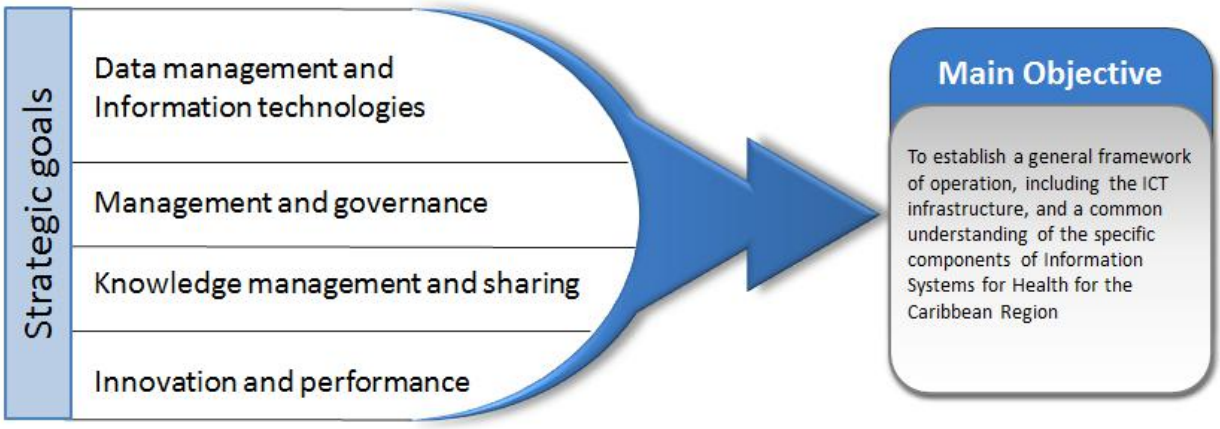
III. Main goal

To implement a better decision- and policy-making mechanism through health systems that ensure universal, free, and timely access to quality and open data and strategic information, using the most cost-effective ICT tools.

IV. Main objective

To establish a general framework of operation, including the ICT infrastructure, and a common understanding of the specific components of Information Systems for Health for the Caribbean Region.

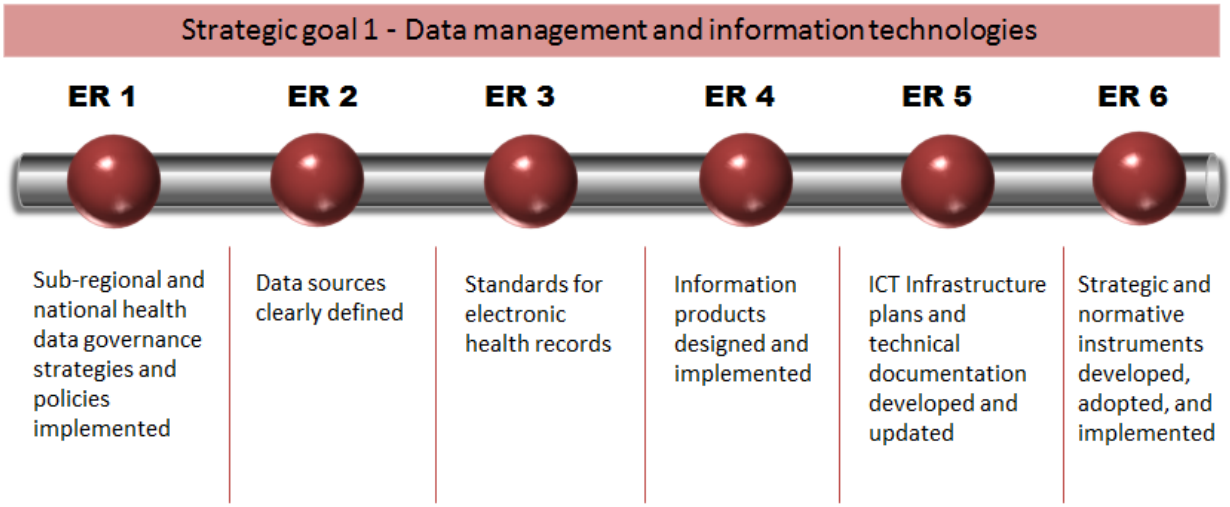
V. Strategic goals



[2] Strategy for Universal Access to Health and Universal Health Coverage, PAHO's 53rd Directing Council, 66th session of the Regional Committee of WHO for the Americas.

Strategic goal 1 - Data management and information technologies

Expected results



DGSP: Data governance strategies and policies: Sub-regional and national health data governance strategies and policies implemented. Health data governance is the framework for establishing sub-regional and national strategies, objectives, policies, standards, and tools for the management of technical data, which is supported by a legal framework. It is also a system of decision rights and accountabilities for health data management processes at the country and sub-regional level. It refers to the overall management of the availability, usability, integrity, privacy, and security of the health data, internal and external, managed by each country.

DASO: Data sources clearly defined. Data sources are composed of structured and unstructured data. Data are subject to the administrative authority of each country. *Structured data* refers to content that has a predefined structure and is normally classified in a standard manner and stored in a traditional relational database. *Unstructured data* refers to different types of content that do not have a predefined structure and are not classified in a standard manner or contained in traditional databases.

SEHR: Standards for electronic health records**.** Electronic medical records are real-time longitudinal electronic records of an individual patient's health information, which can assist health professionals with decision-making and treatment, including evidence-based decision support systems, quality management, and outcomes reporting. In some cases, it may be a longitudinal record widely available across a number of institutions, but in others, it may be a limited automated system only available within a confined community or within a specific unit or department.[3]

[3] eHealth Strategy, PAHO's 53rd Directing Council, 66th session of the Regional Committee of WHO for the Americas & WHO/WPRO Electronic Health Records: Manual for Developing Countries.

