National Health Information System Strengthening and e-Health Strategic Plan

2014 to 2018

Ministry of Health | Government of Jamaica

October 2013

Pan American Health Organization

Regional Office of the World Health Organization

Acknowledgements

The *National Health Information System Strengthening and e-Health Strategic Plan* has been developed over the period July 2012 to March 2013, and is a result of the sustained, invaluable and dedicated contributions and investments of time, intellectual and other resources of various stakeholders representing the health and other industries in both the public and private sectors.

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Finally, the Ministry acknowledges the work of the members of the Health Information and Technologies Steering Committee who worked tirelessly in organizing and participating in the workshops, sensitization sessions at the regional level, reviewing and providing feedback on the planning process and the document throughout the process.

Acronyms

BSJ	Bureau of Standards of Jamaica
eGovJa	eGov Jamaica Limited
CMS	Change Management Specialist
CPC	Chief Parliamentary Council
DMIS	Document Management and Imaging System
EHU	Environmental Health Unit - Ministry of Health
ERDAU	Epidemiological Research and Data Analysis Unit
FD	Finance Division – Ministry of Health
GIS	Geographic Information System
HIL	Health Informatics Lead
HIQC	Health Information Quality Committee
HISHRC	Health Information and Statistics Human Resources Committee
HMN	Health Metrics Network
HMSR	Hospital Monthly Statistical Report
HPA	Health Professional Associations
HPC	Health Professional Councils
HPD	Health Programme Directors - MOH
HPU	Health Promotion Unit - MOH
HR	Human Resources Unit - Ministry of Health
HRS	Health Records Services - Ministry of Health
ICT	Information and Communication Technologies
IDAS	Information Documentation and Access Service - MOH
JD	Jamaican Diaspora
LS	Legal Services – Ministry of Health
MCSR	Monthly Clinical Summary Report
MIISH	Committee for Monitoring the Implementation of Information Systems in Health
MOF	Ministry of Finance
MOH	Ministry of Health
NBCJ	National Bioethics Committee of Jamaica
NBTS	National Blood Transfusion Services
NHIN	National Health Information Network
NPHL	National Public Health Labs
PAS	Patient Administration System
PIOJ	Planning Institute of Jamaica
PMO	Programme Management Office
PPD	Policy, Planning and Development Division – Ministry of Health
PRU	Public Relations Unit – Ministry of Health
RGD	Registrar General's Department
RHA	Regional Health Authorities
SITU	System Information Technology Unit – Ministry of Health
STATIN	Statistical Institute of Jamaica
TBD	To Be Determined
TL	Tele-Medicine Limited
TU	Training Unit – Ministry of Health
TWG	Technical Working Group
UHWI	University Hospital of the West Indies
USF	Universal Service Fund (formerly Universal Access Fund)
UWI	University of the West Indies

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Message from the Minister of Health

The Honourable Dr. Fenton Ferguson, DDS, MP

The Ministry's efforts at strengthening and modernizing the National Health Information System have been in the making for a long time. I am happy that we have reached this stage where we can now have a strategic plan that will allow us to reach our goal. We have long recognised the need to improve the current health information and records systems.

It is important to note that we are closely following the recommendations of the World Health Organization in its Health Metrics Network Framework and Standards. We have also identified the elements which need priority attention including data management, the information technology infrastructure, the coordination and planning mechanisms, the financial and human resource allocations and very importantly, the ethical, legislative, regulatory and policy frameworks which are necessary for supporting a robust and effective National Health Information System as well as the e-Health applications.

A focus on these areas and others should take us a far way towards making meaningful improvement to our health information and records system. Of primary concern is the matter of the storage and management of health records at public health facilities. The paper-based system has outlived its usefulness and we no longer have the storage capacity in our facilities for such records, making security and safety of patient records a major challenge. The NHIS and e-Health system will seek to address these issues.

Such a system can provide an electronic record for each patient that can be accessed with authorization, regardless of the health facility at which they present for care. Policies, procedures and guidelines will be established and enforced to maintain privacy, confidentiality and security of the electronic records. This means that health care staff will access only the sections of the patient's electronic record that is appropriate to their job role. A manual system will still be maintained at all facilities.

I would like to commend all the stakeholders involved in creating this document and ensuring that all the necessary inputs are in place to make certain that we are successful in devising the best system that we can with the resources available to us.

Message from the Permanent Secretary

Ministry of Health

Dr. Jean Dixon

Evidence based policy is essential to moving the health sector forward and the National Health Information System is expected to move us closer to be able to strategically position ourselves to better manage our health systems. Reliable and timely information is important in public health for many reasons. Our workers on the ground need this information to determine the best interventions for patients, government needs the information to determine the direction of policy and how best to move the sector forward and donors need to know the state of public health in the country so that they can be better able to position the type of assistance that may be needed to improve the country's health sector.

A robust and effective health information system is the foundation of all successful health systems. If we are to meet our National Development Goals as outlined in Vision 2030, *to make Jamaica the place of choice to live, work, raise families and do business,* we have to take quick action to improve the current health information system that we have. The paper based patient records system currently in place is of particular concern.

This *Strategic Plan* comes at a time when we are challenged by the old systems and need to urgently put things in place to make significant improvement to the way we currently manage information in the public health sector. We are on a drive to improve the collection, flow and storage of our information.

The completion of this *Strategic Plan* marks the culmination of months of hard work by the team and I congratulate all the stakeholders including the Health Information and Technologies Steering Committee (HITSC), which was appointed in April 2010 with the main mandate being the strengthening and modernization of the National Health Information System (NHIS).

I am looking forward to the implementation of the plan and to seeing meaningful change in the management of our health information and the required linkages in all our health facilities.

Message from the Chief Medical Officer

Ministry of Health

Dr. Michael Coombs

It is critical for the Ministry of Health to have reliable data to develop evidence-based policy.

Evidence-based policy is required to enable us to make informed policy decisions to move the health sector forward and the National Health Information System has the necessary characteristics to allow us to achieve this system wide.

Another key benefit of such a system is to enable better monitoring of our health indicators. It is no secret that we need to improve our records management systems throughout the public health sector to move beyond the paper-based patient medical records system by incorporating electronic systems, among others.

This report is informed by the assessment of the National Health Information System in collaboration with the Pan American Health Organization (PAHO) which indicated that there is a need to improve the Information and Communication Technologies (ICT) infrastructure, the policy and legislation framework, the related human and financial resources and overall data management.

The Ministry takes these findings seriously and we are applying the attention and resources to secure improvements in a realistic and carefully planned manner. This *Strategic Plan* is therefore most opportune and marks the culmination of much dedicated work by the team.

An efficient and effective health information system is non-negotiable if we are to meet our National Development Goals as outlined in Vision 2030, *to make Jamaica the place of choice to live, work, raise families and do business.*

The completion of this *Strategic Plan* marks the culmination of months of hard work by the team and I must lift my hat to all the contributing stakeholders.

I anticipate the roll out of this plan and I am confident that it will redound to the benefit of the health sector in all its dimensions.

Message from the PAHO/WHO Representative

Jamaica

Ms. Margareta Sköld

Health information is crucial for ensuring that the health needs of the population are addressed. Reliable and timely information are part of the foundation of public health. Clinicians, health care managers, public health practitioners, community members, decision makers, governments, as well as national and international partners need sound data to identify the most pressing public health needs, as well as the most effective interventions.

We commend the vision statement of the *National Health Information System Strengthening and e-Health Strategic Plan:* "An integrated National Health Information System supporting timely and efficient data management to produce quality health information for evidence based decision making at all levels of the National Health System."

PAHO acknowledges the well planned and very systematic manner in which the Ministry has undertaken the development of the *NHIS Strengthening and e-Health Strategic Plan*: the formation of a multi-sectoral committee to provide leadership and coordination for the process; the successful completion of the Assessment of the NHIS using the WHO's Health Metrics Network Framework; the use of the findings together with a series of consultations with various stakeholders such as government ministries and agencies, academia, private health sector, international donors, and professional organizations; and the formulation of the seven strategic objectives with the associated initiatives and actions.

For a health information system to function effectively, various policy, administrative, organizational and financial prerequisites must be in place. We are pleased that these prerequisites have been identified and are strongly represented in the plan.

PAHO's commitment to supporting HIS in Jamaica has been long standing, starting from the time an office has been established in Kingston nearly 50 years ago. More recent PAHO support include the Assessment of the National Health Information System in July 2011 followed by a series of consultations with key groups and stakeholders and the development of the *National HIS Strengthening and e-Health Strategic Plan.*

We are confident that the *Strategic Plan* will provide useful next steps for Jamaica which, as all of us are aware, will assist greatly in monitoring the country's achievements including health indicators, Vision 2030 goals; the Millennium Development Goals, and post 2015 development goals. Furthermore, the plan will identify the best way forward with regards to strengthening the current manual Health Information System and identifying affordable and sustainable technology systems that can enhance our efforts in this regard.

Overview of Strategic Plan

Strategic Objective 1

Strengthen national capacity for the planning, coordination and implementation of health information system and e-Health initiatives.

Strategic Objective 2

Ensure the required legislative, ethical, regulatory, and policy frameworks are in place to enable an effective national health information system and the appropriate use of e-health solutions.

Strategic Objective 3

Strengthen the organizational capacity for health information management within the Ministry of Health and the Health Regions.

Strategic Objective 4

Improve the quality of health information.

Strategic Objective 5

Expand the effective use of information technology to improve the quality, availability and continuity of healthcare, and to improve the quality and timeliness of health information for decision-making.

Strategic Objective 6

Strengthen the national ICT infrastructure and support capacity to enable the effective, secure and reliable use of health information technologies.

Strategic Objective 7

Expand the use of information to support evidence-based decision making at all levels and sectors of the health system.

Vision and Guiding Principles

Vision for a National Health Information System

An integrated National Health Information System supporting timely and efficient data management to produce quality health information for evidence-based decision-making at all levels of the National Health System; to improve the health and well-being of the people of Jamaica.

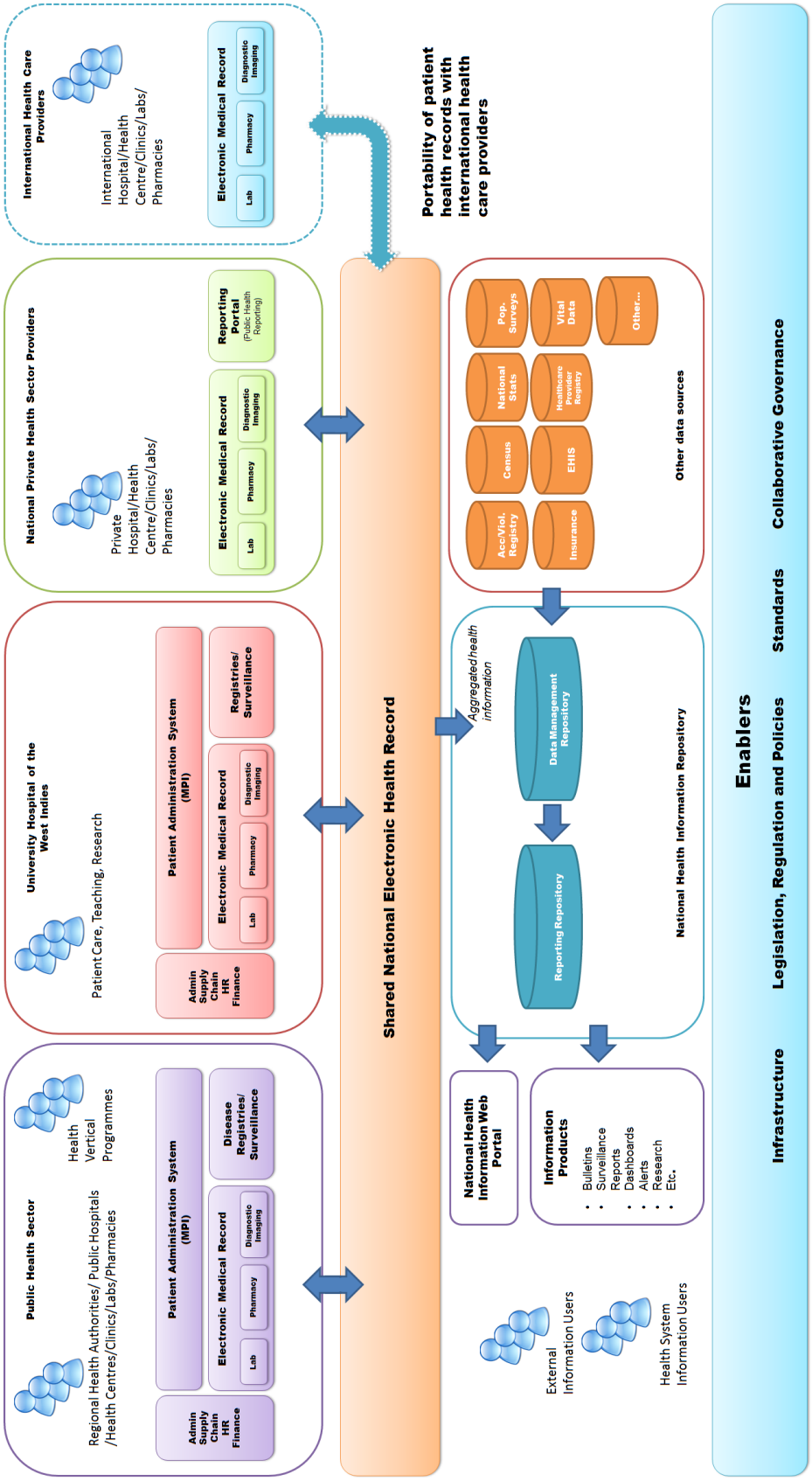
National Vision for e-Health

A single electronic health record for every person that facilitates patient safety, quality and continuity of care wherever services are provided.

Guiding Principles

1. Patient-centric
2. Equitable
3. Standards-based
4. Interoperable
5. Portable
6. Innovative
7. Cost-effective
8. Sustainable
9. Scalable and phased – "Small is beautiful"
10. Collaborative

Conceptual Overview



The diagram above provides a graphical representation of the vision for a National Health Information System and e-Health for Jamaica. This is not a technical architecture, but rather a conceptual view of how the various envisioned components may work together.

The top row of boxes represents the various health care provider sectors in Jamaica: the public sector, the University Hospital of the West Indies, and the private health care sector. Each of these sectors will implement administrative and health information systems to support their health care services and operational needs. The *Strategic Plan* includes initiatives for the public health sector to work together to implement common platforms, as well as initiatives to ensure that while UHWI and the private sector implement information systems that meet their own needs, these systems also conform to established national standards to support interoperability with other sectors.

As well, the diagram illustrates how patient health records may be exchanged with international health care providers through adherence to international standards. International portability of patient health records will support health tourism, and the adherence to international information and security standards will give health tourists confidence that their information can be seamlessly and securely exchanged with their health care providers at home.

Through common standards and shared access to a national health ICT infrastructure, all sectors will be able to contribute to, and access information from, a shared national patient health record – one single record for each patient in Jamaica that can be used at every point of care throughout the country, thereby increasing access to care, and improving the quality and continuity of care.

