

Planning the Implementation of the Workload Measurement System –
Emerald's *Dynamine*TM and *Dynaboard*TM

by

Marsha F. Greenan
B00133050
greenan@cs.dal.ca

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This report has been written by me and has not received any previous academic credit at this or any other institution.

I would like to extend my deep appreciation to the Co-leads of the Implementation of the Workload Measurement System project, Randi Monroe and Shauna McMahon. They both gave me the freedom to take the lead with many aspects of the workload measurement project and at the same time were readily available for consultation when needed. This allowed me to gain experience and confidence working in project management and health informatics.

Marsha Greenan

Executive Summary

Case costing data is required in order to effectively manage a health care organization such as the Capital District Health Authority. The workload measurement project was initiated because it was information that was missing from the case costing formula. Numerous information systems exist at Capital Health, however, a workload information system was the one piece of the puzzle which was missing in order to produce accurate cost costing information.

In March 2011, Capital Health purchased workload measurement software (*Dynamine*TM and *Dynboard*TM) from Emerald Health Information Systems. At that time, Co-leads were assigned to develop an implementation plan. A Workload Measurement Sub-committee, with representation from across the district, was struck to assist with this implementation plan. When the plan, consisting of the Project Charter, Roll-out Plan and Project Plan were created and approved by the Case Costing Steering Committee, the implementation work was handed over to the Workload Measurement Coordinators.

The team members involved in the workload project are numerous, so ongoing and effective communication is extremely important. Various methods of communication are used to keep all members abreast of the project's development.

Many of the health informatics courses contributed to a successful internship, however, there were three which stood out as being extremely useful for this particular internship project: "Project Management for Health Information Projects", "Knowledge Management" and "Information Flow and Standards".

The internship was a success as the entire project involved health informatics and course work from Dalhousie's Health Informatics Program were directly applied to the work completed during the internship.

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1. Introduction

There is an imbalance between demand for health care services and the supply of health care funding. The aging population will continue to place increased pressure on the health care system. As a result, the cost of health care will continue to increase. “Total spending on health care in Canada is expected to reach \$191.6 billion this year, growing an estimated \$9.5 billion, or 5.2%, since 2009, according to new figures released today by the Canadian Institute for Health Information (CIHI).”¹

At the same time, the supply of funding for health care is decreasing. In March 2011, Nova Scotia Health and Wellness Minister, Maureen MacDonald announced, “Nova Scotia’s nine district health authorities and the IWK Health Centre in Halifax will have to make do without any funding increases this year”² No funding increase translates to a funding decrease as many health care costs such as compensation and supplies continue to increase. Ms. MacDonald continued to say that, “the health authorities will have to find ways to manage and control cost pressures”.³

In order to manage these cost pressures, case costing is required. Case costing “is about putting a true cost to health care services. It’s about finding out which resources are being used to provide which services.”⁴

Workload information is a key component of case costing. Capital Health has been planning the implementation of a new workload information system. At present, workload is collected by a limited number of disciplines (social workers, physiotherapists, occupational therapists etc). This represents a small percentage of the total work force. A large representation of the workforce who do not currently collect workload is nursing. Nursing staff will begin to collect workload in this new electronic system. The collection of workload by a broader group of health care disciplines will add tremendous value to the case costing data.

Workload measurement software was purchased from the Canadian company, Emerald Health Information Systems. The software purchased is *Dynamine*TM and *Dynaboard*TM. *Dynamine*TM is the software used to enter the workload data. *Dynaboard*TM is software for reporting performance indicators.

2. Description of the Capital District Health Authority

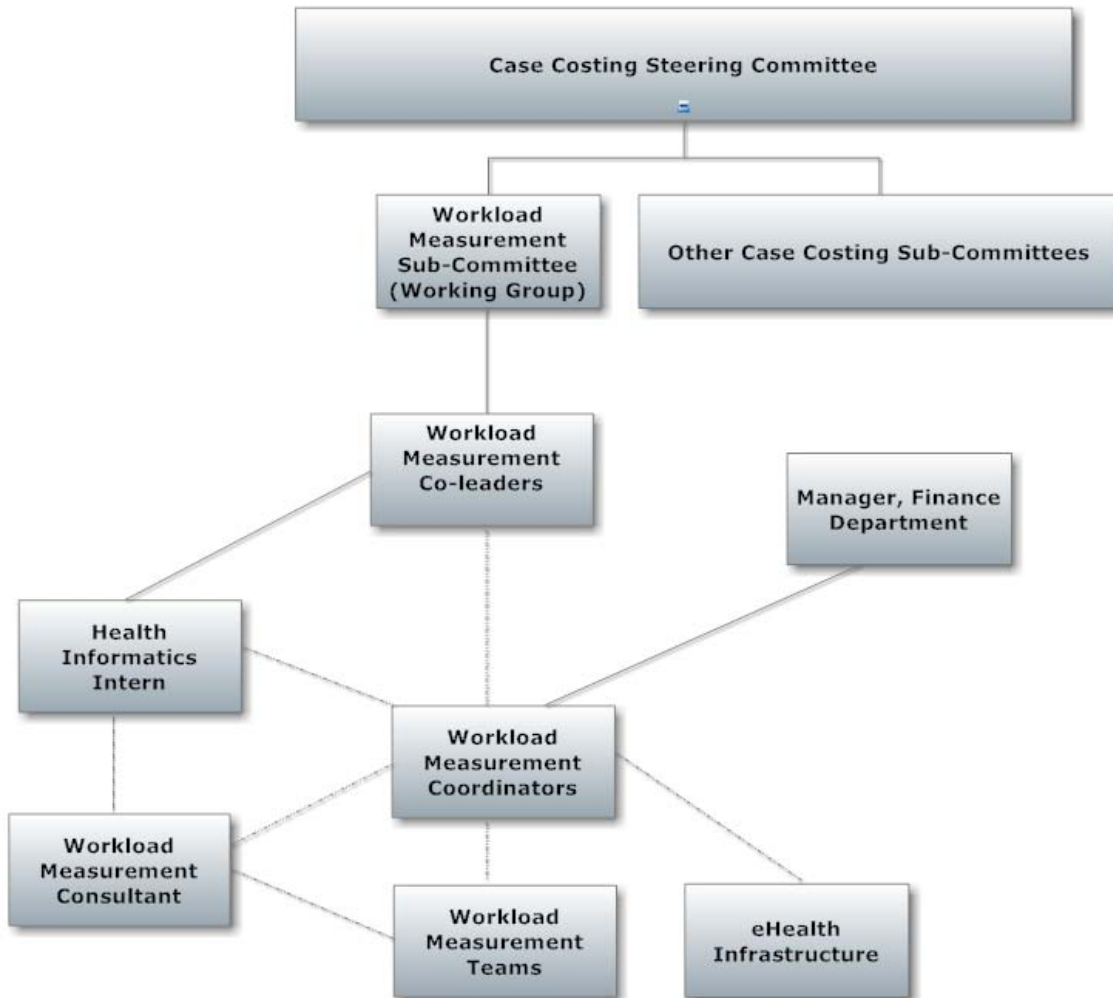
Capital District Health Authority is comprised of nine health care facilities providing inpatient and/or outpatient care as well as numerous community based programs. Types of care range from acute inpatient care to public health and specialty services at the East Coast Forensic Hospital, the Environmental Health Centre and mental health services at the Nova Scotia Hospital.