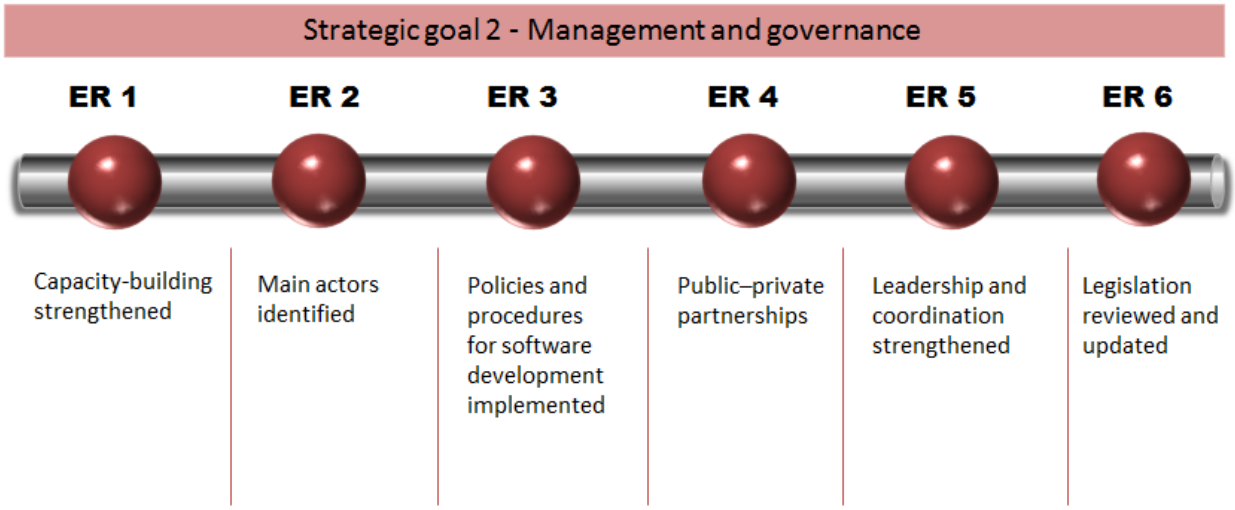
IPDI: Information products designed and implemented**.** Health data that are processed and published openly in a variety of formats that accomplish the different needs of the information systems for health constituencies. Technical data managed by national institutions should be able to be transformed, at a minimum, in open data sets in multiple formats, technical and strategic reports, scientific and technical publications, and different forms of visualizations.

ITDD: ICT Infrastructure plans and technical documentation developed and updated**.** Technical documentation that considers different aspects of Internet connection across the country. It seeks also to define or adjust an MoH's connectivity plans and document the technological scheme of local area networks, including strategies and infrastructure for secure data storage.

SNID: Strategic and normative instruments developed, adopted, and implemented**.** Strategies, policies, and standards for interoperable and interconnected systems and best practices in health data management for improving decision making and well-being are updated and implemented to the extent possible.

Strategic goal 2 - Management and governance

Expected results



CABS: Capacity-building strengthened**.** Capacity-building is about the individual and collective ability of implementing interconnected and interoperable systems. It is also a mechanism for developing or adopting a health data governance strategy that promotes a better decision- and informed policy-making mechanism. It encompasses a country's human, scientific, technological, institutional, and resource capabilities.

MAAI: Main actors identified**.** The mapping of the main actors considered a clear identification of their roles as potential producers, users, or intermediaries of health-related data and information.

It encompasses national and sub-regional institutions[4] of the Caribbean community, as well as international bilateral and multilateral organizations, such as community institutions, associate institutions, functional cooperation institutions, USAID, the European Union, PAHO/WHO, UN agencies, and other stakeholders.

PPSI: Policies and procedures for software development implemented**.** Software development is the process of analysis, updates, customizations, reuse, or development of ICT applications that are interoperable by design. Policies and standard operating procedures describe technical norms and standards to be adopted for developing, adopting, or implementing new software or mobile applications connected to the national information system for health.

PUPP: Public–private partnerships**.** Telecommunications, Internet access, and software development or adoption, among other critical actions, require strong public–private partnerships. Actions, projects, and services that could benefit from a strong public–private relationship will be recommended.

LECS: Leadership and coordination strengthened**.** To ensure managerial and technical coordination among all the actors for having interconnected and interoperable systems, a formal scheme of leadership and coordination among all players will be developed and implemented.

LERU: Legislation reviewed and updated**.** Key and core elements that should be considered as minimum and necessary components to update the legislation of the countries will be formulated, shared, and promoted.

COEL: Core Elements. Define by the Vision and Goals for the IS4H in the country….

INAG : International Agreements

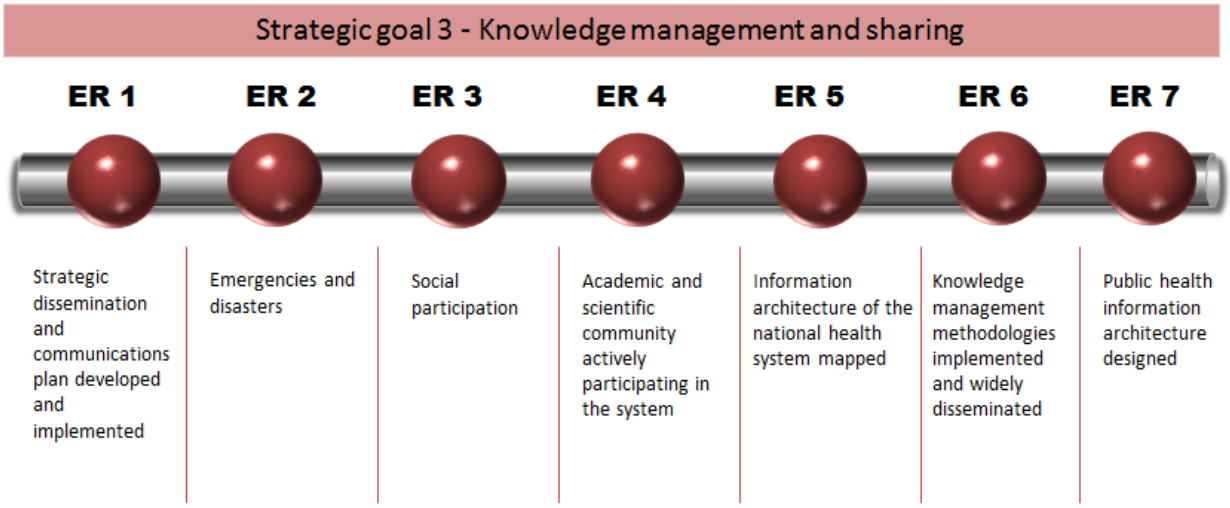
MAGO-MARE: Management of resources (including HR, Financial and other sustainable managerial aspects)

ORST: Organizational Structure

Strategic goal 3 - Knowledge management and sharing

[4] Community institutions/associate institutions provide direct technical support to CARICOM Member States in a range of areas.

Expected results



STDC: Strategic dissemination and communications plan developed and implemented**.** Strategic dissemination and communications plans are strategic tools and methodologies for supported decision-making, as well as promoting (individual, social, and political) changes that lead to achievement and maintenance of health. This is a dynamic process characterized by different variables of access to information, production of knowledge, dissemination, and two ways of communication and training. In the case of communications, the following approaches are noteworthy: communication for development, communication for health, communication for behavioural change, risk communication, institutional communication, external communication, advocacy for health, social mobilization, and scientific communication.[5]

EMDI: Emergencies and disasters**.** Emergencies and disasters require the development and application of special operating procedures, as well as access to the right information at the right moment in the right format. Special operating procedures for information management during emergencies and disasters will be developed and implemented.