The information from this shared national patient health record becomes a key source of information for the National Health Information System, providing aggregated information on the health status of the population. Other data sources will also be aggregated and integrated into this national repository, including data from various surveillance systems, disease registries, vital events systems, as well as data from population-based sources such as census and surveys.

Health information analysts from many organizations will be able to securely access aggregated data from the repository to produce a variety of health information products to meet the information and decision-making needs of information consumers at all levels of the health information system. A web-based health information platform will provide simple to use online analysis tools, allowing information consumers to find data and create their own information products.

Supporting this system is a set of important enablers represented by the box at the bottom of the diagram. The envisioned collection, flow, storage and dissemination of health information will require a robust and secure national ICT infrastructure, a supporting policy and legal context, standards that support interoperability across organizational and sector domains, and a collaborative approach to governance.

The vision represented by the diagram above forms the foundation for the initiatives in this *Strategic Plan*. It recognizes that for this vision to become a reality, much work is required to develop detailed plans and to strengthen the capacity of many components of a National Health Information System.

Costing Estimate Summary

*All cost estimates in US dollars. Costs below include both one-time and recurrent as they occur per fiscal year. A summary by initiative and by cost category is provided in **Cost Estimate Summary** section. Detailed cost estimates for specific actions are documented in **Annex B: Detailed Work Plan and Cost Estimates.***

	Fiscal Year				
Initiative	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**Total**
Strategic Objective 1: Strengthen capacity for the planning, coordination and implementation of national Health Information System and e-Health initiatives.	**$84,362**	**$228,962**	**$228,962**	**$228,962**	**$771,248**
Strategic Objective 2: Ensure the required legislative, ethical, regulatory, and policy frameworks are in place to enable an effective national health information system and the appropriate use of e-Health solutions.	**$42,500**	**$157,500**	**$26,000**	**$1,000**	**$227,000**
Strategic Objective 3: Strengthen the organizational capacity for Health Information Management within the Ministry of Health and the Health Regions.	**$2,700**	**$117,050**	**$62,450.00**	**$62,450.00**	**$244,650**
Strategic Objective 4: Improve the quality of health information by strengthening data collection and management capacity.	**$41,600**	**$45,600**	**$45,600**	**$45,600**	**$178,400**
Strategic Objective 5: Expand the effective use of information technology to improve the quality, availability and continuity of healthcare, and to improve the quality and timeliness of health information for decision-making.	**$450,100**	**$636,600**	**$2,770,350**	**$2,320,350**	**$6,177,400**
Strategic Objective 6: Strengthen the national ICT infrastructure and support capacity to enable the effective, secure and reliable use of health information technologies.	**$2,865,000**	**$4,609,000**	**$3,135,000**	**$2,750,000**	**$13,359,000**
Strategic Objective 7: Expand the use of information to support evidence-based decision making at all levels and sectors of the health system.	**$27,750**	**$66,500**	**$115,250**	**$125,250**	**$334,750**
TOTAL	**$3,514,012**	**$5,861,212**	**$6,383,612**	**$5,533,612**	**$21,292,448**

NHIS and e-Health

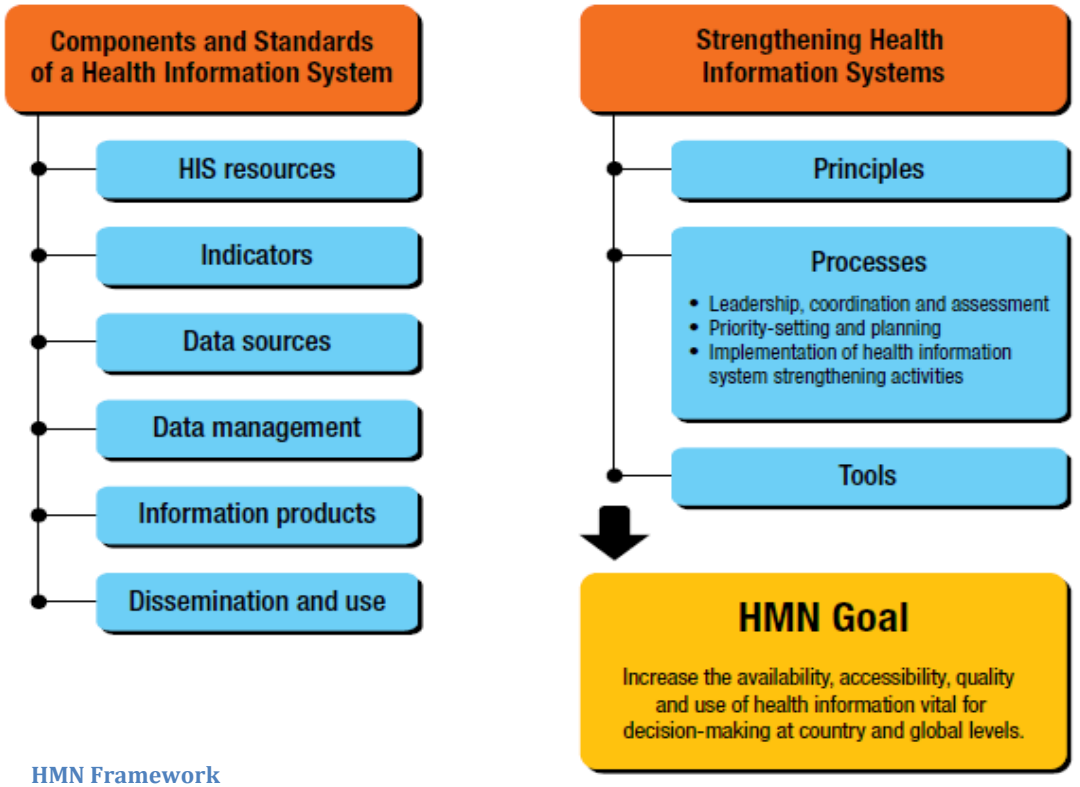
What is a National Health Information System?

While the term "health information system" often directs our focus toward networks, hardware and software applications such as electronic health record systems, in the context of national health system development and strengthening, a National Health Information System (NHIS) must be understood more broadly.

The Health Metrics Network (HMN) is an international organization founded by the World Health Organization (WHO) and partners from international donor agencies and countries to provide guidance on strengthening the NHIS. HMN has developed a clear framework for defining the components of a NHIS, and provides a process to help countries

assess gaps and develop strategic approaches for strengthening their NHIS.

The HMN Framework highlights the concept that a NHIS is in fact a broad system of policies, legislation, governance, human, financial and technology resources, health indicators, data sources, data management processes, information products and the effective dissemination and use of information. The overall goal of an effective national health information system is to "increase the availability, accessibility, quality and use of information vital for decision-making at country and global levels" in order to improve the health and well-being of populations.



HMN Framework

What is e-Health?

It is therefore important to distinguish between the objectives for strengthening the NHIS and the objectives for implementing e-Health. WHO defines e-Health as "the use of information and communication technologies for…. improving the flow of information, through electronic means, to support the delivery of health services and the management of health systems." While there are various global definitions of e-Health, there is a common thread that runs through all definitions focusing on the use of information and communication technology to:

- Improve quality and safety in health care
- Improve continuity of care across the health care spectrum
- Increase access to care and services (remote access, timely access)
- Increase efficiency of health care service delivery
- Improve access to health education and knowledge
- Empower individuals in their own health care management
- Improve health monitoring and reporting (e.g., surveillance and outcomes)

e-Health solutions include a variety of health information technologies that, when used effectively, drive the benefits listed above:

- Electronic health records
- Clinical applications: e.g., Telehealth and ePrescribing
- eLearning tools that support education in health and Continuing Professional Development
- Mobile health (m-Health) systems

Alignment of NHIS strengthening and e-Health strategic planning

While both the NHIS and e-Health are concerned with health information, the NHIS is focused on improving the access to, and the quality of, information to drive evidence-based decision-making to improve health outcomes. e-Health is focused specifically on the use of information technology to improve the efficiency and quality of health care service delivery.

While e-Health information systems may be an important data source for the NHIS, these systems are only *one source* among many. The implementation of e-Health tools does not in itself address the strengthening needs of the NHIS. Further, NHIS strengthening does not typically address the clinical transformation activities required to support the implementation of e-Health systems into health service delivery contexts.

Increasing the availability of quality health information to support evidence-based decision-making, policy formulation and improving the quality and continuity of care are both strategic objectives for the Ministry of Health. For this reason, initiatives for strengthening various components of the NHIS as well as for implementing e-Health have both been included within the *Strategic Plan*.

While many of the strategic objectives and initiatives are different for NHIS strengthening and e-Health, they also

share common aspects such as ICT infrastructure, standards, and enabling policy and legislation. Further, both domains require a collaborative approach to planning and implementation among a common group of stakeholders. As such, this *Strategic Plan* reflects an aligned approach for strengthening the NHIS and implementing e-Health, but recognizes the unique strategic considerations for each.

Key Challenges

In July 2011, the Ministry of Health with support from the Pan-American Health Organization (PAHO/WHO) undertook an assessment of the Jamaican NHIS using the HMN Framework. The assessment process involved over 70 stakeholders from across the public health sector, other government agencies and the private health sector. In addition to this assessment process, further consultations were held with a variety of stakeholder groups in July 2012 in preparation for beginning the strategic planning process. This consultation process included a focus on e-Health as well as NHIS issues. From these consultations, a number of key themes emerged:

- Lack of a national coordination mechanism for planning and implementing initiatives to support NHIS strengthening and e-Health.
- Current legal and policy context does not fully support key aspects of the NHIS and the use of e-Health solutions.
- Insufficient human resources with the appropriate skills in health information management, statistics and information technology.
- Current organizational structures do not reflect the functions required to support a modernized NHIS and the effective use of e-Health.
- Data management and quality gaps contribute to challenges with the timeliness, accuracy and completeness of national health indicators.
- Data is currently not fully integrated at the national level, and therefore not readily available for use by stakeholders.
- Patients' health records are stored on paper and are not readily available at various points of care. There are no mechanisms to easily share patient health information among health care providers. The management of paper-based files is burdensome and inefficient.
- The current ICT infrastructure is not sufficiently robust or reliable to support a high level of availability and performance to ensure the safe and effective use of e-Health solutions.
- Lack of an organizational culture of information use among key health system stakeholders. Individuals at all levels and sectors of the health system do not routinely use information to support evidence-based decision-making.

Critical Success Factors for Implementation of the Strategic Plan

- A clear understanding of the strategic priorities and objectives for both NHIS strengthening and e-Health.
- A shared vision and collaborative approach among all stakeholders for the coordination, planning and implementation of *Strategic Plan* initiatives.
- The availability of the appropriate financial resources to support *Strategic Plan* initiatives.
- Strong project management and change management approach to effectively coordinate activities, and support the required organizational, behavioral and attitudinal changes.

Development of the Strategic Plan

The *Strategic Plan* was developed between July and December 2012 under the direction of the Health Information and Technologies Steering Committee (HITSC), and supported by several multi-sectoral working groups representing key domains.

Based on the outcome of the HMN Assessment in July 2011, and further consultations undertaken in July 2012, the HITSC and working groups followed the HMN strategic planning framework and process to review challenges, identify strategic objectives and develop an implementation plan with specific initiatives and activities with cost estimates.

A broad stakeholder consultation session in December 2012 was held to gather final feedback on the plan and to develop further recommendations on the implementation of various activities and initiatives.

Strategic Plan Structure

The *Strategic Plan* is organized around seven Strategic Objectives (see Overview section above). This document includes a chapter for each Strategic Objective. Each Strategic Objective includes several initiatives, each with specific actions. A detailed work plan and cost estimate for each activity can be found in Annex B.

Monitoring the Strategic Plan

The Committee for Monitoring the Implementation of Information Systems in Health (MIISH) was appointed to provide oversight, advisory and monitoring functions to the implementation of the *Strategic Plan*. The Detailed Work Plan (Annex B) will be used to monitor and report on progress on the achievement of specific initiatives and actions, and to track costs against milestones and deliverables.

However, it will also be important to measure whether strategic initiatives are driving performance improvements. Each Strategic Objective within this document includes several indicators to measure performance improvements toward the target of achieving the Strategic Objective.

Strategic Objective 1

Strengthen national capacity for the planning, coordination and implementation of health information system and e-Health initiatives

Overview

The Health Information and Technologies Steering Committee (HITSC) was established in April 2010 with the mandate to strengthen and modernize the NHIS. The HITSC includes representation from national partners that will be involved in delivering initiatives, as well as other key stakeholders (See Annex A). Given its national scope, the *NHIS Strengthening and e-Health Strategic Plan* requires a collaborative approach to planning, decision-making and coordination to ensure alignment of investments and activities. The HMN Framework identifies the establishment of a national coordinating body to guide the development and execution of a national strategic plan as a critical success factor.

A permanent governance structure with the appropriate authority to implement strategic priorities, and direct the ongoing operations and development of the National Health Information System will be a key initiative of the *Strategic Plan*.

Ongoing stakeholder communication and engagement is another critical success factor. The initiatives included in the *Strategic Plan* will require the understanding and support of many different stakeholders. An effective communication and stakeholder engagement plan will help ensure that the needs of all stakeholders are well understood, and that stakeholders are confident about their responsibilities and contributions. It will also be important to establish a clear approach for coordination and communication with other national bodies with related mandates, such as the National Statistics Secretariat.

The *Strategic Plan* involves a large number of inter-related initiatives and actions that must be carefully planned and coordinated at a very detailed level. The establishment of a Programme Management Office (PMO) staffed with project management expertise will provide secretariat support, as well as the required focused attention on managing the day-to-day activities, issues and decisions required to execute the *Strategic Plan* effectively.

Many of the initiatives in the *Strategic Plan* will require significant changes to organizational structures, and individual roles, responsibilities and work processes. Lessons from other countries that have implemented similar health information system and e-Health initiatives illustrate the critical importance of a best-practice change management approach, including a formal

framework for planning and supporting changes, as well as building resource capacity for managing change.

Initiatives and Actions

Initiative	1.1. Establish a permanent governance structure with the responsibility and authority for national health information systems and e-Health planning, coordination and monitoring, and for approving recommendations for national policies and standards.
Actions	1.1.1. Hold ongoing meetings of MIISH (and eventually permanent governance body) to advise, coordinate and monitor implementation of strategic plan. 1.1.2. Develop the governance model, including defining the relationship, membership and coordination mechanisms with the body for National Statistics to ensure alignment of investments, activities, policies and standards. 1.1.3. Secure approval for the permanent governance model. 1.1.4. Map alignment between strategic priorities, between the *NHIS Strengthening and e-Health Strategic Plan*, and the strategic plan for National Statistics, including work plans for coordination where appropriate.
Initiative	1.2. Develop a communication and advocacy plan to support implementation of the *NHIS strengthening and e-Health Strategic Plan* to sensitize stakeholders and the public on the objectives, actions and outcomes of the Plan, to support advocacy activities with national decision-makers on the value of NHIS strengthening and e-Health, and to build support among stakeholders.
Actions	1.2.1. Develop communication and advocacy plan for review and input by decision-makers and stakeholders. 1.2.2. Implement communication plan and advocacy plan to inform and sensitize stakeholders.