Capital District Health Authority (CDHA), also known as Capital Health, provides services to citizens from West Hants to Sheet Harbour as well as offering specialized care to patients residing in Atlantic Canada. Capital Health is made up of approximately 10,000 employees and 1,000 physicians along with learners and volunteers.

The project, Planning the Implementation of the Workload Measurement System, involves a team of specialists from a number of departments within Capital Health. The Co-leads of the project are the Director of eHealth and the Director of Rehabilitation Services. The actual development and implementation of Emerald's workload measurement software will fall to the two Workload Measurement Coordinators, two project managers and an internal consultant. The two Workload Measurement Coordinators are Registered Nurses who will be crucial during the development of the workload instruments and the roll-out in the clinical areas.

The governance structure for the workload measurement project, as of July 2011, is on the following page.

Governance Structure - Workload Measurement Project - July 2011



3. Work Performed at Capital Health

3.1 Project Charter

One of the first tasks was to create a project charter. The process of writing the charter, ensured that the project was well thought out and defined up front. A template from a previous Capital Health project was used as the framework for the charter along with a charter from a similar project implemented in New Brunswick two year earlier.

The charter (Appendix C) includes numerous sections such as: objectives, current situation, scope, out of scope, customers/sponsors, system requirements, operational requirements, assumptions, risks, critical success factors, security, costs and project deliverables. Two components, “Out of Scope” and “Assumptions” will be reviewed in detail.

A key component of the charter is the “Out of Scope” section. Other projects being carried out at Capital Health relate to, but are not included in the workload measurement project. It is imperative that projects not included in the workload measurement project be documented in the “Out of Scope” section. An important example, is the MIS Standards project. MIS Standards are the standards for the Management Information Systems in Canadian Health Service Organizations. It’s imperative that clinical areas comply with MIS Standards in order to produce meaningful integrated data, however, it is not within the scope of the workload measurement project. Ensuring that Capital Health is complying with MIS Standards is a separate project. The success of the MIS Standards project will contribute to the success of the workload measurement project; however, they remain two separate projects.

Another important component of the project charter is the assumptions section. Examples of these assumptions include:

- All patient encounters are registered in STAR.
- Areas are compliant with the MIS Standards:
 - Cost Centres define a function and/or different functions;
 - Labour costs, earned hours, supply expense and statistical activity are reported in the appropriate cost centre (matching principle);
 - Criteria established to review broad occupational groups (BOGs);
- Availability of human resources to meet the objectives of the project;
- Availability of staff from the working group for operational requirements;
- Computers are available for entering workload into Emerald’s *Dynamine*TM software;
- Availability of resources for ongoing maintenance of the system;
- Availability of application and database servers;
- Availability of IT human resources (infrastructure team, interface team and database administrators);
- *Dynamine*TM training will be provided to point-of-care workers prior to go-live date(s);
- *Dynaboard*TM training will be provided to managers prior to implementation

All components of the project charter are important, however, the author selected two components to review in detail due to their specific relevance to the workload measurement project.

When a draft project charter was complete, it was distributed to the members of the Workload Measurement Sub-committee and Co-leads for their input. When the final version was ready, the project charter was presented and approved by the Case Costing Steering Committee, chaired by Capital Health's Vice President of Sustainability.

3.2 Project Plan

A project plan is an important management tool used to itemize tasks, assign responsibilities and timelines. The project plan is a living document that is reviewed and updated on a regular basis. An excerpt from the project plan can be found in Appendix D.

Microsoft Project was purchased so project plans could be created and used as a management tool throughout the project. Jean White, the Vice President from Emerald, supplied a project plan template which included some key deliverables for Capital Health and Emerald.