SOPA: Social participation**.** The participation of social groups in the development process is critical. Transparency and sound communication in an early stage can build trust in the system and facilitate contributions and cooperation across different sections of society. Establishing mechanisms for communication with and engagement of key social groups will also provide feedback on views and concerns of stakeholders and citizens that may be addressed.

ACSC: Academic and scientific community actively participating in the system**.** The academic and scientific communities contribute to research and producing new knowledge in health. Their involvement in the renewed model will be encouraged from an early stage.

[5] Knowledge Management and Communications Strategy, PAHO's 28th Pan American Sanitary Conference, 68th session of the Regional Committee of WHO for the Americas

IANH: Information architecture of the national health system mapped. To ensure a clear understanding of the flow of information among key actors and the organization of the health system, a formal mapping of the organization of the system, including the organizational structure of ministries of health, will be developed.

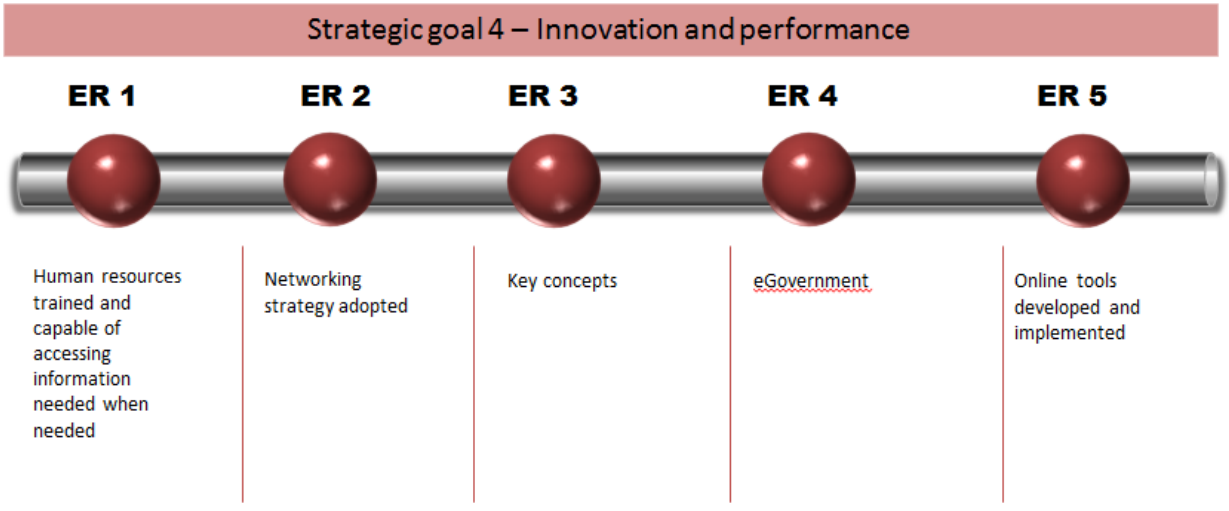
KMME: Knowledge management methodologies implemented and widely disseminated**.** Knowledge management methodologies for best practices in health information and knowledge management for improving decision-making and data management are updated and implemented to the greatest extent possible. Some critical methodologies are listed below:

- How to implement communities of practice
- How to document and share lessons learned
- How to preserve institutional memory
- How to conduct effective virtual meetings
- How to improve scientific writing
- How to develop functionally within the information society

PHIA: Public health information architecture designed**.** Develop a clear conceptual architecture (blueprint) at the country, sub-regional, and regional levels that shows how users, data sources, tools and information systems, and enabling mechanisms work together to deliver on the vision for information systems for health.

Strategic goal 4 - Innovation and performance

Expected results



HRTI: Human resources trained and capable of accessing information needed when needed
Empower people and communities through training, active participation, and access to information for community members, in order for them to take an active role in data management, policy-making, and decision-making, in actions to address social determinants of health and in health

promotion and protection. Ensure that health workers have access to health information and introduce new professional and technical profiles and strengthen existing ones.[6]

NEST: Networking strategy adopted**.** Networking as a core strategy for data management and information and knowledge sharing will be adopted. Different types of networks will be implemented, such as: strategic and diplomatic networks of relations, thematic and knowledge networks, and social networks for community engagement.

KECO: Key concepts**.** With the rapid growth of the Internet and the exponential evolution of information technologies and big data, key concepts must be known, understood, and assimilated. A self-virtual training course on key concepts for information systems for health will be developed and implemented at the PAHO Virtual Campus.

EGOV: eGovernment**.** Caribbean countries may benefit from taking a collective approach to eGovernment initiatives, including the adoption of standards, applications, and information services. Potential benefits, opportunities, and challenges of regionally managed eGovernment initiatives will be identified and discussed within the Caribbean political and technical forums.

ONTO: Online tools developed and implemented

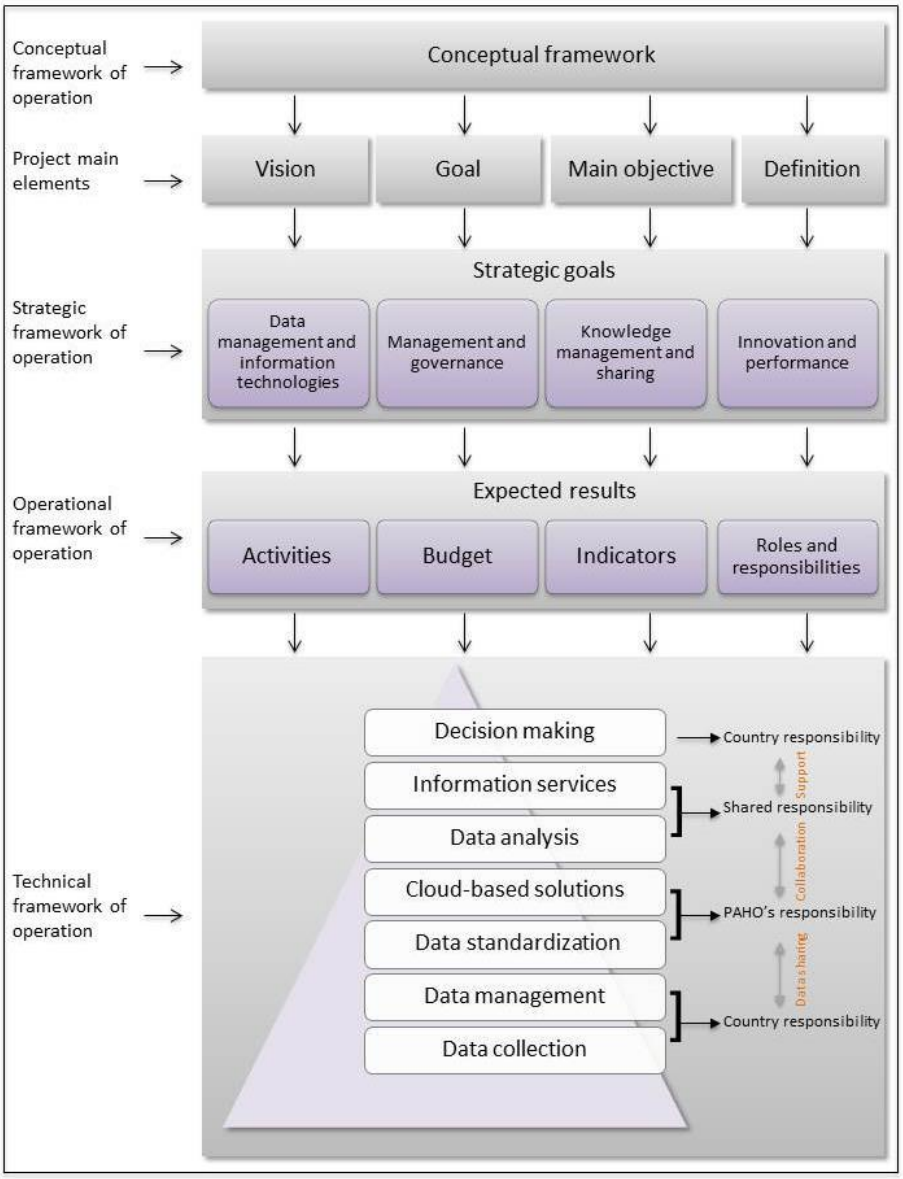
- The Caribbean Public Health Information Warehouse (*Annex 3*)
- The Caribbean Information System for Health Maturity Model
- The Caribbean Open Data Maturity Model
- The Caribbean Knowledge Management Maturity Model