Initiative	1.3. Establish the Programme Management Office (PMO) to support the coordination, planning, implementation and monitoring of the *NHIS Strengthening and e-Health Strategic Plan*, liaise with other project offices, and to develop and support organizational and clinical change management strategies.
Action	1.3.1. Define operational functions, detailed budgetary requirements, reporting structure and staffing model for the Programme Management Office (PMO). 1.3.2. Sensitize policy and decision-makers to the need and benefits for investing in project management and change management capacity-building. 1.3.3. Secure operational budget for the Programme Management Office 1.3.4. Adopt Change Management frameworks from international best practices 1.3.5. Implement and operate Programme Management Office to plan, coordinate and manage Strategic Plan initiatives, including change management support.

Performance Improvement Indicators

Indicator	Baseline Value	Target Value / Target Year	Frequency
Number of HIT Steering Committee Meetings held per year	8-10 per year	9 per year / 2017-2018	Annually
% of NHIS/e-Health strategic plan initiatives included in annual budgets of appropriate organizations during required timeframe	0%	100% / 2017-2018	Annually
% of NHIS/e-Health initiatives involving the implementation of information technology with project manager, scope, project governance structure, schedule and budget documented in a formal project charter	0%	100% / 2017-2018	Annually
% of NHIS/e-Health initiatives involving changes to work processes or roles/responsibilities that have a formal change management plan	0%	100% / 2017-2018	Annually

Strategic Objective 2

Ensure the required ethical, legislative, regulatory, and policy frameworks are in place to enable an effective national health information system and the appropriate use of e-Health solutions.

Overview

Strengthening the National Health Information System and implementing e-Health solutions requires a legal, regulatory and policy context that enables the collection, sharing and use of health information while protecting patients and other health system stakeholders. Many existing laws, regulations and policies do not anticipate the capacity and need to collect and share health data among a diverse set of public and private organizations, or the shift to electronic record-keeping and storage of patient health information.

During the initial HMN Assessment and further consultations, stakeholders identified several key priorities, including:

- Data sharing among government and other national organizations;
- The reporting of public health data to government by private sector health care providers;
- The legal and ethical context for the use of an electronic patient health record;
- The protection of individually identifiable and aggregated personal health information.

As health data becomes electronic and can move seamlessly among patients, health care providers and health system planning organizations, there is increased concern about the confidentiality of health information.

The *Strategic Plan* focuses on clarifying gaps in the legislative, regulatory and policy context and developing the appropriate mechanisms to enable an effective national health information system while ensuring the ethical use of health information for health policy and planning, and to improve the quality and continuity of patient care.

A national framework for the protection of personal health information will be essential to ensure patient health information is treated with the same level of confidentiality throughout the national health system. The use of electronic health records will only be safe and effective if patients trust that the system will protect their most personal information, even as it is shared among health care providers across the system.

The proposed national identifier holds promise in linking health information across diverse data stores to ensure the portability of patient information to support continuity of care, and to develop a more robust understanding of the health situation in Jamaica. The *Strategic Plan* includes an initiative to ensure that the design of a national identifier is aligned with the development of e-Health solutions, and will support a truly national health information system.

Initiatives and Actions

Initiative	2.1. Define, plan and implement the legislative, regulatory and policy changes required to support an effective and ethical national health information and e-Health system.
Actions	2.1.1. Develop Code of Practice Policy Provisions as the foundation for Health Privacy Legislation. 2.1.2. Conduct consultations with stakeholders on changes to legal, regulatory, policy framework. 2.1.3. Develop advocacy plan to sensitize policy-makers and stakeholder on the proposed legislative, regulatory or policy changes. 2.1.4. Implement required legal, regulatory and policy changes as per revised framework. 2.1.5. Liaise and provide input from NHIS perspective on National Policy on Data Sharing. 2.1.6. Ensure that health system requirements are included within the approach for National Identification Initiative, including legal frameworks for use of a national ID within the health system.
Initiative	2.2. Improve the protection of personal health information.
Action	2.2.1. Sensitize key stakeholders on key concepts and frameworks for the protection of personal health information (privacy). 2.2.2. Develop a National Privacy Programme. 2.2.3. Develop advocacy plan to sensitize policy-makers and stakeholders on the proposed legislative, regulatory or policy changes. 2.2.4. Implement National Privacy Programme.

Performance Improvement Indicators

Indicator	Baseline Value	Target Value / Target Year	Frequency
% of government organizations collecting health information with formal policies or processes for sharing that data with other government organizations	Unknown	100% / 2017-2018	Annually
% of patients registered in the PAS with a National ID	0%	25% / 2017-2018	Annually beginning in 2016-17
% of public health care facilities with a formal health information privacy programme implemented	0%	75% / 2017-2018	Annually beginning in 2017-2018

Strategic Objective 3

Strengthen the organizational capacity for health information management within the Ministry of Health and the Health Regions.

Overview

As the need and demand for quality information to support health policies and interventions increases, so must the national capacity for collecting, processing, analyzing, and disseminating health information. Historically, the collection and management of health information has been a manual endeavour. Medical Records personnel were focused on managing paper files, and used time-consuming and tedious manual processes to collect and collate information. However, as health information becomes increasingly electronic, the roles and skills of workers must change to meet the demands of the new environment.

The functions of health record units at both the Ministry of Health and within Health Regions and health care facilities must be re-designed to strengthen capacity for the collection and management of health information in electronic form. Globally, the professional discipline of Medical Records Management has evolved into Health Information Management (HIM). HIM professionals are trained in management of electronic health information, including the management of electronic health record systems, the use of sophisticated data analysis tools, the protection of personal health information, and techniques to ensure the quality of information at every stage of its lifecycle.

The *Strategic Plan* includes initiatives to modernize the structure and function of health records units in the Ministry of Health, Health Regions and in health care facilities to prepare for the migration to electronic health record systems and to increase the efficiency and capacity for analyzing and disseminating health information to support evidence-based decision-making.

This modernization effort will require changes to job functions, educational requirements, compensation schemes and career paths. The *Strategic Plan* recognizes that this level of change will take time, and requires both short and long-term strategies for strengthening the capacity, and increasing the availability, of skill human resources. Human resource planning must be a national and regional collaborative effort, and requires coordination with post-secondary institutions to ensure the future availability of skilled personnel as the NHIS evolves.

Initiatives and Actions

Initiative	3.1. Strengthen the operational functions and business processes for Health information Management, including both Medical Records management, and health data management.
Actions	3.1.1. Develop a sustainable operational model for strengthened Medical Record Units/Health Information Units at the national, Health Region and facility levels, including scope of responsibilities, staffing and skills requirements, budgets and reporting relationships among various functions and levels. 3.1.2. Re-design and optimize business processes for data collection, processing, analysis, dissemination and storage based on the updated operational models (data management plan). 3.1.3. Develop new Medical Records Policies and Procedures based on the updated operational models and business processes. 3.1.4. Using a formal change management approach, implement sustainable and phased improvements to staffing, operational functions, business processes aligned with the Health Information Human Resources Strategy
Initiative	3.2. Develop a national Health Information Management Human Resources Strategy.
Actions	3.2.1. Establish a Health Information and Statistics Human Resources Committee (HISHR) with key stakeholders from MOH, the Health Regions, UWI, STATIN, RGD, PAHO, Ministry of Finance (Office of the Services Commissions), Cabinet Office (Corporate Management Division) and post-secondary educational institutions. 3.2.2. Define short and long-term national health information and statistics human resources requirements based on updated operational models (See 3.1.1) 3.2.3. Identify changes in roles, skills and staffing required to support updated operational models, and align among organizations as required (MOH, STATIN, PIOJ, Health Regions, etc.). 3.2.4. Collaborate with national and Caribbean post-secondary educational institutions to define educational and long-term workforce requirements aligned with developmental objectives of health sector. 3.2.5. Document strategy that addresses roles, skills, staffing levels, recruitment, retention, career paths, training and succession planning for Health Information Management and Health Statistics.

Performance Improvement Indicators

Indicator	Baseline Value	Target Value / Target Year	Frequency
% compliance of Health Records Units in the Health Regions with updated policies and processes	0%	75% / 2017-2018	Annually beginning in 2017-2018
% of Health Records Units in the Health Regions and Ministry of Health with documented organizational models aligned with national standards	0%	50% / 2017-2018	Annually beginning in 2017-2018
% of national post-secondary institutions offering courses in Health Information Management, biostatistics or demography that can demonstrate a curriculum aligned with national human resource development goals documented in the Health Information and Statistics Human Resources strategy	Unknown	75% / 2017-2018	Annually beginning in 2017-2018
% of new graduates in Health Information Management, biostatistics or demography hired in their field in the public and private sectors in Jamaica within 9 months of graduation	Unknown	TBD / TBD	Annually beginning in 2017-2018

Strategic Objective 4

Improve the quality of health information.

Overview

Like many countries around the world, Jamaica faces serious population health challenges in the context of ever-decreasing resources. The availability of quality information to support effective interventions that reduce the burden of disease and improve the well-being of the population is critical to addressing these challenges.

The quality of health information is dependent on many factors, including the timeliness of data collection, the adherence to standards, and the comprehensiveness of data sources.

Health care facilities are the "front-line" of health care delivery, and thus a critical source of national health information. The *Strategic Plan* addresses the need to strengthen data collection at the regional and local levels through improved tools that reduce the burden of data collection, training and sensitization, and by increasing ownership over data by supporting the use of information for decision-making.

While it is important to improve the capacity for collecting quality data in the public health system, a significant portion of health care services are provided in the private health sector, making it an essential source of national health data. Many stakeholders in both the public and private health sectors acknowledged the challenges of collecting data from private healthcare providers. However, consultations with private sector physicians highlighted both an understanding of the importance of generating and sharing health information, and a willingness to work collaboratively to increase the availability of health data from the private sector. The *Strategic Plan* includes initiatives to work collaboratively with private health sector stakeholders to ensure that health data collated and reported are truly nationally representative.

As the NHIS includes many contributors, standards are critical for ensuring the comparability and meaning of data across national data sources, and for inclusion in Caribbean and global health statistics. The *Strategic Plan* focuses on the development of national health information standards based on international standards, in collaboration with health system stakeholders and the Bureau of Standards Jamaica (BSJ).

The *Civil Registration and Vital Statistics Modernization Programme* has been focused on improving the coverage and quality of vital event data through a comprehensive initiative that address standards, organizational structures, business processes, human resources and information technology. As the *Strategic Plan* is national in scope, several key initiatives already underway are included within the plan to ensure alignment and coordination.

Interventions and Actions

Initiative	4.1. Implement improved data quality monitoring mechanisms at the National, and Health Region levels.
Actions	4.1.1. Update performance requirements for data collection, data reporting and data quality in Service Level Agreements with Health Regions. 4.1.2. Establish a national Health Information Quality Committee (HIQC) within the permanent NHIS/e-Health governance structure to define health information standards and monitor national data quality with representation from MOH, Health Regions, STATIN, UWI, PIOJ, RGD and PAHO.
Initiative	4.2. Define and implement national health information data standards.
Actions	4.2.1. Develop a National Health Indicator Compendium for local, regional, national, Caribbean and global level programmes and priorities, harmonized with international standards and reporting requirements. 4.2.2. Develop a National Health Data Dictionary to support the data requirements of the National Health Indicator Compendium, and to serve as a standard for discrete data elements for use in paper and electronic data collection tools. 4.2.3. Collaborate with the Bureau of Standards Jamaica (BSJ) to establish e-Health information technology and data standards related based on international standards.(e.g. ISO)

Initiative	4.3. Improve the quality and timeliness of data collection at the local health facility level.
Actions	4.3.1. Implement online data collection tools for HMSR, MCSR and disease surveillance to improve practicality of collection, quality, usability and timeliness. 4.3.2. Develop facility-focused reports from HMSR, MCSR and disease surveillance to support decision-making at the local level. 4.3.3. Develop and pilot training and a change management approach for improving clinical documentation standards/discharge summaries by physicians in public facilities. 4.3.4. Implement ongoing training on clinical documentation standards and completion of discharge summaries for physicians in public facilities. 4.3.5. Provide training and tools for data collection quality assurance for local health facilities. 4.3.6. Strengthen capacity for ICD-10 coding by MR staff in hospitals, Medical Officers and RGD staff through ongoing training in Medical Certification of Cause of Death and peer-to-peer mentoring. 4.3.7. Evaluate the benefit of coding software and other online tools to improve the quality and efficiency of coding, and develop requirements for PAS or other solutions.
Initiative	4.4. Improve the quality of health information from private sector health care providers.
Action	4.4.1. Define a set of minimum discrete data elements for routine reporting from private health sector. 4.4.2. Implement mechanism to support engagement and coordination with private sector health providers and other private sector stakeholders to ensure alignment and compliance with national initiatives, policies and standards. 4.4.3. Develop approach for increasing voluntary information reporting from private sector health care providers.

Initiative	4.5. Improve the quality of vital events data.
Actions	4.5.1. Sensitize key stakeholders on updated standards and business processes for vital data. 4.5.2. Implement new vital data software and business processes. 4.5.3. Strengthen systems to monitor the quality of the completion of death and foetal death certificates by identifying a quality control officer in each hospital. 4.5.4. Collaborate with Medical Council to include routine training on completion of Medical Certificate of Cause of Death (MCCD) as mandatory Continuing Medical Education requirement. 4.5.5. Collaborate with the Nursing Council (for midwives) to include routine training of stillbirth (foetal death) certification as mandatory Continuing Education requirement.
Initiative	4.6. Improve the quality of routine population health surveys.
Actions	4.6.1. Define strategic priorities, cycles and budgets for population health surveys to ensure they are routinely executed. 4.6.2. Define standards and methodologies for population health surveys with key stakeholders to improve quality and increase confidence in data.

Performance Improvement Indicators

Indicator	Baseline Value	Target Value / Target Year	Frequency
Data quality assessments carried out and published within last 2 years	No	Yes / 2017-2018	Bi-Annually
% of public health facilities that meet health data reporting deadlines and quality benchmarks	Unknown	90% / 2017-2018	Annually
% of discharge summaries completed on time and meeting quality standards.	Unknown	75% / 2017-2018	Annually
% of private health care facilities reporting mandatory health data	Unknown	50% / 2017-2018	Annually
% of certificates registered within 3 months of death	71% (2008)	TBD / TBD	Bi-Annually
% of coroner's cases registered	78% (2008)*	TBD / TBD	Bi-Annually
Median and Mean days to register a death (all types)	Median 5 days Mean 24.5 days (2008)*	TBD	Bi-Annually
% of certificates of death (MCCD or Coroner's Certificate) with ill-defined or vague, non-specific conditions	TBD	TBD / TBD	Bi-Annually
% of incorrectly coded certificates based on documentation of the MCCD	TBD	TBD / TBD	Bi-Annually

*Source: "Evaluation of quality and completeness of death registration: 2008. Proposal to streamline death registration across agencies in Jamaica", Affette McCaw-Binns and Yvette Holder, Feb 16, 2012. Delaware.