The following includes a sample of some of the tasks included in the workload measurement project plan:

Emerald's tasks:

- Providing specifications
- Providing the software and testing environment
- Supporting the development of the dictionaries and workload instruments

Capital Health's tasks:

- Information gathering (cost centres, MIS functional centres, provider lists)
- Pre-implementation tasks (creating dictionaries and workload instruments)
- Build interfaces for admission, discharge, transfer system and staff worked hours

The tasks listed in the project plan were also given timelines. The duration (days) of tasks carried out by Emerald were assigned by the Emerald staff. The duration (days) of tasks carried out by Capital Health were estimated by the Capital Health project team. The technical tasks were estimated by the project team and confirmed by the Capital Health IT group.

The draft project plan was distributed to:

- Members of the Workload Measurement Sub-committee
- Capital Health IT managers
- Staff at Emerald
- Members of the Case Costing Steering Committee

The project plan was presented and approved by the Case Costing Steering Committee on May 26th, 2011.

The project plan will continue to be used as a management tool for monitoring the tasks and time lines for the workload measurement project.

3.3 Roll-out Plan

The Roll-out Plan (Appendix B) outlines the order in which the clinical areas will implement the workload measurement system. The roll-out plan required many iterations and at the time of this report there were 17 phases which includes all inpatient and outpatient services at Capital Health. There were a number of factors considered when determining the order of implementation:

- Roll-out by Director/Manager grouping, discipline or physical location?
- Organizational Commitment – VP/Director/managers – some were more eager than others
- MIS readiness – clinical areas are at varying degrees of MIS compliance
- Resolution of Registration Process Issues – some clinical areas are not registering their patients in the Admission, Discharge, Transfer (ADT) system (McKesson's STAR)
- High cost areas (ie Operating Rooms, surgical cases) are given priority
- Areas needing to realize utilization/efficiency improvements were given priority
- Areas needing to move to enterprise systems were given priority
- Coordinate with other Capital Health initiatives ie Collaborative Care Initiative (CCI)
- Areas with clinical data available to integrate in Dynaboard™ (Inpatient areas) were given priority

Phase 1 of the Roll-out Plan includes the Rehabilitation Services portfolio, users of the existing workload measurement system and the clinical areas caring for the veterans. The Rehabilitation Services portfolio was chosen because it was seen as a quick win. The staff (except nursing) have been collecting workload for several years and the transition from the old workload system to the new system (Emerald's *Dynamine*™ software) would be seen as an improvement. The same is true for the other health care professionals who are currently collecting workload.

The clinical area where the veterans reside was also selected for the first phase as there has been increased pressure from the Federal Government to justify their increased costs. Introducing a workload measurement system and ultimately producing case costing data would assist this clinical area in their cost analysis.

The only concern with Rehabilitation Services being included in Phase 1 was that some staff (physiotherapist, occupational therapist) work throughout the district. As a result, the ADT Interface would have to be set up and all the interface tables would have to be complete at the time of the first phase. This was seen as a benefit and a deterrent. The benefit of all the ADT interface work being done upfront is that it would be a more efficient method and would result in the remaining phases being implemented fairly quickly. On the other hand, the deterrent of doing all the interface work upfront would be that it is expected to be a lot of work for a large, complex health authority such as Capital Health. When this issue was identified and discussed and confirmation was given to move forward with Rehab starting in Phase 1, it was acknowledged that this would push back the implementation date of Phase 1.

Developing the Roll-out Plan required a lot of re-work and consultation with the various stakeholders. It is expected that further changes will be made as the realities of implementation are played out.

The Roll-out Plan is a necessary tool to assess and document the order of implementation. It is an important process to work through to determine the most appropriate order of implementation. Like the Project Plan, the Roll-out Plan will evolve with time as lessons are learned in the early implementation phases.

3.4 Interfaces

Interfaces are necessary for integrating information systems. The implementation of Emerald's *Dynamine*[™] requires two interfaces: Admission Discharge Transfer Interface (ADTI) and a payroll interface which was named SAP Interface (SAPI).

- i) ADT Interface – the ADTI is necessary in order to link workload units to a specific patient. When a health care provider is scoring workload, they can apply it to a specific patient on the inpatient unit or clinic where they are caring for the patient.
- ii) SAP Interface – an interface is required with SAP to obtain employee worked hours. Worked hours and workload units are combined in Emerald's *Dynamine*[™] to generate utilization indicators. These data are also combined with financial data and clinical data to produce case costing data.

A meeting was held with managers from Capital Health's Information Technology (IT) Department, the workload measurement team and representatives from Emerald to discuss the overall IT requirements of Emerald's workload measurement system. Sami Aly, President of Emerald, presented a project plan for each of the interfaces which included tasks, meetings, elapsed time, client resources etc. (Appendix E – ADT Interface Project Plan).

Specifications for each of the two interfaces were obtained from Emerald.

- i) ADT Interface – the specifications were reviewed by two members of the IT Interface Team and the workload measurement team prior to ADTI Meeting #1 with Emerald. A large group congregated for Meeting #1 and discussed in further detail the specifications for the ADTI. Many issues were settled with only a few items outstanding. After this meeting, the Interface Team from Capital Health's IT department were able to move forward with the initial steps of the interface development. Meeting #2 occurred approximately three weeks after Meeting #1. An issue that continued to generate discussion was what fields to use from the ADT to uniquely identify each clinical area and cost centre. This is particularly problematic for the outpatient clinics. The inpatient areas have unique naming conventions, however some of the outpatient areas share the same names. It is imperative for all clinical areas to be uniquely identified and attached to a cost centre so workload, financial and statistical information can be pooled together for reporting purposes.
- ii) SAP Interface – the employee worked hours will come from SAP. The SAP Interface will be built by HASP (Health Administration Systems Project). A similar interface was built for the implementation of Emerald at the IWK three years ago and team members

were hopeful that Capital Health would require a similar interface. As it turns out, there are a number of payroll business rules which differ between CDHA and the IWK, so additional work is required to iron out the complexities of the payroll system at CDHA. SAPI Meeting #1 involved the CH team members as well as representatives from HASP and the IWK. The representatives from HASP and the IWK were able to share their experience building an SAPI for IWK's implementation of Emerald's *Dynamine*TM. At the time of this report, only Meeting #1 took place and another is scheduled for the third week of August. One of the interface issues that exists is the lack of shift times. Emerald needs the worked hours as well as the shift START date/time and END date/time. The START date/time and END date/time is not in SAP. As a result the workload project team assigned shift start/end times for each of the shift codes (ie D 0700-1500, E = 1500-2300). This is not ideal, but it is felt to be an acceptable solution at this time. Capital Health will be implementing a scheduling system within the next year which will provide more specific information on shift start/end dates and times.