OPGO: Open Government**.** …….. (Open Government Partnership)

HEAN: Health Analysis……..

[6] Adapted from PAHO's Strategy for Universal Access to Health and Universal Health Coverage.

VI. Project architecture



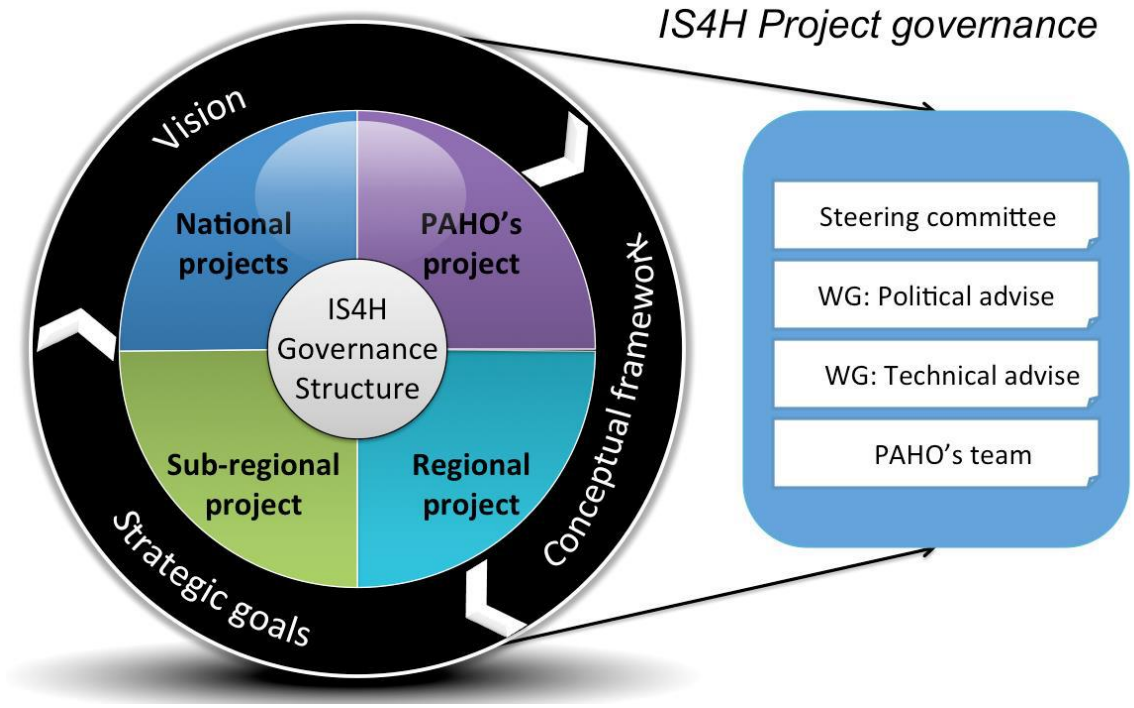
VII. Implementation strategies

Implementation strategies are the process and premises that transform expected results into actions and deliverables in order to accomplish strategic objectives and goals. Below are the core implementation strategies identified for this project:

- Building on existing actions, including lexicons, definitions, and conceptual frameworks for information systems for health
- Assessment of the information system for health maturity, including legal, political, ethical, regulatory, and practical issues
- Actions based on countries' situation analyses and technical evidence, including the strengthening of analytical areas

- Innovation as a critical factor of success
- Capacity-building as an ongoing strategy
- Definition of roles of information science and technological advances and infrastructure
- Strengthening of the workforce
- Networking as a core element of technical and diplomatic relations and dissemination
- Web-based tools for information, knowledge, and data management
- Openness as a principle for software development, data dissemination, and scientific and technical communications

VIII. Project governance



Roles and responsibilities

Detailed below are the different types of roles involved in this project and their respective responsibilities. Roles and responsibilities are designed for PAHO's secretariat, for key partners,[7] for member states, and for collaborative teams composed OF staff members of different institutions and programs. A Responsibility assignment matrix, known as the **RACI** matrix, is used to define roles and responsibilities: Responsible: Those who do the work to achieve the goal / Accountable: The one ultimately answerable for the correct and thorough completion of the deliverable, and the one who delegates the work to those responsible / Consulted: Those whose opinions are sought, typically subject matter experts, and with whom there is two-way communication / Informed:

[7] Key partners: CARICOM, ACS, CTU, CDEMA, CELAC, OECS, ECLAC, UWI

Those who are kept up-to-date on progress, often only on completion of the deliverable, and with whom there is just one-way communication.[8]

RACI Matrix

Activity	PAHO	Member states	CARPHA	Key partners	Project teams
Project governance	R	A/R	C	C	C
Data management	C	A/R	I	I	C
Data collection	I	A/R	I	I	C
Data standardization	A/R	C	C	I	C
Adoption of cloud-based solutions for the sub-region	A/R	C	I	I	C
Data analysis	R	A	R	I	C
Implementation of information services	R	A	R	I	C
Decision-making	C	A/R	C	I	C
Technical evaluations	R	A/R	C	I	C