Strategic Objective 5

Expand the effective use of information technology to improve the quality, availability and continuity of healthcare, and to improve the quality and timeliness of health information for decision-making.

Overview

Until recently, the cost of information and communication (ICT) technologies in the health sector was prohibitive for resource-challenged countries. However, with the continuing reduction in the cost of ICT, and with investments in ICT infrastructure, the opportunities for technology-driven improvements and efficiencies are a reality for Jamaica.

As the MOH embarks on strengthening its use of ICT in health, it must draw upon global lessons and maximize limited resources in ensuring that technology solutions reflect affordable, sustainable and financially responsible decisions. The MOH has participated in the Government of Jamaica Free and Open Source Software (FOSS) Migration Pilot Project 2013, the findings of which may be the catalyst for a national level adoption of and support for FOSS.

Beginning in March 2012, the MOH conducted a systematic assessment of FOSS for healthcare and selected GNU Health software with an Enterprise Resource Planning (ERP) architecture. GNU Health is developed by an NGO, not-for-profit organization named GNU Solidario, with which the MOH established a Memorandum of Understanding for a 2-year period as of September 2013. During this time, GNU Health will be customized and implemented via a Pilot Project as the new Patient Administration System (ePAS), which will serve as a foundation for connecting information systems.

The *Strategic Plan* also embraces the principle of "small is beautiful" – meaning that ICT investments should begin small and their expansion phased over time, as capacity and resources allow. Moreover, investments will be driven by national strategic priorities and interoperability among systems is to be ensured.

The planning for a number of other "building block" solutions is already underway. Other core systems will include a Laboratory Information System (LIS) for public hospitals that will connect with the recently implemented LIS at the National Public Health Laboratory, a Blood Bank Information System, a Document Management and Imaging System to manage paper-based medical records, an Environmental Health Information System and information systems to support specific national health programmes.

The *Strategic Plan* also reflects contributions from private sector partners at home and abroad. A telehealth pilot with support from several private sector partners has already been planned to drive the development of a national roadmap for telehealth services. In addition, members of the Jamaican Diaspora are contributing to building Health IT core systems.

Interventions and Actions

Initiative	5.1. Develop a strategy for the implementation of integrated health information and corporate information systems within MOH and Health Regions integrated with private health sector, as appropriate.
Actions	5.1.1. Develop Technical Working Group (TWG) within the permanent NHIS and e-Health governance structure to support a collaborative approach for planning, prioritizing and implementing health information technology solutions in the public health sector, including input from private sector healthcare providers. 5.1.2. Identify strategic priorities for health information technology solutions in the public health system (e.g., electronic health records, document management, surveillance system, radiology information system, digital imaging (and PACS) and corporate information systems (e.g. supply chain management, financial systems, HR, etc.). 5.1.3. Based on identified priorities, develop a long-term implementation strategy for public sector health information system, aligned with private sector initiatives.
Initiative	5.2. Implement GNU Health Free and Open Source Software (FOSS) as the replacement Patient Administration System (ePAS) for public hospitals and health centres on a phased basis.
Actions	5.2.1. Review findings of Pilot Project for the electronic Patient Administration System (ePAS) based on the customization of GNU Health at selected health facilities and institute mechanisms to manage challenges. 5.2.2. Expand on the GNU Health ePAS Pilot Project and implement the software at selected health facilities (hospitals and larger health centres as priorities). 5.2.3. Develop implementation plan and operational budget for the phased and expanded implementation of the new ePAS.
Initiative	5.3. Implement a Laboratory Information System (LIS) at public hospitals, and a Blood Bank Information System (BBIS) at the National Blood Transfusion Service and blood collection sites across the country.
Actions	5.3.1. Procure a Laboratory Information System (LIS) and Blood Bank Information System (BBIS). 5.3.2. Plan and implement the LIS at Regional and other public hospitals and a BBIS at the NBTS.

Initiative	5.4. Implement an Inventory Management and Pharmacy Information System for the public health sector.
Actions	5.4.1. Procure an Inventory Management and Pharmacy Information System. 5.4.2. Plan and implement the Inventory Management and Pharmacy Information System.
Initiative	5.5. Implement Document Management and Imaging System (DMIS) for health records in the public health sector.
Actions	5.5.1. Develop strategy for imaging and archiving medical record files. 5.5.2. Document requirements and procure a DMIS. 5.5.3. Plan and implement a DMIS.
Initiative	5.6. Implement telemedicine solutions to increase access to quality healthcare services.
Actions	5.6.1. Implement and evaluate telemedicine pilot at University of Technology Medical Centre, UHWI and Mandeville Regional Hospital. 5.6.2. Based on outcomes of telemedicine pilot, develop National Telemedicine Strategy and Implementation Plan aligned with health system strategic priorities. 5.6.3. Develop policies and protocols for telehealth/telemedicine and eLearning.
Initiative	5.7. Implement Environmental Health Information System (EHIS)
Actions	5.7.1. Update the EHIS database and complete testing. 5.7.2. Pilot EHIS to confirm and develop implementation plan. 5.7.3. Plan and implement the EHIS.

Initiative	5.8. Implement programme-specific health information solutions and disease registries.
Actions	5.8.1. Identify strategic priorities, and document data and functional requirements for programme-specific information systems. 5.8.2. Based on defined requirements, evaluate programme-specific health information technology solutions, including Childhood Immunization, HIV/AIDS, PsychReport and Cancer Registry for suitability for a Phased National roll-out. 5.8.3. Develop implementation plan for programme-specific information systems, integrated with overall NHIS and e-Health plan and corporate systems, as appropriate. 5.8.4. Implement programme-specific information systems.
Initiative	5.9. Strengthen Human Resource and Finance systems for the public health sector.
Actions	5.9.1. Document indicator and data requirements and customize Human Resources Information System. 5.9.2. Pilot Human Resource Information System. 5.9.3. Implement Human Resource Information System. 5.9.4. Develop revised financial indicators and data requirements for Finance Information System.
Initiative	5.10. Implement electronic registries for Professional Health Councils.
Actions	5.10.1. Document strategic priorities and requirements for electronic registries for Professional Health Councils. 5.10.2. Develop and implement registries.

Performance Improvement Indicators

Indicator	Baseline Value	Target Value / Target Year	Frequency
% of health facilities using new PAS by type: • Secondary Type A • Secondary Type B • Secondary Type C • Primary Type 5 • Primary Type 4	0%	• Secondary Type A + UHWI – 100% • Secondary Type B – 100% • Secondary Type C – 50% • Primary Type 5 – 100% • Primary Type 4 – 50% 2017-2018	Annually beginning in 2017-2018
% of laboratory reports issued electronically	0%	50% 2017-2018	Annually
% of health facilities converting paper medical records to digital/electronic format	0%	25% 2017-2018	Annually
% of public health inspection reports recorded in EHIS	0%	50% 2017-2018	Annually
% of Medical Council and Nursing Council members registered in an electronic registry	0%	70% 2017-2018	Annually
% of Health Regions with a Health and Corporate Information Systems Plan aligned with national architecture and priorities	0%	100% 2017-2018	Annually beginning in 2017-2018

Strategic Objective 6

Strengthen the national ICT infrastructure and support capacity to enable the effective, secure and reliable use of health information technologies.

Overview

Increasing the use of ICT to support the generation of quality information for decision-making and to improve the quality and continuity of health care will require a reliable and secure infrastructure, including national and local networks, data centres, and appropriate end-user devices.

A National Health Information Network (NHIN) refers to the standards, protocols, legal agreements, specifications and services which enable the secure exchange of electronic health information and includes the design and phased implementation of a robust, secure, redundant and scalable ICT infrastructure. The vision for a national integrated patient health record must begin with a clear blueprint for building the NHIN that addresses how the various information systems across the public and private health system and the broader government sector will be connected to ensure a truly interoperable electronic environment. As electronic systems replace manual and paper-based systems, factors such as security, redundancy, reliability and performance of the ICT infrastructure will be essential to ensure health care productivity and patient safety.

The *Strategic Plan* calls for the development of a blueprint for the national business and technical architecture, standards and protocols as well as the establishment of a planning and implementation mechanism that reflects a partnership with legal agreements between the public and private sectors.

At the same time as plans for national interoperability are underway, the ICT infrastructure within Health Regions must be improved to support the planned use of ICT at all public health facilities. Health Region ICT infrastructure should be based on a common set of plans and standards to leverage investments and ensure interoperability. The MSTEM and the national Government Network Infrastructure (GovNet) initiative as well as the Universal Service Fund are given consideration in this regard.

The expanded use of ICT will also require strengthening of the organizational structure, functions and human resource capacity of ICT units in the Health Regions and the Ministry of Health. Again, resource constraints mean that opportunities to share capacity and expertise will be essential to ensuring the appropriate implementation and support of ICT at all levels of the system. A short and long-term human resource strategy is required to reflect the expanded functions and needs for specialized skills that will be driven by these new information systems. In addition, criteria for outsourcing perhaps the more specialized ICT services are to be developed and applied as appropriate.

Interventions and Actions

Initiative	6.1. Develop business and technical architecture for a National ICT Infrastructure to support the long-term vision for the use of health information technologies.
Actions	6.1.1. Establish mechanism for planning, implementing and operating the national health infrastructure in partnership with the private sector. 6.1.2. Develop the high-level technical architecture for a National Health ICT Infrastructure to meet the short and long-term needs for supporting health information technologies.
Initiative	6.2. Improve ICT infrastructure within Health Regions and local facilities, including Wide and Local Area Networks and endpoint devices.
Actions	6.2.1. Align standards for ICT infrastructure among Health Regions to leverage investments and prepare for future integration, and to ensure readiness for national information system roll-outs. 6.2.2. Implement ICT infrastructure at approved sites for WAN connection across the MOH, the RHAs and its other Agencies.
Initiative	6.3. Strengthen the capacity to implement and support health ICT infrastructure and health information technology solutions.
Action	6.3.1. Develop an operational model for MOH and Health Region IT Units, including shared services, outsourcing, scope of responsibilities, staffing and skills requirements, budgets and reporting relationships among various functions and levels. 6.3.2. Develop a long-term national Health Information Management Human Resources Strategy that addresses outsourcing, roles, skills, recruitment, retention, training and succession planning based on the updated operational model.

Performance Improvement Indicators

Indicator	Baseline Value	Target Value / Target Year	Frequency
% of Health Regions with ICT Infrastructure Plans aligned with national ICT architecture	0%	100% / 2017-2018	Annually beginning in 2017-2018
% of Health Regions with documented ICT standards aligned with national ICT standards	0%	100% / 2017-2018	Annually
% of annual budget of MOH Head Office and Health Regions expended on ICT	TBD	TBD / 2017-2018	Annually
% of Health Regions with documented operational models and human resource plans aligned with national plans	0%	100% / 2017-2018	Annually
% Network availability within each Health Region	TBD	98 / 2017-2018	Annually

Strategic Objective 7

Expand the use of information to support evidence-based decision making at all levels and sectors of the health system.

Overview

The key objective of strengthening the National Health Information System is to ensure that quality information is available to support evidence-based decision-making at all levels and sectors of the health system. While the availability of quality information is necessary to support evidence-based decision-making, it is not sufficient to ensure information is actually used to make decisions that ultimately improve health outcomes.

Stakeholders identified the need to create an organizational culture of information use, and to increase the capacity of individuals across the health system to apply the use of information in their day-to-day tasks and operational planning. This will require sensitization and training, as well as change management activities to modify knowledge, attitudes and behaviours.

Improving information use capacity and behaviours also requires the availability of information products that meet the needs of users across the system. While front-line health care providers, health administrators or policy-makers may all require information from the same sources, the level of detail and the medium and format used for presentation of that information must be tailored to meet their specific roles in the system and decision-making needs. The identification of these needs and the development of appropriate information products are essential strategies to drive the effective use of information.

The capacity to use health information analysis tools is important to the creation of information products that convert data into useful information. The *Strategic Plan* includes initiatives to acquire statistical analysis and GIS tools, and to train in both the Ministry of Health and the Health Regions on their effective use to support information consumers at all levels of the system.

Finally, the *Strategic Plan* anticipates the aggregation, distribution and publishing of health information through web-based health data repositories in due course. Initial phases will be focused on making information products available through a web site, but efforts will eventually expand toward the development of a more sophisticated web-based platform that aggregates historical health data and provides analytical tools to a broad range of information consumers, including the general public.

Interventions and Actions

Initiative	7.1. Increase the capacity of staff at all levels of the health system to use information for decision-making through training and change management.
Actions	7.1.1. Conduct an assessment of capacity and needs for information use. 7.1.2. Develop a change management plan for improving the use of information for decision-making. 7.1.3. Develop and deliver change management and training activities to encourage information-use behaviors.
Initiative	7.2. Develop information products that meet the specific needs of different information users across the health system.
Actions	7.2.1. Develop an Information Products Plan to meet the information needs identified in Needs Assessment (See Action 7.1.1). 7.2.2. Develop MOH Web governance and operational model to ensure currency and sustainability of MOH website. 7.2.3. Update MOH website with frequently requested information products 7.2.4. Implement MOH Intranet to improve information dissemination within MOH. 7.2.5. Implement Virtual Health Library for Jamaica using the PAHO platform to increase availability of research and other technical information products. 7.2.6. Conduct training on the appropriate use of social media for health information, and implement the use of social media for disseminating health information. 7.2.7. Develop and implement improved information products, aligned with the availability of information and human resources

Initiative	7.3. Increase access to health information and analysis tools for information consumers across the health systems.
Action	7.3.1. Document requirements and operational approach for a web-based National Health Information Repository. 7.3.2. Implement a web-based National Health Information Repository. 7.3.3. Recruit additional GIS specialists. 7.3.4. Expand the capacity of GIS focal points in Health Region. 7.3.5. Upgrade to ArcGIS 10 or equivalent software.