An interface between two information systems is a necessary component of producing robust, meaningful information. In order to build an interface a clear understanding of the issues is necessary. Through the ADTI and SAPI meetings issues are brought to the table, discussed and resolved to ensure a quality interface is built.

3.5 Hiring two Workload Measurement Coordinators

During the authors internship two Workload Measurement Coordinators were hired. An interview tool was developed specifically for the needs of these positions. Five candidates made the short list and all five were interviewed. Candidates were evaluated based on answers to the interview questions, education, experience and references. Reference were contacted by telephone for the top two candidates. The references confirmed the suitability of the candidates and they were each offered the position. Both candidates accepted the position with one candidate starting on July 4th and the other starting on August 8th, 2011.

3.6 Communication

Various methods of communication were used to gather information, share information, inform stakeholders, confirm information and reach a common understanding. This was essential and continues to be essential as the project continues to move forward. Below is a list of the variety of communication methods used:

- Meetings (face-to-face, teleconference and video conference) were held with the following groups:
 - Members of the Workload Measurement Sub-committee (Working Group)
 - Emerald's VP of Development and Implementation (Jean White) and the President of Emerald (Sami Aly)
 - Meetings with members of Capital Health's IT group and members of HASP (Health Administration Systems Project).
 - Workload Measurement Co-leads (Randi Monroe and Shauna McMahon)

- Members of the workload measurement project team (Workload Measurement Coordinators, Workload Consultant, Project Manager and Health Informatics Intern)
- IWK workload and interface team members
- Email Communication (operational level communication)
 - Emerald's VP Development and Implementation (Jean White) and Emerald President (Sami Aly)
 - Co-leads of the Workload Measurement System Implementation (Shauna McMahon and Randi Monroe)
 - Numerous managers from IT
 - Members of the Workload Measurement Subcommittee (especially those in the first two phases of implementation)
 - Manager, Decision Support, later Workload Measurement Consultant
 - MIS Coordinator
 - Workload Measurement Coordinators
 - Workload Measurement and Interface team members at the IWK
- Written Communication (reports)
 - Status Reports to the Case Costing Steering Committee
 - Updates to the Workload Measurement Sub-committee
- Presentations
 - Presentation to the Case Costing Steering Committee
- Shared drive for storing project documents (project plans, project charter, meeting minutes, meeting calendar etc)

Various methods of communication were used to gather and share information with a wide variety of team members involved in the workload measurement project. It was essential to keep the communication flowing among the team members so everyone was informed of the project's development.

4. Relationship Between Internship and Health Informatics

Many of the Dalhousie University Health Informatics courses were valuable during the workload measurement internship completed by the author between April and August 2011. The single most important course which assisted with the success of the internship was “Project Management for Health Information Projects”. Since the project was just starting, many project management tools could be utilized, tools such as, a project charter and a project plan. There were also additional courses which assisted in a successful internship. “Knowledge Management” provided the understanding of the benefits of quality integrated information systems to provide knowledge to assist with the efficient operation of a health care facility. “Information Flow and Standards” provided an understanding how information systems work and integrate, for the implementation of an efficient integrated information system. This section will outline the work that was completed that related directly to the Health Informatics course work.

4.1 Project Management

When the internship began, there were two co-leads and a sub-committee responsible for developing a plan to implement a workload measurement system at Capital Health. The internship commenced at the same time the committee began their work. At this time, no other team members, except the author (Health Informatics Intern) were dedicated to the project on a full-time basis. Since the project was just starting, many project management tools could be utilized. The Health Informatics course “Project Management for Health Information Projects” was invaluable in the early stages and throughout this workload measurement implementation project. From the initial meeting, project management concepts were utilized. For example, team norms were established which ensured that team members had a common understanding of expectations and contributed to the team functioning effectively.

A project plan was adapted from a template supplied by the vendor (Emerald Health Information Systems). The project plan template contained high level tasks as well as more detailed tasks which Emerald staff were responsible for. Microsoft Project was the project plan software used. This was the same software used in the project management course, so the author was familiar with its functionality. The project plan was updated, modified and changed several times over the course of the workload measurement project and will continue to change as the project continues. At the initial IT meeting, to discuss the overall project requirements, the project plan was printed on a plotter so that the approximately 75 tasks could be visible along with the Gantt Chart. Throughout the project, the project plan was posted in a central office, so that team members could review and consult it when needed. The project plan was also posted to a folder on the shared drive for team members to access. Two formats were available, Microsoft Project and PDF. A PDF format was made available, as some team members didn't have Microsoft Project on their computer. The work with the project plan was possible due to experience with Microsoft Project and project plan theory

covered in the “Project Management for Health Information Projects” course and term assignment. This course was invaluable to the success of the internship and it’s recommended that it be completed prior to the commencement of any health informatics internship.