Partnership

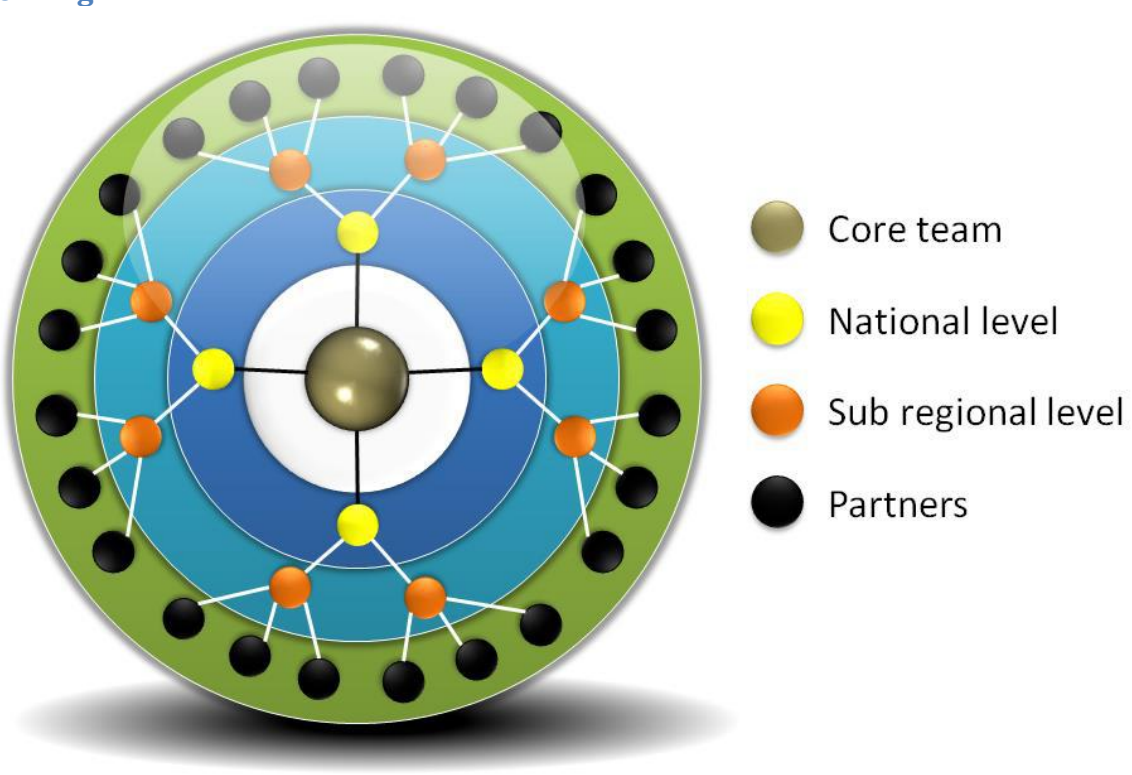
Activity	Partner main role								
	CARICOM	ACS	OECS	CTU	UWI	CDEMA	CELAC	ECLAC	CKLN
Project governance	Political advice	Political advice	Political advice		Strategic advice		Political advice	Political advice	
Data management					Technical advice	Technical advice			Technical advice
Data collection				Technical advice	Technical advice			Strategic advice	Technical advice
Data standardization				Technical advice	Technical advice				Technical advice
Adoption of cloud-based solutions for the sub-region				Technical advice		Technical advice		Strategic advice	Technical advice
Data analysis					Technical advice			Strategic advice	
Implementation of information services					Technical advice	Strategic advice		Strategic advice	Technical advice
Decision-making	Political advice	Political advice	Political advice		Technical advice		Political advice	Political advice	
Technical evaluations				Technical advice	Technical advice	Technical advice		Strategic advice	Technical advice

CARICOM: Caribbean Community
ACS: Association of Caribbean States

[8] Source: https://en.wikipedia.org/wiki/Responsibility_assignment_matrix

OECS: Organisation of Eastern Caribbean States
CTU: Caribbean Telecommunications Union
UWI: University of the West Indies
CDEMA: Caribbean Disaster Emergency Management Agency
CELAC: Community of Latin American and Caribbean States
ECLAC: United Nations Economic Commission for Latin America and the Caribbean
CKLN: Caribbean Knowledge and Learning Network

Networking



IX. Plan of action

Operational plan

A. Capacity building

Governance level / Strategy	Training	Policies and regulations	Tools	Standards	Inventories	Actors
PAHO	Content development	Set of policies and templates	Maturity model and health analysis toolkit	Identification	Inventory management system	Expertise locator
Regional	Monitoring	Validation	Validation	Recommendations	Dissemination	Updates and use

Sub regional	Dissemination	Dissemination	Dissemination	Dissemination	Dissemination	Updates and use
National	Implementation	Adoption	Gap analysis and use	Adoption	Implementation and mantenience	Updates and use

B. ICT Infrastructure

Governance level / Strategy	Software	Hardware	Telecommunications	eGovernment	Software development
PAHO	Inventory and technical analysis	Technical specifications	Networking with ITU and CTU	Networking with the Open Government Partnership	Technical guidelines and networking with Health-IT communities
Regional	Recommendations	Recommendations	Partnerships	Partnerships	Community of Health-IT developers
Sub regional	Dissemination	Dissemination	Partnerships	Partnerships	Community of Health-IT developers
National	Customization and adoption	Adoption	National plans	National plans and MoH integration	Customization, development and implementation

C. Health analysis

Governance level / Strategy	Tools	Data governance	Data management	Methods
PAHO	Cloud-based solutions for BI and health analysis tools	Templates for strategies and policies	Regional hub with health-related data sets (PLISA)	Identification of innovative and state-of-the-art mehods
Regional	Surveillance, forecasting and predictions	Validation	Validation and use	Validation and use
Sub regional	Surveillance, forecasting and predictions	Dissemination	Dissemination and use	Dissemination and use
National	Surveillance, forecasting and predictions, policy and decision making	Adoption	Validation, use and updates, including use of unstructured data	Validation, use and decision making

D. Information and knowledge management

Governance level / Strategy	KM Methodologies	KM tools	Knowledge networks	Information management	Scientific communications	Digital literacy
PAHO	Set of PAHO's KM methodologies	IS4H-KM portal	Establishment and selective information dissemination	Open access to scientific and technical information (BIREME)	Bibliometric analysis and networking with critical partners	Content production
Regional	Dissemination and use	Dissemination and use	Dissemination and use	Dissemination and use	Analysis and recommendations	Use
Sub regional	Dissemination and use	Dissemination and use	Dissemination and use	Dissemination and use	Analysis and recommendations	Use

National	Use and dpcumentation	Use and updates	Active participation, ownership and use	National virtual health libraries and opean access policies	Analysis, policy and decision making	Use