Performance Improvement Indicators

Indicator	Baseline Value	Target Value / Target Year	Frequency
% of public health facilities that have at least one staff member that has received training on the use of information for decision –making	0%	75% / 2017-2018	Bi-Annually
% of MOH budget submissions for capital acquisitions accompanied by a formal business case	0%	50% / 2017-2018	Annually
% of public health facilities that report using utilization data to make planning decisions	Unknown	75% / 2017-2018	Bi-Annually
% of MOH public health information publications produced in the last 5 years that are available on the MOH website	Unknown	75% / 2017-2018	Annually
% of private sector physicians that receive electronic health information bulletins from MOH	0%	50% / 2017-2018	Annually
% of core national health indicators that are publicly available through a web-based National Health Repository	0%	50% / 2017-2018	Annually beginning in 2017-2018
% of Health Regions with at least one individual trained on most recent version of GIS software	TBD	100% / 2017-2018	Annually

Cost Estimate Summary

Cost estimate notes:

- *All costs in US dollars*
- *Estimates are based on cost assumptions documented in the **Detailed Work Plan and Cost Estimates** section. It is expected that estimates will be reviewed and updated prior to inclusion in annual budgets or funding proposals.*
- *Some costs cannot be estimated at this time, as they are dependent on the development of detailed requirements or plans. These are noted as TBD throughout the detailed costing document.*

Cost Estimates By Intervention

	Fiscal Year				
Initiative	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**Total**
Strategic Objective 1: Strengthen capacity for the planning, coordination and implementation of national Health Information System and e-Health initiatives.					
1.1 Establish a permanent governance structure with the responsibility and authority for national health information systems and e-Health planning, coordination and monitoring, and for approving recommendations for national policies and standards.	**$9,612**	**$9,612**	**$9,612**	**$9,612**	**$38,448**
1.2 Develop a communication and advocacy plan to support implementation of the NHIS *Strengthening and e-Health Strategic Plan* to sensitize stakeholders and the public on the objectives, actions and outcomes of the Plan, to support advocacy activities with national decision-makers on the value of NHIS strengthening and e-Health, and to build support among stakeholders.	**$9,750**	**$9,750**	**$9,750**	**$9,750**	**$39,000**
1.3 Establish the Programme Management Office (PMO) to support the coordination, planning, implementation and monitoring of the *NHIS Strengthening and e-Health Strategic Plan*, as well as developing and supporting organizational and clinical change management strategies.	**$65,000**	**$209,600**	**$209,600**	**$209,600**	**$693,800**
Initiative Sub-Total	**$84,362**	***$228,962***	***$228,962***	***$228,962***	***$771,248***

Strategic Objective2: Ensure the required legislative, ethical, regulatory, and policy frameworks are in place to enable an effective national health information system and the appropriate use of e-Health solutions.					
2.1 Define, plan and implement the legislative, regulatory and policy changes required to support an effective and ethical national health information and e-Health system.	**$42,500**	**$50,000**	**$0**	**$0**	**$92,500**
2.2 Improve the protection of personal health information.	**$0**	**$107,500**	**$26,000**	**$1,000**	**$134,500**
Initiative Sub-Total	***$42,500***	***$157,500***	***$26,000***	***$1,000***	***$227,000***
Strategic Objective 3: Strengthen the organizational capacity for Health Information Management within the Ministry of Health and the Health Regions.					
3.1 Strengthen the operational functions and business processes for Health Information Management, including both Medical Records management, and health data management.	**$0**	**$64,350**	**$59,750**	**$59,750**	**$183,850**
3.2 Develop a national Health Information Management Human Resources Strategy.	**$2,700**	**$52,700**	**$2,700**	**$2,700**	**$60,800**
Initiative Sub-Total	***$2,700***	***$117,050***	***$62,450***	***$62,450***	***$244,650***
Strategic Objective 4: Improve the quality of health information by strengthening data collection and management capacity.					
4.1 Implement improved data quality monitoring mechanisms at the National, and Health Region levels.	**$1,800**	**$1,800**	**$1,800**	**$1,800**	**$7,200**
4.2 Define and implement national health information data standards.	**$0**	**$0**	**$0**	**$0**	**$0**
4.3 Improve the quality and timeliness of data collection at the local health facility level.	**$38,000**	**$42,000**	**$42,000**	**$42,000**	**$164,000**
4.4 Improve the quality of health information from private sector health care providers.	**$1,800**	**$1,800**	**$1,800**	**$1,800**	**$7,200**
4.5 Improve the quality of vital events information.	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**
4.6 Improve the quality of routine population health surveys.	**$0**	**$0**	**$0**	**$0**	**$0**
Initiative Sub-Total	***$41,600***	***$45,600***	***$45,600***	***$45,600***	***$178,400***

Initiative	Fiscal Year 2014-15	2015-16	2016-17	2017-18	Total
Strategic Objective 5: Expand the effective use of information technology to improve the quality, availability and continuity of healthcare, and to improve the quality and timeliness of health information for decision-making.					
5.1 Develop a strategy for the implementation of integrated health information and corporate information systems within MOH and Health Regions integrated with private health sector, as appropriate.	**$5,100**	**$5,100**	**$55,100**	**$5,100**	**$70,400**
5.2 Implement a replacement Patient Administration System for all public hospitals and health centres.	**$305,000**	**$335,000**	**$350,000**	**$350,000**	**$1,340,000**
5.3 Implement LIS at the NHPL, and public hospitals, and BBIS at the NBTS and blood collection sites across the country.	**$0**	**$115,000**	**$100,000**	**$100,000**	**$315,000**
5.4 Implement an Inventory Management and Pharmacy Information System for the public health sector.	**$0**	**$0**	**$0**	**$0**	**$0**
5.5 Implement DMIS for health records in the public health sector.	**$40,000**	**$40,000**	**$40,000**	**$40,000**	**$160,000**
5.6 Implement telemedicine solutions to increase access to quality healthcare services.	**$0**	**$0**	**$0**	**$0**	**$0**
5.7 Implement Environmental Health Information System (EHIS).	**$0**	**$0**	**$116,250**	**$116,250**	**$232,500**
5.8 Implement programme-specific health information solutions and disease registries.	**$100,000**	**$141,500**	**$100,000**	**$100,000**	**$441,500**
5.9 Strengthen Human Resource and Finance systems for the public health sector.	**$0**	**$0**	**$2,009,000**	**$1,609,000**	**$3,618,000**
5.10 Implement electronic registries for Professional Health Councils.	**$0**	**$0**	**$0**	**$0**	**$0**
Initiative Sub-Total	***$450,100***	***$636,600***	***$2,770,350***	***$2,320,350***	***$6,177,400***

Strategic Objective 6: Strengthen the national ICT infrastructure and support capacity to enable the effective, secure and reliable use of health information technologies.					
6.1 Develop business and technical architecture for a national ICT infrastructure to support the long-term vision for the use of health information technologies.	**$100,000**	**$0**	**$0**	**$0**	**$100,000**
6.2 Improve ICT infrastructure within Health Regions and local facilities, including Wide Area and Local Area Networks, and workstations and peripheral devices.	**$2,765,000**	**$4,534,000**	**$3,110,000**	**$2,750,000**	**$13,159,000**
6.3 Strengthen the capacity to implement and support health ICT infrastructure and health information technology solutions.	**$0**	**$75,000**	**$25,000**	**$0**	**$100,000**
Initiative Sub-Total	***$2,865,000***	***$4,609,000***	***$3,135,000***	***$2,750,000***	***$13,359,000***

Initiative	Fiscal Year 2014-15	2015-16	2016-17	2017-18	Total
Strategic Objective 7: Expand the use of information to support evidence-based decision making at all levels and sectors of the health system.					
7.1 Increase the capacity of staff at all levels of the health system to use information for decision-making through training and change management.	**$0**	**$0**	**$8,750**	**$8,750**	**$17,500**
7.2 Develop information products that meet the specific needs of different information consumers across the health system.	**$1,000**	**$10,000**	**$31,000**	**$6,000**	**$48,000**
7.3 Increase access to health information and analysis tools for information consumers across the health systems.	**$26,750**	**$56,500**	**$75,500**	**$110,500**	**$269,250**
Initiative Sub-Total	***$27,750***	***$66,500***	***$115,250***	***$125,250***	***$334,750***
TOTAL	**$3,514,012**	**$5,815,612**	**$6,383,612**	**$5,532,612**	**$21,292,448**

Cost Estimates By Category

Category	2014-15	2015-16	2016-17	2017-18	Total
Meetings (venue/administrative)	$38,080	$39,580	$33,480	$32,580	$143,720
Printing/Photocopying	$5,182	$5,432	$9,782	$10,682	$31,078
Training	$127,000	$147,100	$141,100	$141,100	$556,300
Short-term Technical Assistance	$208,000	$438,000	$278,000	$128,000	$1,052,000
IT Equipment/ Hardware/Software	$2,798,000	$4,706,500	$5,399,750	$4,741,250	$17,645,500
Human Resources	$337,750	$524,600	$521,500	$480,000	$1,863,850
TOTAL	$3,514,012	$5,861,212	$6,383,612	$5,533,612	$21,292,448

Pilot Project Implementation 2013-2014

Prior to the Year 1 implementation of the Strategic Plan during fiscal year 2014-2015, Pilot Projects will be developed for execution in 2013-2014. The success of these Pilot Projects will provide the foundation for the further investments as described in this document.

Specifically, with the national Patient Administration System (ePAS) forming the foundational and core component of the Electronic Health Record (EHR) System for Jamaica, it is prudent to undertake the small-scale implementation of the solution selected in a limited number of health facilities. For this purpose, the four Primary Care Centres of Excellence and the four Regional Hospitals have been selected.

Typically, the procurement of software, particularly for nationwide implementation, involves the selection of a vendor who supplies a proprietary software system. In the case of the ePAS, the solution of choice for the Pilot Project is GNU Health, a Free and Open Source Software (FOSS), developed and maintained by GNU Solidario, a not-for-profit organization based in Spain and Argentina. A Memorandum of Understanding established between the MOH and GNU Solidario defines and guides the collaboration to ensure that GNU Health is successfully implemented as the ePAS according to the documented requirements specifications and a Project Implementation blueprint. The findings of the Pilot Project will inform changes which are needed to improve the phased implementation of GNU Health/ePAS at additional health facility sites.

In addition, the eight Pilot sites will be connected to a private Wide Area Network facilitated by connections installed by the Universal Service Fund (USF). It is upon this secure, scalable and robust network that the ePAS, the GOJ Health Card System and other technology initiatives will be supported during the Pilot Phase and beyond.

Annex A: HIT Steering Committee

Names	Post	Location	Membership Status
Dr. Michele Roofe	Chairperson, Health Information and Technologies Steering Committee	MOH	CORE
Ms. Marjorie Hendricks	Director, Health Records Services	MOH	CORE
Mr. Arnold Cooper	Director, System Information Technology Unit	MOH	CORE
Mrs. Anya Jones	Senior Director, Finance	MOH	CORE
Mrs. Joan Guy-Walker	Director HRM	MOH	CORE
Mrs. Shirley Hibbert	Deputy Chief Nursing Officer	MOH	CORE
Mrs. Patrice Gavin-Byfield	Director, Management Information System	NERHA	CORE
Mrs. Veronica Miller-Richards	Regional Health Records Administrator & President of the Jamaica Medical Records Association	SRHA	CORE
Dr. Chapman Longmore	General Surgeon, Cornwall Regional Hospital	WRHA	CORE
Mr. Horace Buckley	Senior Project Manager	SERHA	CORE
Mr. Granville Gayle	Vice President, Management Information System	National Health Fund	CORE
Mrs. Deirdre English-Gosse	Chief Executive Officer	Registrar General's Department	CORE

Names	Post	Location	Membership Status
Mr. Walter James	Health Specialist	PIOJ	CORE
Ms. Heather Prendergast	Representative	Statistical Institute of Jamaica	CORE
Prof. Marvin Reid	Director, Sickle Cell Unit, UWI and Medical Association of Jamaica (MAJ) Representative	UWI/MAJ/ Private Health Sector	CORE
Mr. Oliver Brown	Director, Management Information System	SRHA	CO-OPTED
Mr. Oral Newman	Director, Management Information System	WRHA	CO-OPTED
Mrs. Beverley Needham	Change Management Specialist	MOH	CO-OPTED
Mr. Harold Daniel	Policy, Planning and Development Division	MOH	CO-OPTED
Ms. Sheryl Dennis	Legal Department	MOH	CO-OPTED
Mrs. Janet Powell	Health Records Administrator/ Patient Affairs	UHWI	CO-OPTED
Mr. George Brown	Chief Information Officer	UHWI	CO-OPTED
Mr. Vincent Riley	Director, Management Information System	SERHA	CO-OPTED
Dr. Ediel Brown	Senior Medical Officer, Spanish Town Hospital	SERHA	CO-OPTED
Dr. Kam Suan Mung	Advisor Disease Prevention and Control	PAHO/WHO	EX-OFFICIO

Annex B: Detailed Work Plan and Cost Estimates

Cost estimate notes:

- *All costs in US dollars*
- *Estimates are based on cost assumptions documented in the* ***Detailed Work Plan and Cost Estimates*** *below. It is expected that estimates will be reviewed and updated prior to inclusion in annual budgets or funding proposals.*
- *Some costs cannot be estimated at this time, as they are dependent on the development of detailed requirements or plans. These are noted as TBD throughout the detailed costing document.*

Strategic Objective 1: Strengthen capacity for the planning, coordination and implementation of National Health Information System and e-Health initiatives.

1.1 Establish a permanent governance structure with the responsibility and authority for national health information systems and e-Health planning, coordination and monitoring, and for approving recommendations for national policies and standards.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year														
								FY 2014-15					FY2015-16				FY2016-17				FY2017-18			
							Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
1.1.1	Hold ongoing meetings of the Committee for MIISH (and eventually permanent governance body) to advise, coordinate and monitor implementation of strategic plan.	MIISH PMO	• Assumes 8-9 Meetings Per Year • Venue (15 persons x 9 meeting) = **$3,600** • Virtual meeting - (Web conferencing) - (5 licenses x $1,000 per year per license – one license each for MOH plus each RHA.) = **$5,000** • Photocopying for meeting document (150 pages per meeting x 9 meetings x 0.05 per page x 15 participants)= **$1,012**	MOH	$0	$9,612		**$9,612**				**$9,612**				**$9,612**				**$9,612**			

1.1 Establish a permanent governance structure with the responsibility and authority for national health information systems and e-Health planning, coordination and monitoring, and for approving recommendations for national policies and standards.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
1.1.2	Develop the governance model, including defining the relationship, membership and coordination mechanisms with the body for national statistics to ensure alignment of investments, activities, policies and standards.	PMO PS LS STATIN PIOJ RGD RHA	• Internal resources	MOH	$0	$0-	FY 2014-15: $0 (Q4 Q1 Q2 Q3 Q4) · FY2015-16: $0 (Q1 Q2 Q3 Q4) · FY2016-17: $0 (Q1 Q2 Q3 Q4) · FY2017-18: $0 (Q1 Q2 Q3 Q4)
1.1.3	Secure approval for the permanent governance model.	MIISH PMO	• Internal resources	MOH	$0	$0-	FY 2014-15: $0 (Q4 Q1 Q2 Q3 Q4) · FY2015-16: $0- (Q1 Q2 Q3 Q4) · FY2016-17: $0 (Q1 Q2 Q3 Q4) · FY2017-18: $0- (Q1 Q2 Q3 Q4)
1.1.4	Map alignment between strategic priorities, between the NHIS Strengthening and e-Health Strategic Plan, and the strategic plan for national statistics, including work plans for coordination where appropriate.	HIL PMO HRS HPD STATIN	• Internal resources	MOH	$0	$0-	FY 2014-15: $0 (Q4 Q1 Q2 Q3 Q4) · FY2015-16: $0- (Q1 Q2 Q3 Q4) · FY2016-17: $0 (Q1 Q2 Q3 Q4) · FY2017-18: $0- (Q1 Q2 Q3 Q4)