The Project Charter was developed from another charter used for an unrelated project at Capital Health. This template provided the foundation for the major sections of the workload measurement project charter. It contained many of the important elements required in a charter. It also provided a sample of the type of information contained in the various sections. In addition, New Brunswick shared the project charter used for their Emerald implementation project. From this charter we added sections such as, Critical Success Factors and Approval.

Developing the project charter was an extremely beneficial exercise as it was when the project charter was developed during the term project in the project management course. It allowed the team members to examine in detail what the project was all about. It was an opportunity to clarify what the project was and what it wasn’t, by defining the work that needed to be done. As we learned during our project management course, the charter also defined critical areas such as requirements, assumptions and risk. All aspects of the charter are important and must be examined carefully during the earliest stages of the project.

When developing a responsibility matrix it’s imperative to have all your team members in place. When working on the project management term assignment, a responsibility matrix was created during the very early stages of the project, because all the team members were known and available. During the workload measurement project, developing a responsibility matrix was delayed until August because the staff responsible for the actual implementation commenced work over a period of two months. In addition, just recently, two new members joined the workload measurement team – a Workload Consultant and a Project Manager. Also, the second workload measurement Coordinator joined the team in early August. With all the team members now in place it’s imperative that a responsibility matrix be established so that everyone is clear about their role. There are several advantages in creating a responsibility matrix for this workload measurement project or any project:

- One go-to person for a particular area of the project
- Reduce duplication – reduces the chance of two people completing the same work, or contacting the vendor about the same issue.
- Tasks getting left undone

During the Project Management term assignment, the responsibility matrix was helpful for everyone. Every student knew what they were responsible for and were confident that other areas of the project were covered by other students in their group and nothing was left undone.

Project management tools, were invaluable during the term assignment as well as the workload measurement project. These tools helped define the projects and ensured a successful progression and completion.

4.2 A Workload Measurement System Provides Knowledge

Knowledge Management was one of the most informative Health Informatics courses in the Master of Health Informatics program at Dalhousie University. Through this course, I learned the value of various types of data/information and how these data can be transformed into knowledge which can contribute to a more efficient, safer and improved health care system.

Workload data combined with other health care facility data provides significant knowledge to the leadership community of a health care facility. Workload data can be used to produce workload indicators as well as playing a significant role in case costing information. These workload data contribute significantly to the knowledge needed by health care leaders to make tough decisions in today's fiscally challenging health care environment.

Workload can be used to provide valuable information to a health care organization such as:

- Staff utilization indicators – these indicators can help identify if staff are under utilized or over utilized in certain clinical areas. Having this knowledge is the first step in smoothing these inequities.
- Appropriateness of tasks – through the collection of workload, inappropriate use of staff can be identified. Staff can then be assigned tasks aligned with their skill set. For example, there may be tasks being done by highly skill professionals which can be performed by lower skilled (and lower paid) professionals. This is sometimes seen among nurse practitioners, nurses and licensed practical nurses(LPN) as well as nurse practitioners and physicians.
- Staff productivity – workload may show that some staff are much busier than others. Workload data can help justify the realignment of staff in order to smooth the workload and human resources.

Workload is an important piece of data to collect in a health care facility because compensation makes up the majority of health care expenditures. At Capital Health, over 70% of the budgeted expenditures are allocated for staff compensation. When workload is collected along with worked hours and compensation, costs can be calculated for the work being done. This is invaluable when determining the cost effectiveness of care and the distribution of health care dollars among clinical services.

A workload measurement system is used to collect the type and quantity of work performed by staff. Workload can be collected from certain groups of staff or all staff. In a health care facility, nursing is an important group of staff to collect workload because they make up the largest group of health care workers. In some jurisdictions, such as New Brunswick, only nursing workload is collected, although there are plans to expand it to other health care professionals. Nursing is a large component of the compensation, however, there are still other health care groups which make up a significant portion. For this reason, Capital Health's initial implementation of workload will include nursing and allied health, with the intention to expand it to other groups in the future. Including a large number of health care providers in the workload measurement implementation, contributes to the refinement of the accuracy of case costing.

Workload data is just one part of many that contributes to Case Costing. However, it is an important piece. Facilities which do not collect workload data can not accurately report case costing data. Workload provides specific activities carried out by professional groups and the amount of time spend on the activity. Employees' worked hours and pay scales also contribute to the accuracy of the data and the knowledge gained.

The integration of these data, produce case costing information. This knowledge can be used by health care leaders at the facility, provincial and national level to make tough decisions about health care spending and efficiency analysis.

4.3 Liaison Between Vendor and IT staff

Having a solid foundation of information systems and computer applications is necessary when liaising between software developers/vendors and IT staff as was done during this internship. It is also important to know who, within your organization, are the subject matter expert, so they can be invited to participate in the project. As was outlined in detail earlier in the report, two interfaces are required for the implementation of the Emerald's *Dynamine*TM software. In order to effectively deal with the technical issues of the two interfaces, a significant level of knowledge is required to understand the issues and effectively move the project forward. Health Informatics courses such as "Information Flow and Standards", "Information Systems and Issues" and "Networks and the Web" assist in preparing students to understand the work that needs to be done and how to move it forward.

In addition, it is important to ensure that all the key players are at the table. Numerous teleconference meetings were held to discuss the finer details of the interfaces. The building of the interfaces commenced in early July. Since July and August are popular vacation times, it took careful planning to ensure the meetings were going to be successful. There were a number of stakeholders, however, due to a high number of staff on vacation, the key attendees were identified and the meetings were scheduled around their availability. This method ensured that the key players within the organization were at the table when important issues were being discussed.

Having the knowledge to liaise with all members of the project team was essential in this workload implementation project as it is with all health informatics projects. Many of the health informatics courses provided the author with the knowledge required to feel comfortable with the content of the project and knowledge to move it forward.