E. Advocacy and communications

Governance level / Strategy	Social networking	Strategic communications	Media relations	Social communications	Risk communications
PAHO	Regional strategy	Implementation strategies and content development	Media advocacy and content development	Data management for behavioural changes	Data management for risk communications
Regional	Dissemination, participation and use	Networking and partnerships	Media advocacy and content development and customization	Validation, customization and use	Validation and use
Sub regional	Dissemination, participation and use	Networking and partnerships	Content development and customization	Use	Use
National	Active participation	Prioritization and budget allocation	Open data for National media management	Country focused customization and use	Country focused customization and use

Annex 1 – TORs Steering committee

Annex 2 – TORs WG: Strategic and political advise

Annex 3 – TORs WG: technical advise

Annex 4 – Country situation analysis

Annex 5 – IS4H Jamaica's meeting report

Annex 6 - References

Regional approaches to e-government initiatives in the Caribbean, Studies and Perspectives – ECLAC Subregional Headquarters for The Caribbean http://caribbean.cepal.org/content/regional-approaches-e-government-initiatives-caribbean

eLAC 2018 Digital Agenda. Adopted at the fifth Ministerial Conference on the Information Society in Latin America and the Caribbean
http://caribbean.cepal.org/content/elac-2018-digital-agenda

United Nations E-Government Survey 2014. Includes analysis of 16 Caribbean countries
http://caribbean.cepal.org/content/united-nations-e-government-survey-2014

Trinidad and Tobago National ICT Plan 2012-2016
http://caribbean.cepal.org/content/trinidad-and-tobago-national-ict-plan

St. Kitts and Nevis National Information and Communications Technology (ICT) Strategic Plan
http://caribbean.cepal.org/content/st-kitts-and-nevis-national-information-and-communications-technology-ict-strategic-plan

ICT in Education in Latin America and the Caribbean. A regional analysis of ICT integration and e-readiness
http://caribbean.cepal.org/content/ict-education-latin-america-and-caribbean

Strategy for universal access to health and universal health coverage. PAHO/WHO 2014.
http://www.paho.org/hq/index.php?option=com_docman

Health in All Policies (HiAP) Framework for Country Action.
http://www.who.int/cardiovascular_diseases/140120hprhiapframework.pdf
UN Data Revolution Report - Data Revolution Group [Internet]. UN Data Revolution Group. [cited 2016Mar24]. http://www.undatarevolution.org/report/

Bunge M. How Does It Work?: The Search for Explanatory Mechanisms. Philos Soc Sci Philosophy of the Social Sciences 2004;34:182–210. doi:10.1177/0048393103262550.

e-Gov Research and Resources. World Bank. http://www.worldbank.org/en/topic/ict/brief/e-gov-resources

Open Health Data: An International Snapshot [Internet]. Open Health Data: An International Snapshot. [cited 2016Mar24]. Retrieved from: http://openhealthdata.org/post/41348924369/open-health-data-international-snapshot

The 8 Principles of Open Government Data (OpenGovData.org) [Internet]. The 8 Principles of Open Government Data (OpenGovData.org). [cited 2016Mar24]. Retrieved from: https://opengovdata.org/

Big Data and Health: Revolutionizing medicine and Public Health.; 2013. https://kit.mit.edu/sites/default/files/documents/WISH_BigData_Report.pdf

The Open Data Era in Health and Social Care. A blueprint for the National Health Service (NHS England) to develop a research and learning programme for the open data era in health and social care. The GovLab (NYU) http://images.thegovlab.org/wordpress/wp-content/uploads/2014/10/nhs-full-report-21.pdf

Annex 3 - Outcome mapping method

Draft strategic regional IS4H goals: summary of Work Group outcome mapping

Strategic goals	Outcome mapping		
	Immediate	**Medium-term**	**Long-term**
Data management and information technologies	• Infrastructure/technologies/elec-tronic medical records • Definition and identification of data sources in health and non-health sectors • Harmonization of data standards • Consideration of, and guidelines for, the use of unstructured data • Self-assessment tools • Open data policies • Data governance strategies	• Guiding principles for privacy and confidentiality • Collection of data from the private sector	• Elaboration of frameworks enabling predictive analytics and population health management • Guidelines for cross-border data sharing
Management and governance	• Defined and standardized data (regional/international) to use as a guide. • Sharing of models used by different countries, including unique patient identifier • Leadership, coordination, and stability, to transcend changes in administration • Decision on contracting out the development of the system, in light of limited capacity in many countries, with technical cooperation from agencies such as PAHO/WHO	• General capacity building • Greater integration of all systems providing information on health • Development of model organogram based on common structure • Ability to disaggregate data	• Efficient data/information system • Updating legislation governing information sharing • Sustainable funding/financing mechanism
Knowledge management and sharing	• Creation of dashboards for public information • Legal and regulatory frameworks for data sharing within and outside of countries • Definition of data collection strategies • Regional data sharing for analysis of regional health status and detection of communicable diseases • Inventory of services available in each country that may be shared with other countries, and their cost • Inventory of information assets available in countries, including technology and human resources. • Integration of data from both health and non-health sectors	-	-

Strategic goals	Outcome mapping		
	Immediate	**Medium-term**	**Long-term**
	to facilitate HiAP		
Innovation and performance	• Definition of data dictionary, standardization across institutions, and management of the data dictionary to include non-health sector data • Strategies to transform data into useful information, including capacity building in data capture and informatics. • Greater information sharing outside of the MoH, with integration of, and timely capture of information from, the private sector	-	• Information sharing across countries, using open data, to provide a clearinghouse for information and facilitate research

Annex 4 – Lessons learned from countries

Barbados

- In May 2015, the information system was rolled out and is now in 6 of 9 primary care polyclinics. The aim is to replace paper records, and data management through MedData was the initial solution.
- Critical success factors: Foundation work through the Information Management and Technology Task Force and MoH staff, so that when funding became available, the MoH was ready; initial assessments and prior planning; availability of human resources; and understanding that successful health information is not about technology, but about systems and procedures.
- Areas for improvement: Definition and documentation of SOPs across primary health care (PHC) facilities before deploying the electronic automated solution; identification, training, and empowerment of Champions for IS4H; integration of telemedicine solutions at the Queen Elizabeth Hospital (QEH)1 into the MedData solution; legislative review to enable timely private sector implementation; a more structured implementation plan, taking resource constraints into consideration; and a communication strategy for internal and external stakeholders.
- Lessons learned: Cost-benefit analysis is needed to garner the policy support needed for the ongoing operation of national IS4H; the social and economic impact needs to be considered; and all of the contributors should be included in the initial stages to ensure buy-in and an all-of-government approach.
- Main accomplishments: Establishment of an all-encompassing data dictionary to govern data capture; development of draft policy to influence the legislative reform required; implementation of Electronic Medical Records, Admission Discharge, and Transfer and Appointments modules across 75% of the PHC system; and successful telemedicine solutions at the QEH. The Radiology and Laboratory telemedicine solutions at the QEH are accessible across the entire PHC system.
- Main barriers: Regulatory and legislative reform to govern the secure capture and sharing of information across the public and private health care systems; lack of standardized processes across health care facilities; resource constraints, fiscal and human; and embracing the private sector in implementing the national IS4H.