1.2 Develop a communication and advocacy plan to support implementation of the *NHIS Strengthening and e-Health Strategic Plan* to sensitize stakeholders and the public on the objectives, actions and outcomes of the Plan, to support advocacy activities with national decision-makers on the value of NHIS strengthening and e-Health, and to build support among stakeholders.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
1.2.1	Develop communication and advocacy plan for review and input by decision-makers and stakeholders	CMS PMO PRU	• Internal Resources	MOH	$0	$0	FY 2014-15: Q4 Q1 Q2 Q3 Q4 — **$0** FY2015-16: Q1 Q2 Q3 Q4 — **$0** FY2016-17: Q1 Q2 Q3 Q4 — **$0** FY2017-18: Q1 Q2 Q3 Q4 — **$0**
1.2.2	Implement communication plan and advocacy plan to inform and sensitize stakeholders.	CMS PMO PRU PAHO	• Internal Resources • **Travel** – assumes travel included in staff travel allowances • Full colour print 150 copies of Strategic Plan (100 pages x 0.15 per page x 150 copies) = **$2,250** (assumes new copies printed each year for additional distribution/updates) • Venue costs for stakeholder meetings (6 x per year) = $**7,500.**	MOH	$0	$9,750	FY 2014-15 — **$9,750** FY2015-16 — **$9,750** FY2016-17 — **$9,750** FY2017-18 — **$9,750**

1.3 Establish the Programme Management Office (PMO) to support the coordination, planning, implementation and monitoring of the *NHIS Strengthening and e-Health Strategic Plan*, liaise with other project offices, and to develop and support organizational and clinical change management strategies.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
1.3.1	Define operational functions, detailed budgetary requirements, reporting structure and staffing model for Programme Management Office (PMO)	PMO / PS, MIISH, MOH, HR	• Internal resources	MOH	$0	$0	FY 2014-15: $0; FY2015-16: $0; FY2016-17: $0; FY2017-18: $0
1.3.2	Sensitize policy and decision-makers to the need and benefits for investing in project management change management capacity-building	CMS / PMO	• Internal resources	MOH	$0	$0	FY 2014-15: $0; FY2015-16: $0; FY2016-17: $0; FY2017-18: $0
1.3.3	Secure operational budget for Programme Management Office	PS / HR	• Internal resources	MOH	$0	$0	FY 2014-15: $0; FY2015-16: $0; FY2016-17: $0; FY2017-18: $0

1.3 Establish the Programme Management Office (PMO) to support the coordination, planning, implementation and monitoring of the *NHIS Strengthening and e-Health Strategic Plan*, liaise with other project offices, and to develop and support organizational and clinical change management strategies.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
1.3.4	Adopt Change Management framework from international best practices	CMS / PMO	• Short Term Technical Assistance for consulting on establishing Change Management functions and standards within PMO = **$35,000** • CM Training for two staff (assumes trained staff will train others) = 2 staff x $5,000 per course x 2 return flights to US at $800 x $1,500 per diem) = **$14,600**	MOH	$49,600	**$0**	FY 2014-15: **$0**; FY2015-16: **$49,600**; FY2016-17: **$49,600**; FY2017-18: **$49,600**
1.3.5	Implement and operate Programme Management Office to plan, coordinate and manage Strategic Plan initiatives, including Change Management support.	PMO	• For costing purposes – PMO staffing assumes Health Informatics Lead (HIL) (internal assignment, Change Management Specialist (internal assignment), 1 Project Management Executive, Procurement Officer, Business Analyst, Project Accountant, Administrator and 1 Change Management Officer (external – project) = **$160,000** • One-time workspace set up (furniture, computers) – 3 computer workstation for new project funded staff = **$3,000** • Honoraria- (assumes all PMO staff work over 50 hours per week for 26 weeks per year) **$16,000 ($8,000 in Y1)**	MOH/ Project Funding - TBD	$3,000	$160,000	FY 2014-15: **$65,000**; FY2015-16: **$160,000**; FY2016-17: **$160,000**; FY2017-18: **$160,000**

Strategic Objective 2: Ensure the required legislative, ethical, regulatory, and policy frameworks are in place to enable an effective national health information system and the appropriate use of e-Health solutions.

2.1 Define, plan and implement the legislative, regulatory and policy changes required to support an effective and ethical national health information and e-Health system.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
2.1.1	Develop Code of Practice Policy Provisions as the foundation for Health Privacy Legislation.	HIL HRS PPD HPD LS	• Short-term Technical Assistance	USAID	**$30,000**	**$0**	FY 2014-15 (Q4 Q1 Q2 Q3 Q4): **$30,000** FY2015-16 (Q1 Q2 Q3 Q4): **$0** FY2016-17 (Q1 Q2 Q3 Q4): **$0** FY2017-18 (Q1 Q2 Q3 Q4): **$0**
2.1.2	Conduct consultations with stakeholders on changes to legal, regulatory, policy framework.	NBCJ PMO PPD LS	• Assumes 10 consultation sessions. • Venue costs for stakeholders' meetings (10 x $1,250) = $**12,500**.	NBCJ PAHO /WHO	**$12,500**		FY 2014-15 (Q4 Q1 Q2 Q3 Q4): **$12,500** FY2015-16 (Q1 Q2 Q3 Q4): **$0** FY2016-17 (Q1 Q2 Q3 Q4): **$0** FY2017-18 (Q1 Q2 Q3 Q4): **$0**
2.1.3	Develop advocacy plan to sensitize policy-makers and stakeholders on the proposed legislative, regulatory or policy changes.	PMO HRS HIL PRU	• Short-term Technical Assistance	MOH	**$50,000**	$0	FY 2014-15 (Q4 Q1 Q2 Q3 Q4): **$0** FY2015-16 (Q1 Q2 Q3 Q4): **$50,000** FY2016-17 (Q1 Q2 Q3 Q4): **$0** FY2017-18 (Q1 Q2 Q3 Q4): **$0**
2.1.4	Implement required legal, regulatory and	PPD HRS	• Internal resources	MOH	$0	$0	FY 2014-15 (Q4 Q1 Q2 Q3 Q4): **$0** FY2015-16 (Q1 Q2 Q3 Q4): **$0** FY2016-17 (Q1 Q2 Q3 Q4): **$0** FY2017-18 (Q1 Q2 Q3 Q4): **$0**

2.1 Define, plan and implement the legislative, regulatory and policy changes required to support an effective and ethical national health information and e-Health system.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4 · FY2015-16: Q1 Q2 Q3 Q4 · FY2016-17: Q1 Q2 Q3 Q4 · FY2017-18: Q1 Q2 Q3 Q4
	policy changes as per revised framework and legislation.	HIL					
2.1.5	Liaise and provide input from NHIS perspective on National Policy on Data Sharing	PPD Cabinet Office	• Internal resources	MOH	$0	$0	$0 · $0 · $0 · $0
2.1.6	Ensure that health system requirements are included within the approach for National Identification Initiative, including legal frameworks for use of national ID within the health system.	HIL PMO PPD LS SITU	• Internal resources	MOH	$0	$0	$0 · $0 · $0 · $0

2.2 Improve the protection of personal health information.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
2.2.1	Sensitize key stakeholders on key concepts and frameworks for the protection of personal health information (privacy).	PMO HRS PPD	• Internal resources	MOH	$0	$0	FY 2014-15: **$0** FY2015-16: **$0** FY2016-17: **$0** FY2017-18: **$0**
2.2.2	Develop a National Privacy Programme.	PMO PMO HRS	• Short Term Technical Assistance	TBD	$75,000	$0	FY 2014-15: **$0** FY2015-16: **$50,000** FY2016-17: **$25,000** FY2017-18: **$0**
2.2.3	Design and conduct a baseline National Health Privacy Survey.	PMO STATIN PPD PMO HPPB		TBD	$50,000	$0	FY 2014-15: **$0** FY2015-16: **$50,000** FY2016-17: **$0** FY2017-18: **$0**
2.2.4	Implement National Privacy Programme.	HRS PMO RHA	• Ongoing training at health facilities • Onsite training on ongoing basis • Assumes 1 visit to each Health Region once per year for training and updates • Assumes travel covered by existing staff travel allowances • Venue – assumes 25 participants x 4 workshops per year)=**$9,500**	MOH	$7,500	$1,000	FY 2014-15: **$0** FY2015-16: **$7,500** FY2016-17: **$1,000** FY2017-18: **$1,000**

Strategic Objective 3: Strengthen the organizational capacity for Health Information Management within the Ministry of Health and the Health Regions.

3.1 Strengthen the operational functions and business processes for Health Information Management, including both Medical Records management, and health data management.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15 (Q4) | FY2015-16 (Q1 Q2 Q3 Q4) | FY2016-17 (Q1 Q2 Q3 Q4) | FY2017-18 (Q1 Q2 Q3 Q4)
3.1.1	Develop a sustainable operational model for strengthened Medical Record Units/Health Information Units at the national, health region and facility levels, including scope of responsibilities, staffing and skills requirements, budgets and reporting relationships among various functions and levels.	HRS PMO RHA	• Internal resources • Assumes travel for meeting will be covered by staff travel allowances • Honoraria (Assumes 2 HRS staff work over 50 hours a week for 12 weeks) = **$2,300**	MOH	$2,300	$0	**$0** | **$2,300** | **$0** | **$0**
3.1.2	Re-design and optimize business processes for data collection, processing, analysis, dissemination and storage based on the updated operational models (data management plan)	HRS PMO RHA	• Internal resources • Assumes travel for meeting will be covered by staff travel allowances • Honoraria (Assumes 2 HRS staff work over 50 hours a week for 12 weeks) = **$2,300**	MOH	$2300	$0	**$0** | **$2,300** | **$0** | **$0**

3.1 Strengthen the operational functions and business processes for Health Information Management, including both Medical Records management, and health data management.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
3.1.3	Develop new Medical Records Policies and Procedures based on the updated operational models and business processes.	HIL HRS RHA	• Short Term Technical Assistance	MOH	$0	$55,000	FY 2014-15 (Q4 Q1 Q2 Q3 Q4): **$0** FY2015-16 (Q1 Q2 Q3 Q4): **$55,000** FY2016-17 (Q1 Q2 Q3 Q4): **$55,000** FY2017-18 (Q1 Q2 Q3 Q4): **$55,000**
3.1.4	Using a formal change management approach, implement sustainable and phased improvements to staffing, operational functions, business processes aligned with the Health Information Human Resources Strategy.	HRS PMO RHA	• Internal resources • Venue for training – assumes 25 participants x 4 meetings)=**$1,000** • Photocopying – 50 page x 0.05 per page x 4 meetings x 25 participants per meeting) = **$250** • Honoraria (Assumes 2 HRS staff work over 50 hours a week for 18 weeks) = **$3,500**	MOH	$0	$4,750	FY 2014-15 (Q4 Q1 Q2 Q3 Q4): **$0** FY2015-16 (Q1 Q2 Q3 Q4): **$4,750** FY2016-17 (Q1 Q2 Q3 Q4): **$4,750** FY2017-18 (Q1 Q2 Q3 Q4): **$4,750**

3.2 Develop a national Health Information Management Human Resources Strategy.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
3.2.1	Establish a Health Information and Statistics Human Resources Committee (HISHRC) with key stakeholders from MOH, the Health Regions, UWI, STATIN, RGD, PAHO, Ministry of Finance (Office of the Services Commissions), Cabinet Office (Corporate Management Division) and post-secondary educational institutions.	PPD PMO HRM	• Assumes 6 Meetings per year with approx.20 members • Venue (6 meetings x 20 members x $15 per person) = **$1,800** • Photocopying (150 pages per meeting x 0.05 per page 6 meetings x 20 members) = **$900** • Assumes travel for meeting will be covered by staff travel allowances	MOH	$0	$2,700	FY 2014-15: **$2,700**; FY2015-16: **$2,700**; FY2016-17: **$2,700**; FY2017-18: **$2,700**
3.2.2	Define short and long-term national health information and statistics human resources requirements based on updated operational models (See 3.1.1)	HISHRC PMO PAHO	• Internal Resources	MOH	$0	$0	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$0**; FY2017-18: **$0**

3.2 Develop a national Health Information Management Human Resources Strategy.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15 (Q4) | FY2015-16 (Q1 Q2 Q3 Q4) | FY2016-17 (Q1 Q2 Q3 Q4) | FY2017-18 (Q1 Q2 Q3 Q4)
3.2.3	Identify changes in roles, skills and staffing required to support updated operational models, and align among organizations as required (MOH, STATIN, PIOJ, Health Regions, etc.)	HISHRC HRS PMO PAHO	• Short-term technical assistance	TBD	$25,000	$0	$0 | $25,000 | $0 | $0
3.2.4	Collaborate with national and Caribbean post-secondary educational institutions to define educational and long-term workforce requirements aligned with developmental objectives of health sector.	HISHRC HR HRS PMO	• Internal resources	MOH	$0	$0	$0 | $0 | $0 | $0
3.2.5	Document strategy that addresses roles, skills, staffing levels, recruitment, retention, career paths, training and succession planning for Health Information Management and Health Statistics	HISHRC PMO MOF Cabinet Office HR	• Short Term Technical Assistance for the consulting resource to develop the plan based on the work of the HISHR Committee • Internal Resources	TBD	$25,000	$0	$0 | $25,000 | $0 | $0

Strategic Objective 4: Improve the quality of health information by strengthening data collection and management capacity.