4.4 Information Flow

"Health Information Flow and Standards" was a course which contributed to a better understanding of the workload implementation project and success of the internship. There were two important lessons from this course which came to light during the internship. One was the importance of complying with established standards and the other was to ensure a complete understanding of the data being used in the interface.

The workload measurement implementation requires the integration of three information systems. Patient specific information from the Admission, Discharge, Transfer (ADT) system (STAR), payroll information from SAP and the workload data from Emerald. These data need to be integrated using HL7 messaging. As a result of the ADT Interface meetings, it was discovered that some non-standard HL7 messaging is used in STAR. This required the interface team to build a workaround in order to create a usable interface. The workaround was possible, however, it required additional human resources. This issue highlighted the importance of standards and the benefits of complying with established national and international standards such as HL7.

During the interface build, it was also necessary to have a clear understanding of the data within each system so that the appropriate data was being extracted. Within many of the health information systems, there are similar field names used for different types of data. In order to ensure that the implementation team was extracting the appropriate data, subject matter experts from each of the information systems (STAR, SAP and Emerald) were consulted. These experts know the data contained within each field, they know how it got there, if the fields are ever blank and all the idiosyncrasies pertaining to the data. It was imperative to have these experts at the table so the correct data was being used.

In summary, two important lessons, from the Health Information Flow and Standards course, were to follow established standards and have a complete understanding of the data so the correct data is used. These principles will help ensure a successful integration of data among various health information systems.

Many of the Health Informatics courses were valuable while working on the workload measurement project. The single most important course was the “Project Management for Health Information Projects” because the project was in the early stages and many project management tools could be used. There were two other courses which stand out as being extremely helpful during the project planning. They are “Knowledge Management” and “Information Flow and Standards”. “Knowledge Management” provided a better understanding of the benefits of quality integrated information systems which provide knowledge in managing health care facility. “Information Flow and Standards” provided a solid understanding of how information systems work and their integration.

5. Critical Analysis of a problem

Health care facilities, such as Capital Health required case costing data in order to run their business. In order to generate case costing data, a workload measurement system is required. This will produce an accurate picture of the costs associated with caring for a patient or patient group. Capital Health has many information systems, however, information on workload has not been collected, by a majority of the disciplines, since September 2006. The solution to this problem is to re-implement a workload measurement system at Capital Health. In addition, in order to produce case costing information, it's essential that Capital Health comply with the MIS Standards and correct cost allocation assignments.

5.1 What is the problem?

The problem which exists at Capital Health and other health care facilities across the country is the lack of case costing information. There is a lack of quality integrated data which is necessary to produce case costing information. This information is essential to effectively manage a large health care organization such as Capital Health. It's synonymous with a large business not know what their expenses are or where they spent their money. Health care facilities don't know where they spend their money and what it costs to treat different types of patients.

In order to produce case costing information, several pieces of data are required. At present, the information that is missing, at Capital Health, is workload measurement information.

Capital Health has numerous health information systems:

- Volume data (number of inpatient cases, clinics visits, transfusions, lab tests etc);
- Clinical data (diagnostic, interventions or procedures);
- Surgical data(specific data relating to the operating rooms);
- Financial data(expenses such as supplies and compensation as well as revenue)
- Payroll data (hours of work by professional category ie nurses, social workers, housekeeping);

Despite all these data, Capital Health doesn't know how much it costs to treat a patient or a group of patients with the same diagnosis or on the same clinical unit. There is a way to calculate how much it costs to treat a patient, but it is an estimate and uses average cost estimates. Specific treatment costs are not available at this time. In order to calculate case costing, specific to patient groups, workload measurement information is required.

Labour cost data is available. For example, the total cost of providing nursing care is available. In addition, total allied health cost data is available. The problem is that it is not attached to a specific patient or patient grouping. As a result, it is not known how much nursing costs were allocated to a specific group of patients ie cardiac patients or kidney transplant patients.

5.2 Solution to the problem

Measuring workload by patient is the solution. Workload information is required to provide patient specific case costing data. Workload data includes healthcare professional activity information for each patient. This is information which was not available previously. Prior to the implementation of workload, only an average amount of workload (and therefore costs) was available. The amount of workload varies substantially depending on the patient. There is a huge difference in workload for a patient in an intensive care unit (ICU) versus a patient in a transitional care unit (patients waiting to be transferred to a nursing home). If average workload is being used the workload for patients in the ICU is going to be understated and workload for patients in the transitional care unit is going to be overstated. A workload measurement system can provide precise workload information for each of these patient types and everything in between.

The table below illustrates how patient specific workload costs are calculated. The first column indicates the professional discipline (nursing, physiotherapy etc). The second column shows the total number of workload units (minutes) for the patient, this can also be calculated for a group of patients with a similar diagnoses, procedure or patients on the same care unit. The third column shows the salary per minute of the employee. The fourth and last column is the results of a multiplication of the two previous columns. The first row (nursing) shows the total cost of providing nursing care during this patient's visit to hospital (\$250.13). The last row, fourth column shows the total cost of caring for this patient by nursing and allied healthcare professionals (\$522.41).

Additional direct (medication, traceable supplies, etc) and indirect costs (general supplies, administration, housekeeping, etc) are added to these costs to calculate the total cost for the patient's hospital visit.

Table/Figure 1. Patient Specific Direct Costs Using Workload Measurement Information

Patient Specific Direct Costs Using Workload Measurement Information

Example

Professional Discipline	Workload Units (minutes) Patient specific	Cost per unit (employee's salary per minute)	Total Direct Costs by Discipline
Nursing	375	\$0.67	\$250.13
Physiotherapy	150	\$0.60	\$89.55
Social Work	205	\$0.62	\$126.49
Occupational Therapist	89	\$0.63	\$56.25
Total			\$522.41

The solution to generating accurate case costing data at Capital Health is to implement a workload measurement system. Workload is collected in some areas however there is one large pocket (nursing) which needs to be implemented in order to generate accurate case costing data.