Belize

- The Belize Health Information System (BHIS) was launched in 2008 and has proved beneficial to the country. Its aim is to improve individual health outcomes and public health performance, and optimize resource utilization.
- The system allows population-based health services and records-based data to be made available to users anywhere in the country; every patient record is updated immediately, and is available for each patient interaction with public health facilities. Ninety-seven percent of the public sector uses the system; private sector participation is pending.
- Several modules have been implemented, including Patient Electronic Data, Laboratory and Supply Chain, Maternal and Child Health, and HIV/AIDS.
- Accomplishments: Better data in terms of morbidity and mortality for enhancing policy and decision making; relevant data immediately availability; high levels of operational transparency.
- Lessons learned: Implementation should be phased and evolving; successive projects with executive commitment are needed, with projections beyond the project for sustainability.

[1] The QEH is the sole public tertiary care facility in the country.

- Challenges: The system is still linked to the external developers with whom the country has a memorandum of understanding, and any changes foreseen have to be made by the developers, at a cost to the country.
- Next steps: Development of a National Health Data Repository.
- BHIS consolidated data are available for review and sharing with other countries.

Jamaica

- Waiting times for services proved to be a significant problem, and in looking for solutions, the issue of managing patient records and enabling a quicker response was prominent.
- The country has a pilot program using open source data to manage patient records at the Black River Hospital (a rural secondary care facility) and two associated clinics, and efficiency has improved. The MoH would like to add telemedicine for remote areas and between primary and secondary care.
- Challenge: The prolonged duration of implementation in the pilot facilities.
- The University of the West Indies (UWI) in Jamaica provided an alternate approach, as it engaged a private entity – a local firm – to digitize medical records using technology from India. The MoH is analyzing this approach as opposed to the open source approach used at the Black River Hospital, and this meeting might provide relevant guidance.
- Mr. D'Agostino compared the system for digitizing medical records at the UWI and the open source Electronic Patient Administration System (ePAS) used at the Black River Hospital. He noted the need for different levels of relationships between paper and electronic records, since it was almost impossible to put everything on an electronic platform, and emphasized that both systems could cooperate – it need not be one or the other. He also noted the need for development and implementation of a change management strategy and the importance of a national health-related data sources inventory.

Discussion

- IS4H should be seen in context of health system reform, and the role of the MoH should be clarified for the nation – it is regulatory, and reporting on patients should be part of the regulations. There are many conditions, other than communicable diseases, that should be mandated for reporting to the national health authority.
- There is a movement from services to systems, and the systems approach should be implemented in the context of e-governance initiatives; this would be opportune to obtain collaboration from other sectors.
- Digitization of medical records should be done prospectively, rather than retrospectively, and a phased approach to IS4H development should be adopted – by priority areas, geographic areas or institutions, based on priorities and resources – that would identify permit add-ons at a later stage.
- It is important to note that open source solutions may not always be cheaper than proprietary solutions.
- A Caribbean regional proposal should be developed and presented to development partners, to build on what has been done and what is available at country level.
- The PAHO Director noted that all countries need to be committed to the overall IS4H vision and concept, not only addressing client management systems, but also going beyond, to national HIS, to give information for policies, programs, monitoring, and evaluation, and address preventive and rehabilitative, as well as curative, services. IS4H are meant to contribute to efficiencies but there must not be false expectations of those systems; countries should be aware of other mechanisms that will also contribute to increased efficiencies, and IS4H can identify the areas for attention.

Annex 5 - Summary of group reports: Political and strategic considerations for advancing IS4H

Questions	Summary of group responses
1. IS4H goals for achievement	• Implementation of fully interactive HIS with adequate interface between PHC (prevention) and level of hospital management (caregiving). • Interoperability, with contractual arrangements, sustainability, and capacity to link systems within and outside of health sector. • Implementation of behavioural change policy to move from manual to automated structure. • National health sector working groups. • Progress to UAH-UHC with capacity for unique identifier, so that a person interacting with the health sector can be identified with a single number, facilitating availability of information on his/her condition over time. • Availability of information on an open data portal, with capture of information for research, academia. • Transferability and portability of information. • Continuous development and research with international bodies. • Documented policies, procedures, and standards, and frameworks based on international standards. • Regional partnerships and collaboration among countries – especially for standard setting – despite their varying levels of development in countries; integration among Member States.
2. Innovative ideas and strategies	• Establishment of Steering Committee with participation of all major stakeholders, including various government departments, non-governmental organizations, and private sector, to obtain critical inputs, identify desired outcomes for a HiAP approach, determine mandates for interoperability, and achieve effective stakeholder collaboration. • Development of business models and business intelligence for IS4H, with early incorporation of IT departments and the private sector; use of geographical information systems (GIS) and appropriate platforms, including mobile apps and video games, to achieve desired outcomes; agreements with technology companies to reduce costs; and implementation of the project within a political term. • Strategies to foster acceptance and development of the use of ICT. • Strategies for health sector financing, including reimbursement, with collaboration between service providers and payers. • Transparency of the system to obtain agreement on requirements and desirable outcomes. • Specialization in different areas using regional standards. • Strategies for climate change adaptation addressed in IS4H. • Funding for IT systems as a priority, with comprehensive justification. • Change management for IS4H. • Creation of permanent positions for an IT focal point in each country, to offset the challenges of political change. • Accessible, user-friendly human-computer interaction and “the internet of things” to facilitate provision of information to health care providers (HCPs). • Training and capacity building for HCPs and the community. • Development and implementation of a communications plan. • Exploration of external innovation to attain standard setting.
3. Challenges	• Buy-in and consensus around the same vision. • Legislative support to guide the project and the reporting aspects of the system;

Questions	Summary of group responses
	Parliament must be provided with direct information and clear policy initiatives. • Budget and funding, financing and sustainability, ensuring resources to move forward; achieving targeted financing that can demonstrate cost-benefit. • Limited private sector buy-in and effective cooperation with private sector. • IT literacy, and the more general literacy, of the citizens. • Motivation within the MoH and health sector, and within the community and population itself. • Human resources (HR); HR support for system, including support for open source systems where local capacity is needed; HR capacities to determine appropriate solutions • Proper use of health information and the cost of training, especially due to the island geography of the region. • Existence and use of up-to-date information; inadequate knowledge of how to manage information; requirements gathering. • IT infrastructure – bandwidth, penetration; limited connectivity and internet; license fees and other issues related to proprietary software; disaster recovery and back-up, given the region's proneness to natural disasters • Organizational structure – strong steering committee and stakeholder contributions for early initiation and completion of the project.
4. "Enviable" successes	• Efficiency of data management; cost-efficiency; and effectiveness of the system, regarding the collection, accessibility, and use of information, with easy availability of data and reports, provision of information in real time, quick responses to requests for information, and reporting in variety of formats, including GIS, to show disease prevalence, and dashboards. • Ability of IS4H to influence policy and practices within the health sector. • Documentation of lessons learned and provision of historical tracking. • Standardized and uniform approach. • Establishment of health registries. • Defined outcome indicators. • Quality data generation, including automatic generation of data related to the International Health Regulations. • Patient-friendly systems to manage non-communicable diseases and health promotion, with improved patient care. • Use of telemedicine, local and international. • Budgets are honoured and resources allocated, not just promised. • Country ownership of the system. • Integrated, interoperable, scalable, secure, IS4H that can provide continuous client-centered information and support critical decision making and research.