4.1 Implement improved data quality monitoring mechanisms at the National, and Health Region levels.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4 Q1 Q2 Q3 Q4 | FY2015-16: Q1 Q2 Q3 Q4 | FY2016-17: Q1 Q2 Q3 Q4 | FY2017-18: Q1 Q2 Q3 Q4
4.1.1	Update performance requirements for data collection, data reporting and data quality in Service Level Agreements with Health Regions.	PPD PS HRS PMO LS	• Internal resources	MOH	$0	$0	$0 | $0 | $0 | $0
4.1.2	Establish a national Health Information Quality Committee (HIQC) within permanent NHIS/e-Health governance structure to define health information standards and monitor national data quality with representation from MOH, Health Regions, STATIN, UWI, PIOJ, RGD and PAHO.	HIL PMO	• Assumes 6 Meetings per year • 20 members • Venue (6 meetings x 20 members x $15 per person) = **$1,800** • Assumes travel for meeting will be covered by staff travel allowances	MOH	**$0**	$1,800	$1,800 | $1,800 | $1,800 | $1,800

4.2 Define and implement national health information data standards.

Ref	Action	Lead / Support	Cost Assumptions and estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15 (Q4) / FY2015-16 (Q1 Q2 Q3 Q4) / FY2016-17 (Q1 Q2 Q3 Q4) / FY2017-18 (Q1 Q2 Q3 Q4)
4.2.1	Develop a National Health Indicator Compendium for local, regional, national, Caribbean and global level programmes and priorities, harmonized with international standards and reporting requirements.	HIQC HIL PMO PAHO	• Internal resources	MOH	**$0**	**$0**	**$0** / **$0** / **$0** / **$0**
4.2.2	Develop a National Health Data Dictionary to support the data requirements of the National Health Indicator Compendium, and to serve as a standard for discrete data elements for use in paper and electronic data collection tools.	HIQC HIL PMO PAHO	• Internal resources	MOH	$0	$0	**$0** / **$0** / **$0** / **$0**

4.2 Define and implement national health information data standards.

Ref	Action	Lead / Support	Cost Assumptions and estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15 (Q4) / FY2015-16 (Q1–Q4) / FY2016-17 (Q1–Q4) / FY2017-18 (Q1–Q4)
4.2.3	Collaborate with the Bureau of Standards Jamaica (BSJ) to establish e-Health information technology and data standards related based on international standards (e.g., ISO)	HIL HIQC BSJ	• Internal resources	MOH	$0	$0	$0 / $0 / $0 / $0

4.3 Improve the quality and timeliness of data collection at the local health facility level.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15 (Q4) | FY2015-16 (Q1 Q2 Q3 Q4) | FY2016-17 (Q1 Q2 Q3 Q4) | FY2017-18 (Q1 Q2 Q3 Q4)
4.3.1	Implement online data collection tools for HMSR, MCSR and disease surveillance to improve practicality of collection, quality, usability and timeliness.	HRS SITU PMO	• Assumes SITU will use existing IT and HR resources	MOH	$0	$0	$0 | $0 | $0 | $0
4.3.2	Develop facility-focused reports from HMSR, MCSR and disease surveillance, to support decision-making at the local level.	HRS SITU PMO RHA	• Assumes SITU will use existing IT and HR resources	MOH	$0	$0	$0 | $0 | $0 | $0
4.3.3	Develop and pilot training and change management approach for improving clinical documentation standards/discharge summaries by physicians in public facilities.	PMO HRS RHA	• Internal resources	MOH	$0	$0	$0 | $0 | $0 | $0

4.3 Improve the quality and timeliness of data collection at the local health facility level.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
4.3.4	Implement ongoing training on clinical documentation standards and completion of discharge summaries for physicians in public facilities.	HRS RHA PMO	• Onsite training on ongoing basis • Train-the-trainer approach with Region training/clinical resources • Virtual meeting - (Web conferencing) - (4 licenses x $1,000 per year per license – one license each RHA – will support all ongoing training activities).	MOH	$0	$4,000	FY 2014-15: $0 (Q4); FY2015-16: $4,000 (Q1–Q4); FY2016-17: $4,000 (Q1–Q4); FY2017-18: $4,000 (Q1–Q4)
4.3.5	Provide training and tools for data collection quality assurance for local health facilities.	HRS RHA PMO	• Internal resources	MOH PAHO PIOJ	$0	$0	FY 2014-15: $0 (Q4); FY2015-16: $0 (Q1–Q4); FY2016-17: $0 (Q1–Q4); FY2017-18: $0 (Q1–Q4)
4.3.6	Strengthen capacity for ICD-10 coding by MR staff in hospitals, Medical Officers and RGD staff through ongoing training in Medical Certification of Cause of Death and peer-to-peer mentoring.	HRS RGD PMO	• Short Term Technical Assistance	MOH PAHO PIOJ	$0	$38,000	FY 2014-15: $38,000 (Q4); FY2015-16: $38,000 (Q1–Q4); FY2016-17: $38,000 (Q1–Q4); FY2017-18: $38,000 (Q1–Q4)

4.3 Improve the quality and timeliness of data collection at the local health facility level.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4
							FY2015-16: Q1 Q2 Q3 Q4
							FY2016-17: Q1 Q2 Q3 Q4
							FY2017-18: Q1 Q2 Q3 Q4
4.3.7	Evaluate the benefit of coding software and other online tools to improve the quality and efficiency of coding, and develop requirements for PAS or other solutions.	HRS SITU PMO RHA	• Internal resources	--	$0	$0	$0 | $0 | $0 | $0

4.4 Improve the quality of health information from private sector health care providers.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
4.4.1	Define a set of minimum discrete data elements for routine reporting from private health sector.	HIQC HRS PMO PAHO HPC HPA	• Internal resources	MOH	$0	$0	FY 2014-15: Q4 Q1 Q2 Q3 Q4 — **$0** FY2015-16: Q1 Q2 Q3 Q4 — **$0** FY2016-17: Q1 Q2 Q3 Q4 — **$0** FY2017-18: Q1 Q2 Q3 Q4 — **$0**
4.4.2	Implement mechanism to support engagement and coordination with private sector health providers and other private sector stakeholders to ensure alignment and compliance with national initiatives, policies and standards.	HIL PMO HPC HPA	• Internal resources • Assumes 4 meetings per year • 60 participants per meeting • Venue (4 meetings x 60 participants x $7 per person) = **$1,680** • Photocopying ($0.05 page x 50 pages per meeting x 60 participants x 4 meetings) =**$600** • Assumes travel for meeting will be covered by staff travel allowances	MOH	$0	$1,800	FY 2014-15: Q4 Q1 Q2 Q3 Q4 — **$1,800** FY2015-16: Q1 Q2 Q3 Q4 — **$1,800** FY2016-17: Q1 Q2 Q3 Q4 — **$1,800** FY2017-18: Q1 Q2 Q3 Q4 — **$1,800**
4.4.3	Develop approach for increasing voluntary information reporting from private sector health care providers.	PMO HRS Councils	• Internal resources	--	$0	$0	FY 2014-15: Q4 Q1 Q2 Q3 Q4 — **$0** FY2015-16: Q1 Q2 Q3 Q4 — **$0** FY2016-17: Q1 Q2 Q3 Q4 — **$0** FY2017-18: Q1 Q2 Q3 Q4 — **$0**

4.5 Improve the quality of vital events data.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15 (Q4) | FY2015-16 (Q1 Q2 Q3 Q4) | FY2016-17 (Q1 Q2 Q3 Q4) | FY2017-18 (Q1 Q2 Q3 Q4)
4.5.1	Sensitize key stakeholders on updated standards and business processes for vital data.	RGD	• Costs and timelines TBD by RGD	RGD	TBD	TBD	TBD | TBD | TBD | TBD
4.5.2	Implement new vital data software and business processes.	RGD	• Costs and timelines TBD by RGD	RGD	TBD	TBD	TBD | TBD | TBD | TBD
4.5.3	Strengthen systems to monitor the quality of the completion of death and foetal death certificates by identifying a quality control officer in each hospital.	RGD	• Costs and timelines TBD by RGD	RGD	TBD	TBD	TBD | TBD | TBD | TBD
4.5.4	Collaborate with Medical Council to include routine training on completion of Medical Certification of Cause of Death (MCCD) as mandatory Continuing Medical Education requirement.	HIL PPD PMO Medical Council PAHO	• Internal resources	MOH	TBD	TBD	. | $0 | $0 | $0 | $0

4.5 Improve the quality of vital events data.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4 | FY2015-16: Q1 Q2 Q3 Q4 | FY2016-17: Q1 Q2 Q3 Q4 | FY2017-18: Q1 Q2 Q3 Q4
4.5.5	Collaborate with the Nursing Council (for midwives) to include routine training of stillbirth (foetal death) certification as mandatory Continuing Education requirement	HIL PPD PMO Nursing Council PAHO	• Internal resources	MOH	$0	$0	$0 | $0 | $0 | $0

4.6 Improve the quality of routine population health surveys.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4 | FY2015-16: Q1 Q2 Q3 Q4 | FY2016-17: Q1 Q2 Q3 Q4 | FY2017-18: Q1 Q2 Q3 Q4
4.6.1	Define strategic priorities, cycles and budgets for population health surveys to ensure they are routinely executed.	PPD PMO HIQC HPD PAHO	• Internal resources	MOH	$0	$0	$0 | $0 | $0 | $0
4.6.2	Define standards and methodologies for population health surveys with key stakeholders to improve quality and increase confidence in data.	HIQC PMO PAHO	• Internal resources	MOH	$0	$0	$0 | $0 | $0 | $0

Strategic Objective 5: Expand the effective use of information technology to improve the quality, availability and continuity of healthcare, and to improve the quality and timeliness of health information for decision-making.

5.1 Develop a strategy for the implementation of integrated health information and corporate information systems within MOH and Health Regions integrated with private health sector, as appropriate.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
5.1.1	Develop Technical Working Group (TWG) within the permanent NHIS and e-Health governance structure to support a collaborative approach for planning, prioritizing and implementing health information technology solutions the public health sector, including input from private sector healthcare providers.	HIL PMO	• Internal resources • Assumes 4 meetings per year • 30 participants per meeting • Venue (4 meetings x 30 participants = **$4,200** • Photocopying ($0.05 page x 150 pages x 4 meetings x 30 participants) =$**900** • Assumes travel for meeting will be covered by staff travel allowances	MOH	$0	$5,100	FY 2014-15: **$5,100** FY2015-16: **$5,100** FY2016-17: **$5,100** FY2017-18: **$5,100**

	FY 2014-15				FY2015-16				FY2016-17				FY2017-18			
Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4

5.1 Develop a strategy for the implementation of integrated health information and corporate information systems within MOH and Health Regions integrated with private health sector, as appropriate.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4 Q1 Q2 Q3 Q4 / FY2015-16: Q1 Q2 Q3 Q4 / FY2016-17: Q1 Q2 Q3 Q4 / FY2017-18: Q1 Q2 Q3 Q4
5.1.2	Identify strategic priorities for health information technology solutions in the public health system (e.g., electronic medical records, document imaging, provider order entry, radiology information system, digital imaging and PACS) and corporate information systems (e.g. supply chain management, financial systems, HR, etc.)	TWG PMO SITU RHA HPA	• Internal resources	MOH	$0	$0	$0 | $0 | $0 | $0
5.1.3	Based on identified priorities, develop a long-term implementation strategy for public sector health information system, aligned with private sector initiatives.	TWG PMO SITU RHA HPA	• Short Term Technical Assistance –consultant to develop detailed implementation plan based on identified priorities	TBD	$50,000	$0	$0 | $0 | $50,000 | $0

5.2 Implement, on a phased basis, GNU Health Free and Open Source Software (FOSS) as the new national electronic Patient Administration System (ePAS) for public hospitals and health centres.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
5.2.1	Review findings of Pilot Project for the electronic Patient Administration System (ePAS) based on customization of GNU Health at selected health facilities and institute mechanisms to manage challenges.	PMO SITU HRS RHA	• Internal resources	MOH	$0	$0	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$0**; FY2017-18: **$0**
5.2.2	Expand on the GNU Health ePAS Pilot Project and implement the software at selected health facilities (hospitals and larger health centres as priorities).	PMO SITU HRS RHA	• Phase 1 health facilities as identified. • GNU Health customization, configuration, installation, support and maintenance: Professional Services - $**230,000** • End User Training **$120,000** • End user devices (computers). (See 6.2.2)	NHF USF	$0	221,600	FY 2014-15: **$305,000**; FY2015-16: **$300,000**; FY2016-17: **$350,000**; FY2017-18: **$350,000**
5.2.3	Develop implementation plan and operational budget for further implementation of the new ePAS.	PMO SITU RHA	• Short-term technical assistance	NHF	$35,000	$0	FY 2014-15: **$0**; FY2015-16: **$35,000**; FY2016-17: **$0**; FY2017-18: **$0** Note: Costing for implementation and ongoing operations cannot be estimated at thge given that NHRS needs to be assessed in pilot and then decision make on whetoceed or invest in other systems. The specific software and implementation The scope will determine implementation and ongoing operational costs.

5.3 Implement a Laboratory Information System (LIS) at public hospitals, and a Blood Bank Information System (BBIS) at the National Blood Transfusion Service and blood collection sites across the country.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
5.3.1	Procure a Laboratory Information System (LIS) and Blood Bank Information System (BBIS)	PMO SITU NBTS RHA	• Internal resources	MOH	$0	$0	FY 2014-15: **$0**; FY2015-16: **$15,000**; FY2016-17: **$0**; FY2017-18: **$0**
5.3.2	Plan and implement the LIS at Regional and other public hospitals and a BBIS at the NBTS.	PMO SITU NPHL NBTS RHA	• Procure end user devices **$100,000** • Software procurement and customization **$200,000** • Software support and maintenance **$60,000**	NHF Int. Agency/ PEPFAR	$300,000	60,000	FY 2014-15: **$0**; FY2015-16: **$100,000**; FY2016-17: **$100,000**; FY2017-18: **$100,000** Note: Costs will be confirmed once solution has been selected.

5.4 Implement an inventory management and pharmacy information system for the public health sector.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
5.4.1	Procure an Inventory Management and Pharmacy Information System.	NHF PMO SITU RHA	• Internal resources	NHF	TBD	TBD	FY 2014-15 (Q4 Q1 Q2 Q3 Q4): $0 FY2015-16 (Q1 Q2 Q3 Q4): $0 FY2016-17 (Q1 Q2 Q3 Q4): $0 FY2017-18 (Q1 Q2 Q3 Q4): $0
5.4.2	Plan and implement the Inventory Management and Pharmacy Information System.	NHF PMO SITU RHA	• NHF funded and coordinated.	NHF	TBD	TBD	FY 2014-15 (Q4 Q1 Q2 Q3 Q4): $0 FY2015-16 (Q1 Q2 Q3 Q4): $0 FY2016-17 (Q1 Q2 Q3 Q4): $0 FY2017-18 (Q1 Q2 Q3 Q4): $0 Note: Costs will be determined once solution has been selected

5.5 Implement Document Management and Imaging System (DMIS) for health records in the public health sector.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4 Q1 Q2 Q3 Q4 | FY2015-16: Q1 Q2 Q3 Q4 | FY2016-17: Q1 Q2 Q3 Q4 | FY2017-18: Q1 Q2 Q3 Q4
5.5.1	Develop strategy for imaging and archiving medical record files	PMO HRS RHAs PAHO	• Short-Term Technical Assistance	MOH	$20,000	$0	$20,000 | $0 | $0 | $0
5.5.2	Document requirements and procure a DMIS.	PMO HRS SITU RHAs PAHO	• Short-Term Technical Assistance	MOH	$20,000	$0	$20,000 | $0 | $0 | $0
5.5.3	Plan and implement a DMIS.	PMO HRS SITU RHAs PAHO	• DMIS software customization • Document scanning devices • Servers for storage	NHF	$120,000	$21,600	$0 | $40,000 | $40,000 | $40,000 Note: Costs will be determined once solution has been selected