5.3 *Complying with MIS Standards*

MIS Standards are the standards for the Management Information Systems in Canadian Health Service Organizations.

Ensuring compliance with MIS Standards is not part of the workload measurement implementation project, but it has an impact on it. Following MIS Standards ensures that workload and costs are allocated to the correct MIS Functional Centre. When these data are aligned properly, it is possible to aggregate data within an organization as well as provincially and nationally. A separate project team has been assigned this work, although there is close collaboration between the workload and the MIS Standards working groups.

5.4 *Cost Centre Allocation*

In addition, compensation and workload data must be allocated to the correct cost centre before it is rolled up to the MIS Functional Centre. There could be several cost centres included in the MIS Functional Centre. At Capital Health, there are clinical areas where there are cost allocation issues. In some clinical areas, a cost centre holds supply expenses but no compensation expenses. The compensation expenses are lumped in with another clinical area. In order to produce meaningful data, for a specific clinical area, supply costs, compensation costs and workload must be allocated to the same cost centre. This is an area which has been identified as requiring additional work.

In order to successfully run a large health care facility, costing information is required. Capital Health has many information systems, however, workload information has not been collected by all disciplines, since September 2006. Without this information, compensation costs cannot be allocated to patients (and therefore patient groups) to provide an accurate cost for providing the care. The solution to this problem is to implement a workload measurement system. In addition, in order to produce case costing information, it's essential that Capital Health comply with the MIS Standards and correct cost allocation assignment issues.

6. Conclusion

Workload information is essential to producing accurate case costing information. This health informatics internship focused on the planning and early implementation of a workload measurement system. Many of the health informatics courses, taken through the Master of Health Informatics program at Dalhousie University, contributed to a success internship, however, there were three courses which were particularly helpful: “Project Management for Health Information Projects”, “Knowledge Management” and “Information Flow and Standards”. The workload measurement implementation project will continue through the fall and into 2012.

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APPENDIX A – Abbreviations

Abbreviations

ADT	Admission, Discharge, Transfer system
ADTI	Admission, Discharge, Transfer Interface
CDHA	Capital District Health Authority (or Capital Health)
CIHI	Canadian Institute for Health Information
IT	Information Technology department at Capital Health
MIS	Management Information Systems
SAPI	SAP Interface
ICU	Intensive Care Unit

APPENDIX B – Roll-out Plan

Workload Measurement Roll-out Plan

Guiding Principles:

- Roll-out by Director/Manager grouping, discipline or physical location?
- Organizational Commitment – VP/Director/managers
- MIS readiness
- Resolution of Registration Process Issues
- High cost areas
- Areas needing to realize utilization/efficiency improvements
- Areas that need to move to enterprise systems
- Coordinate with Collaborative Care Initiative (CCI) roll-out?
- Areas with available data to integrate in Dynaboard™ (Inpatient)

Order	Discipline/ Location	Detail	Rationale	MIS Compliance
Phase 1	<ul style="list-style-type: none"> • Rehab Portfolio (OT, PT, RT, Nursing etc.) • Rehab Disciplines (District Wide) • Disciplines currently using Clinical Management (District Wide) • Veterans 	Nursing and Allied Health	Currently collecting workload Recent MIS training Migrate from Clinical Manager and free up the DBC resource to assist with Emerald WMS	<p>Rehab Portfolio – all clinical areas passed MIS Compliance Review except the Rheumatology Clinic & Cardiovascular & Pulmonary Health in Motion both of which received a caution.</p> <p>VAC – all clinical areas received a pass.</p> <p>Rehab Disciplines DGH – received a pass. Have not completed results for smaller facilities.</p> <p>Clinical Nutrition for the District – received a pass.</p>

Order	Discipline/ Location	Detail	Rationale	MIS Compliance
Phase 2	Dartmouth General <ul style="list-style-type: none"> • Inpatient units • Clinics • Emergency Department • ORs 	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)	Focus on one geographic site. Resources and supports are centrally located. Meet case costing requirements	Approximately 35% of the clinical areas did not receive a pass re: MIS Compliance Review. Most notable the Recovery Room & Emergency Department.
Phase 3	Environmental Health Centre		Small contained area. Champion able to lead to group	Pass
Phase 4	QEII - HI and VG Medicine (including TCU, 9 Lane, Palliative Care, and V3E)	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)		HI Site: Pass – HI82, GN81, GP9L Caution – ME84 & HI62 Fail – CNIV & IMCU VG Site: Pass – VG8A/VG8BB, Palliative Care Caution – TC4A

Order	Discipline/ Location	Detail	Rationale	MIS Compliance
Phase 5	QEII - HI and VG Surgery	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)		<p>VG Site: Pass – VG3B; VG5A; VG5B; VG6A & VG6AI; VG6B & VG6BI; VG9A; & VG9B</p> <p>HI Site: Pass – HI 4.1 & HI 4.1I; HI 4.2 & HI 4.2B; HI 7.1 & HI 7.1I; HI 7.2 & HI 7.2I; HI 7.3 & HI 7.3I; HI 7.4; HI 8.3</p> <p>Caution: HI - MSI</p>
Phase 6	QEII - HI and VG ICUs	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)		<p>HI Site- Testing results – Caution – should be reviewed.</p> <p>VG Site – Failed testing results.</p>
Phase 7	QEII - HI and VG Operating Rooms	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)		<p>VG Site – Failed MIS Compliance testing.</p> <p>HI Site – Failed MIS Compliance testing.</p>