Annex 6 - Strategic priority actions for IS4H

Strategic priority actions for IS4H and their proposed timelines

Timeline	Strategic priority actions (by strategic goal)
Do (do it now)	***Data management and information technologies*** • Develop and implement guidelines to implement data management governance and strategies • Support countries for the development their National Health Information Architecture • Determine upgradability of current systems – people, processes, tools, and technologies – and their efficiency and cost-effectiveness • Update countries' IT assessment for comparison and learning • Provide technical guidance for solutions in financial planning and sustainability, and develop a framework on how to approach this • Develop standards for care and data quality, including regional standards (Planning Units, PAHO/WHO) • Support countries for the development of National Open Data policies • Promote a unique patient identifier (UPI) in countries and consider a regional UPI • Improve ICT infrastructure and backbone, including bandwidth requirements (IT departments, private sector) • Develop self-assessment tools for national and sub regional evaluations on IS4H • Conduct gap analysis with baseline to standards (Health Planner, PAHO/WHO) • Map the data sources for various MoH departments (Planning Units) • Identify standardized indicators and measures • Establish data repository and storage (MoH, Government IT, private sector) ***Management and governance*** • Develop and adapt the IS4H conceptual framework with representation from all countries, based on national plans and eGovernment strategy • Develop a high-level blueprint for development and steering of IS4H that each country can follow • Establish regional and local governance mechanisms, including a steering committee or IS4H governance committee, working groups, technical committees, and social engagement presence (MoH); undertake shortlisting and engagement of local partners for collaboration • Develop regional and local legislative frameworks for IS4H • Formalize the IS4H TWG to support and guide initiatives in countries and in the region • Establish minimum standards for the region • Address budget and financing issues, sustainability, and funding, and shortlist possible funders, based on each country's implementation readiness (MoH, external agencies) ***Knowledge management and sharing*** • Develop and share KM methodologies • Document learning outcomes for knowledge management and sharing • Establish a platform such as a regional repository to facilitate ongoing and annual sharing of knowledge and experiences. • Develop and implement a Digital literacy program ***Innovation and performance*** • Develop human capital
Decide (schedule a time to do it)	***Data management and information technologies*** • Harmonize standards and guidelines for disciplines associated with IS4H • Identify important local and regional initiatives, such as UPI and data security, and develop project(s) to address them • Adapt international standards for data interoperability • Identify health surveillance indicators and incorporate into IS4H architecture • Establish a network of Health-IT experts in support to the implementation of the IS4H

Timeline	Strategic priority actions (by strategic goal)
	framework ***Management and governance*** • Develop legislation for systems and sharing data, regarding privacy, confidentiality, and security • Review and update all legislation that can affect IS4H (MoH, other sectors, PAHO) • Conduct an inventory of the list of templates (PAHO/WHO, MoH) • Develop and implement a change management plan (PAHO/WHO, MoH) • Undertake planning for resource allocation and mobilization, and for human resources for health, to facilitate broader capacity building and sustain the IS4H initiative ***Knowledge management and sharing*** • Develop and implement an IS4H communications strategy, including raising public awareness (MoH, private sector, other sectors) ***Innovation and performance*** • Establish a Human Resources Development Commission (CARICOM) • Identify subject matter experts (MoH, CARICOM)
Postpone/delegate (can someone else do it?)	***Data management and information technologies*** • Conduct a systems analysis and identify gaps between the local context and the regional blueprint • Identify workflow (MoH) • Defer procurement and acquisition of refreshed ICT platforms; there should be a good selection methodology, definition of requirements, and identification of funding before such procurement • Implement a system with unique identification numbers (MoH, other sectors, Government) ***Management and governance*** • Develop legislative and regulatory frameworks (PAHO, MoH, external agencies, other sectors) • Develop service level agreements (MoH, private sector, other sectors) • Develop and implement business continuity plan and disaster recovery plan (PAHO, MoH) ***Knowledge management and sharing*** • Develop and implement communication strategies/plans, and ensure that stakeholders are up to date with information ***Innovation and performance*** • Undertake technical cooperation and capacity building (PAHO, MoH)
Delete (eliminate)	-

Outcome mapping

Universal health coverage and universal access to health

Outcome mapping method

Strategic goal	Expect to see	Like to see	Love to see
Data management and information technologies			
Management and governance			
Knowledge management and sharing			
Innovation and performance			

eGovernment

Open and Big Data

Note: **Expect-to-see** are immediate responses that will be expected during the project itself, **like-to-see** are long-term responses that one would expect by the end of the project, and **love-to-see** are responses that one might expect after a number of months or years after the project came to an end

Health in all policies

Strategic thinking method with policy questions

Universal health coverage and universal access to health

STRATEGIC THINKING

1 As you envision where you want your country to be in 10 years on information systems for health, what of the IS4H goals do you see your institution achieving?

2 In order to achieve IS4H goals, what innovative ideas and strategies did you have to come up with?

3 What "challenges" (external or internal) will you have to defeat along the way to achieve your IS4H goals?

4 Imagine it's 5 years from now. **What are other countries "envying"** the most about your Information Systems for Health?

eGovernment

Open and Big Data

Health in all policies

Eisenhower matrix method

Universal health coverage and universal access to health

eGovernment

Open and Big Data

	URGENT	NOT URGENT
IMPORTANT	**DO** *Do it now…*	**DECIDE** *Schedule a time to do it…*
NOT IMPORTANT	**POSTPONE / DELEGATE** *Somebody else can do it for you?...*	**DELETE** *Eliminate it…*

The Eisenhower Box: How to be More Productive

Using the decision matrix, you will separate your actions based on four possibilities.

- Urgent and important (tasks you will do immediately).
- Important, but not urgent (tasks you will schedule to do later).
- Urgent, but not important (tasks you will delegate to someone else).
- Neither urgent nor important (tasks that you will eliminate).

Health in all policies