5.6 Implement telemedicine solutions to increase access to quality healthcare services.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
5.6.1	Implement and evaluate telemedicine pilot at University of Technology Medical Centre, UHWI and Mandeville Regional Hospital.	TL Private Sector NHF	• Private sector consortium providing all costs	Private Sector Funded NHF in kind	$0	$0	FY 2014-15 (Q4): $0 FY2015-16 (Q1–Q4): $0 FY2016-17 (Q1–Q4): $0 FY2017-18 (Q1–Q4): $0 Note: Costs TBD – funding from private sector consortium for pilot.
5.6.2	Based on outcomes of telemedicine pilot, develop National Telemedicine Strategy and Implementation Plan aligned with health system strategic priorities.	HIL PMO Private sector HPC HPA	• Internal resources	MOH	**$0**	**$0**	FY 2014-15 (Q4): **$0** FY2015-16 (Q1–Q4): **$0** FY2016-17 (Q1–Q4): **$0** FY2017-18 (Q1–Q4): **$0**
5.6.3	Develop policies and protocols for telehealth/ telemedicine and e-Learning.	HIL PMO PPD LS HPC HPA	• Internal resources	MOH	**$0**	**$0**	FY 2014-15 (Q4): **$0** FY2015-16 (Q1–Q4): **$0** FY2016-17 (Q1–Q4): **$0** FY2017-18 (Q1–Q4): **$0**

5.7 Implement Environmental Health Information System (EHIS).

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
5.7.1	Update database and complete testing	SITU EHU PMO	• Internal resources	MOH	$0	$0	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$0**; FY2017-18: **$0**
5.7.2	Pilot EHIS to confirm and develop implementation plan	EHU RHA SITU PMO	• Internal resources	MOH	$0	$0	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$0**; FY2017-18: **$0**

5.7.2	Plan and implement the EHIS	EHU
		PMO
		SITU
		RHA
			• Assumes 13 location (Public Health Departments)
			• Assumes train-the-trainer approach once in each region
			  ○ Assumes 4 x 1 day training session with 15 participants
			  ○ Assume local training rooms available at Health Regions
			  ○ Venue (4 session x 15 participants)= $**900**
			• Photocopying for training materials (100 pages x 4 sessions x 15 participants x $0.05 per page) = **$300**
			• 120 laptops/workstations = **$120,000**
				MOH	$121,200	$25,000	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$116,250**; FY2017-18: **$116,250**
							Note: Does not include ongoing operational costs

5.8 Implement programme-specific health information solutions and disease registries.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
5.8.1	Identify strategic priorities, and document data and functional requirements for programme-specific information systems.	PMO HPD SITU RHA	• Short Term Technical Assistance – Consultant to develop requirements - **$40,000** • Venue for consultation session (10 meetings with stakeholders x 15 participants) = **$1,500**	TBD	$41,500	$0	FY 2014-15: **$0**; FY2015-16: **$41,500**; FY2016-17: **$0**; FY2017-18: **$0**
5.8.2	Based on defined requirements, evaluate programme-specific health information technology solutions, including Childhood Immunization, HIV/AIDS, Psych Report and Cancer Registry for suitability for phased National roll-out.	PMO HPD SITU RHA	• Internal resources	MOH	$0	$0	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$0**; FY2017-18: **$0**
5.8.3	Develop implementation plan for programme-specific information systems, integrated with overall NHIS and e-Health plan and corporate systems, as appropriate.	PMO HPD SITU RHA	• Internal resources	MOH	$0	$0	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$0**; FY2017-18: **$0**

5.8 Implement programme-specific health information solutions and disease registries.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4 | FY2015-16: Q1 Q2 Q3 Q4 | FY2016-17: Q1 Q2 Q3 Q4 | FY2017-18: Q1 Q2 Q3 Q4
5.8.4	Implement programme-specific information systems.	HPD SITU PMO RHA	• Software customization and configuration	TBD	**$0**	$50,000	**$100,000** | **$100,000** | **$100,000** | **$100,000**

5.9 Strengthen Human Resource and Finance systems for the public health sector.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4 | FY2015-16: Q1 Q2 Q3 Q4 | FY2016-17: Q1 Q2 Q3 Q4 | FY2017-18: Q1 Q2 Q3 Q4
5.9.1	Document indicator and data requirements and customize Human Resources Information System.	HR SITU RHA PAHO	• Internal resources and existing vendor contract	MOH	$3,600,000	$480,000	$0 | $0 | $2,000,000 | $1,600,000
5.9.2	Pilot Human Resource Information System.	HR SITU RHA PAHO	• Internal resources and existing vendor contract	MOH	$0	$0	$0 | $0 | $0 | $0
5.9.3	Implement Human Resource Information System.	HR SITU RHA	• Internal resources and existing vendor contract	MOH	$18,000	$0	$0 | $0 | $9,000 | $9,000
5.9.4	Develop revised financial indicators and data requirements for Finance Information System.	FD RHA	• Internal resources	MOH	$0	$0	$0 | $0 | $0 | $0

5.10 Implement electronic registries for Professional Health Councils.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
5.10.1	Document strategic priorities and requirements for electronic registries for Professional Health Councils.	Councils JD PMO SITU	• Short-Term Technical Assistance (provided by the Jamaica Diaspora)	Jamaican Diaspora (JD)	$0	$0	FY 2014-15: $0 (Q4 Q1 Q2 Q3 Q4); FY2015-16: $0 (Q1 Q2 Q3 Q4); FY2016-17: $0 (Q1 Q2 Q3 Q4); FY2017-18: $0 (Q1 Q2 Q3 Q4)
5.10.2	Develop and implement registries.	HPC JD PMO SITU	• Jamaican Diaspora to identify resources to develop registries.	Jamaican Diaspora (JD)	$0	$0	FY 2014-15: $0 (Q4 Q1 Q2 Q3 Q4); FY2015-16: $0 (Q1 Q2 Q3 Q4); FY2016-17: $0 (Q1 Q2 Q3 Q4); FY2017-18: $0 (Q1 Q2 Q3 Q4)

Strategic Objective 6: Strengthen the national ICT infrastructure and support capacity to enable the effective, secure and reliable use of health information technologies.

6.1 Develop business and technical architecture for a national ICT infrastructure to support the long-term vision for the use of health information technologies.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
6.1.1	Establish mechanism for planning, implementing and operating the national health infrastructure in partnership with the private sector.	PMO SITU HIL eGovJa RHA	• Internal resources	MOH	**$0**	**$0**	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$0**; FY2017-18: **$0**
6.1.2	Develop the high-level technical architecture for a National Health ICT Infrastructure to meet the short and long-term needs for supporting health information technologies.	PMO SITU eGovJa MSTEM RHAs	• Short-term Technical Assistance – eGovJa to develop technical architecture based on health and corporate information system implementation plan, programme-specific information systems implementation plan, and telemedicine implementation plan. **$100,000**	NHF	$100,000	$0	FY 2014-15: **$100,000**; FY2015-16: **$0**; FY2016-17: **$0**; FY2017-18: **$0**

6.2 Improve ICT infrastructure within Health Regions and local facilities, including Wide and Local Area Networks and endpoint devices.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
6.2.1	Align standards for ICT infrastructure among Health Regions to leverage investments and prepare for future integration, and to ensure readiness for national information system roll-outs.	SITU RHA	• Internal resources	MOH	$0	$0	FY 2014-15 (Q4 Q1 Q2 Q3 Q4): **$0** FY2015-16 (Q1 Q2 Q3 Q4): **$0** FY2016-17 (Q1 Q2 Q3 Q4): **$0** FY2017-18 (Q1 Q2 Q3 Q4): **$0**
6.2.2	Implement ICT infrastructure at approved sites for WAN connection across the MOH, the RHAs and its other Agencies.	RHA SITU PMO	• Networking equipment • WAN connectivity installation. **$167,258** • End user devices (computers) • Professional services. **$280,000** • Network monitoring software	NHF USF	$13,087,000	$302,000 + $1,872,276 (WAN connectivity for all health facilities)	FY 2014-15: **$2,765,000** FY2015-16: **$4,534,000** FY2016-17: **$3,110,000** FY2017-18: **$2,750,000**

6.3 Strengthen the capacity to implement and support health ICT infrastructure and health information technology solutions.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
6.3.1	Develop an operational model for MOH and Health Region IT Units, including shared services, outsourcing, scope of responsibilities, staffing and skills requirements, budgets and reporting relationships among various functions and levels.	SITU Health regions eGovJa eGovJa	• Short Term Technical Assistance – Consulting services to develop Health IT HR operational model - **$50,000**	MOH	$50,000	$0	FY 2014-15: **$0**; FY2015-16: **$50,000**; FY2016-17: **$0**; FY2017-18: **$0**
6.3.2	Develop a long-term national Health Information Technology Human Resources Strategy that addresses outsourcing, roles, skills, recruitment, retention, training and succession planning based on the updated operational model.	SITU Health Regions eGovJa eGovJa	• Short Term Technical Assistance – Consulting services to develop Health IT HR strategy - **$50,000**	TBD	$50,000	$0	FY 2014-15: **$0**; FY2015-16: **$25,000**; FY2016-17: **$25,000**; FY2017-18: **$0**

Objective 7: Expand the use of information to support evidence-based decision making at all levels and sectors of the health system.

7.1 Increase the capacity of staff at all levels of the health system to use information for decision-making through training and change management.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
7.1.1	Conduct an assessment of capacity and needs for information use	PMO HRS IDAS PRU PAHO	• Internal resources	MOH	$0	$0	FY 2014-15 (Q4): $0 FY2015-16 (Q1–Q4): $0 FY2016-17 (Q1–Q4): $0 FY2017-18 (Q1–Q4): $0
7.1.2	Develop a Change Management Plan for improving the use of information for decision-making	CMS PMO PAHO	• Internal resources	MOH	$0	$0	FY 2014-15 (Q4): $0 FY2015-16 (Q1–Q4): $0 FY2016-17 (Q1–Q4): $0 FY2017-18 (Q1–Q4): $0
7.1.3	Develop and deliver change management and training activities to encourage information-use behaviours.	PMO CMS HRS IDAS PAHO TU RHAs	• Internal resources • Venue – assumes 25 participants x 4 meetings =**$1,000** • Photocopying – 50 page x 0.05 per page x 4 meetings x 25 participants per meeting) = **$250** • Honoraria (Assumes 2 PMO and 2 HRS staff work over 50 hours a week for 13 per year) = **$7,500**	MOH	$0	$8,750	FY 2014-15 (Q4): $0 FY2015-16 (Q1–Q4): $0 FY2016-17 (Q1–Q4): $8,750 FY2017-18 (Q1–Q4): $8,750

7.2 Develop information products that meet the specific needs of different information users across the health system.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15 (Q4) | FY2015-16 (Q1 Q2 Q3 Q4) | FY2016-17 (Q1 Q2 Q3 Q4) | FY2017-18 (Q1 Q2 Q3 Q4)
7.2.1	Develop an Information Products Plan to meet the information needs identified in Needs Assessment (See Action 7.1.1).	HRS PMO PRU PAHO IDAS HPD	• Internal Resources	MOH	$0	$0	$0 | $0 | $0 | $0
7.2.2	Develop MOH Web governance and operational model to ensure currency and sustainability of MOH website.	PPD PMO SITU PRU IDAS	• Internal resources	MOH	$0	$0	$0 | $0 | $0 | $0
7.2.3	Update MOH web site with frequently requested information products	TBD SITU IDAS PRU HPD HRS	• Internal resources • Lead will be determine based on governance and operational model above (7.2.2) • Assume use of current scanning technology for print information resources • Need training on digitization of documents - **$1,000**	MOH	$1,000	$0	$1,000 | $0 | $0 | $0
7.2.4	Implement MOH Intranet to improve information dissemination within MOH	SITU PMO IDAS	• Internal resources • Assumes existing IT solution for intranet	MOH	$0	$0	$0 | $0 | $0 | $0

7.2 Develop information products that meet the specific needs of different information users across the health system.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
							FY 2014-15: Q4 | FY2015-16: Q1 Q2 Q3 Q4 | FY2016-17: Q1 Q2 Q3 Q4 | FY2017-18: Q1 Q2 Q3 Q4
7.2.5	Implement Virtual Health Library for Jamaica using the PAHO platform to increase availability of research and other technical information products.	IDAS PMO PAHO SITU	• Internal resources • Assumes use of PAHO Virtual Health Library Platform	MOH	$0	$0	**$0** | **$0** | **$0** | **$0**
7.2.6	Conduct training on the appropriate use of social media for health information, and implement the use of social media for disseminating health information.	HPU PRU IDAS IDAS PMO	• Short term technical assistance for training **$10,000** • Internal resources for implementation	TBD	$10,000	$0	**$0** | **$10,000** | **$0** | **$0**
7.2.7	Develop and implement improved information products, aligned with the availability of information and human resources.	PMO PRU PAHO IDAS HPD HPU	• Internal Resources • Photocopying costs (10 times per year x 10 pages x 1,000 copies x 0.05 per page) = **$5,000 per year** • Technology services costs (email marketing)= **$1,000 per year** • Short term technical assistance for developing information products = **$25,000**	TBD	$25,000	$6,000	**$0** | **$0** | **$31,000** | **$6,000**

7.3 Increase access to health information and analysis tools for information consumers across the health systems.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
7.3.1	Document requirements and operational approach for a web-based National Health Information Repository.	PMO HRS SITU PAHO IDAS HPD	• Short Term Technical Resources – Consulting services to document requirements and develop technical and operational approach - **$25,000**	TBD	**$25,000**	**$0**	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$25,000**; FY2017-18: **$0**
7.3.2	Implement web-based National Health Information Repository.	PMO HRS SITU PAHO IDAS HPD	• The Repository will benefit from existing ICT Infrastructure	TBD	**$60,000**	TBD	FY 2014-15: **$0**; FY2015-16: **$0**; FY2016-17: **$0**; FY2017-18: **$60,000** **Note**: Cost estimate cannot be developed until requirements and approach have been defined.
7.3.3	Recruit additional GIS specialists.	ERDAU HR SITU PMO	• Assumes one funded GIS role for 2014-15 (Health GIS Manager) and then one for 2015-16 – currently unfunded	MOH	$0	$41,500	FY 2014-15: **$20,750**; FY2015-16: **$41,500**; FY2016-17: **$41,500**; FY2017-18: **$41,500**

7.3 Increase access to health information and analysis tools for information consumers across the health systems.

Ref	Action	Lead / Support	Cost Assumptions and Estimates	Funding Sources	One-Time Dev. Cost	Annual Recurrent Cost	Timelines and Cost by Fiscal Year
7.3.4	Expand capacity of GIS focal points in Health Region	ERDAU PMO SITU RHA	• Assumes train-the-trainer approach • 2 MOH resources trained and then train regional (2 MOH users x 6 modules x $1,000 for two day online module) = **$12,000** • Include budget for ongoing refresh/upgrade training= **$2,000/year** for MOH resources • Catering/per diem for 1 training sessions for Region users each year (assumes - 3 days training for 6 Region users travelling to Kingston and staying 3 nights x $250 per diem) = **$4,500**	TBD	$12,000	$6,500	FY 2014-15: **$6,000**; FY2015-16: **$12,500**; FY2016-17: **$6,500**; FY2017-18: **$6,500**
7.3.5	Upgrade to ArcGIS 10 or equivalent software.	SITU	• Newest version of ArcGIS (formerly Arc Info) • Subscription model – annual cost • $2,500/year for up to 5 users	MOH	$0	$2,500	FY 2014-15: **$0**; FY2015-16: **$2,500**; FY2016-17: **$2,500**; FY2017-18: **$2,500**