Order	Discipline/ Location	Detail	Rationale	MIS Compliance
Phase 8	QEII - HI Emergency Department	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)		All three (3) cost centres failed the MIS Compliance Assessment review.
Phase 9	QEII - HI and VG Clinics	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)		
Phase 10	Hants Community Hospital <ul style="list-style-type: none"> • Inpatient units • Clinics • Emergency Department 	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)	Focus on one geographic site. Resources and supports are centrally located. Meet case costing requirements	
Phase 11	Tri-Facilities (Eastern Shore, Musquodoboit Valley & Twin Oaks) <ul style="list-style-type: none"> • Inpatient units • Clinics • Emergency Departments 	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)	Meet case costing requirements	

Order	Discipline/ Location	Detail	Rationale	MIS Compliance
Phase 12	Cobequid Community Health Centre <ul style="list-style-type: none"> • Clinics • Emergency Department 	Nursing (RN, LPN, PCW) and other health care professionals (except the Rehab Disciplines, done in Phase 1)	Focus on one geographic site. Resources and supports are centrally located.	
Phase 13	Addictions		Working to ensure the CH enterprise system can meet needs. Potential to migrate from provincial Assist program	Although no recent analysis completed, it should be noted that there are reporting concerns which have compromised information in the past.
Phase 14	Mental Health - Inpatient & Outpatient <ul style="list-style-type: none"> • NSH • Abbie J. Lane • East Coast Forensic • Community Sites 		Large program over large geographic areas.	
Phase 15	Continuing Care			
Phase 16	Public Health			
Phase 17	Other			

APPENDIX C – Project Charter

Project Charter

Implementation of the Workload Measurement System - Emerald Dynamine™ and Dynaboard™

July 4, 2011

Prepared for:
Capital District Health Authority
Case Costing Steering Committee

Prepared By:

Workload Measurement Sub-committee
(Co-chairs Randi Monroe and Shauna McMahon)

Project Charter

Project Objective

The following goals and objectives have been identified for this project:

- To implement Emerald *Dynamine*TM, a Workload Measurement System, throughout Capital District Health Authority;
- To implement Emerald *Dynaboard*TM, a Hospital Intelligence Tool, throughout Capital District Health Authority;
- To integrate workload data with financial, administrative and clinical data for indicator reporting and to provide data for case costing;
- To implement standard district workload definitions;
- To complete the project on time and within budget.

Current Situation

Workload data is currently being collected by a variety of health care professionals (Nutritionists, Clinical Nutritionists, Occupational Therapists, Physiotherapists, and Recreational Therapists, Psychologist, Social Workers, Spiritual Care Workers) through STAR's Clinical Management Module (CM) at most sites. Other health care professionals (Pharmacists, Respiratory Therapists) are collecting workload in a variety of information systems. In small pockets throughout the district, workload is being collected manually.

Aggregated workload data, despite its method of collection, is submitted to Decision Support monthly and uploaded to SAP.

Workload data currently being collected is not patient specific.

Nursing workload has not been collected since September 1, 2007.

Scope

- Replace the Clinical Management Module (workload collection) and other workload collection systems with Emerald Dynamine™
- Implement Emerald Dynamine™ (workload measurement system) for nursing and health care providers who are currently not collecting workload.

Out of Scope

- Ensuring compliance with MIS Standards
- Physician workload
- Workload for non-clinical areas
- Long Term Care Facilities

Customers/Sponsor

The sponsor is the Case Costing Steering Committee.

The customers for the Workload Measurement System are:

- Capital Health Managers/Directors and VPs
- Capital Health employees needing workload, case costing and other administrative/financial data for planning purposes.

System Requirements

- Interface with Capital Health's Admission, Discharge, Transfer (ADT) system (STAR)
- Interface with scheduling / payroll system for worked hours
- Collect workload at a patient level
- Sufficient availability of computers for entering workload into Emerald Dynamine™
- Integration of workload data with existing health information system data to produce performance indicators and data for Case Costing

Operational Requirements

- Creation of a workload dictionary
- Workload instruments are built for the various disciplines based on the workload dictionary
- Implementation Teams to be established for each area
- The Workload Measurement Sub-committee will transition to an advisory committee

Volume of Emerald Users (in development)

Roll-Out Phase	Volume of Emerald Users
Phase 1	
Phase 2	
Phase 3	
...	
Total	Approximately 5,000

Assumptions

- All patient encounters are registered in STAR.
- Areas are compliant with the MIS Standards:
 - Cost Centres define a function and/or different functions;
 - Labour costs, earned hours, supply expense and statistical activity are reported in the appropriate cost centre (matching principle);
 - Criteria established to review broad occupational groups (BOGs);
- Availability of human resources to meet the objectives of the project;
- Availability of staff from the working group for operational requirements;
- Computers are available for entering workload into Emerald *Dynamine*TM
- Availability of resources for ongoing maintenance of the system;
- Availability of application and database servers;
- Availability of IT human resources (infrastructure team, interface team and database administrators);
- *Dynamine*TM training will be provided to point-of-care workers prior to go-live date(s);
- *Dynaboard*TM training will be provided to managers prior to implementation.

Risks

- If a patient is not registered in STAR, workload cannot be entered into Emerald *Dynamine*TM.
- If MIS Standards are not followed, performance indicators and case costing data will not be accurate.
- Lack of engagement
- Competing priorities for human resources, especially IT human resources.
- Availability of devices in the work areas, for entering workload.

Critical Success Factors

- Strong commitment from leadership;
- Adequate financial and human resources;
- Effective change management plan;
- Effective communication strategy;
- Effective and timely response to issues;
- Accurate technical specifications.

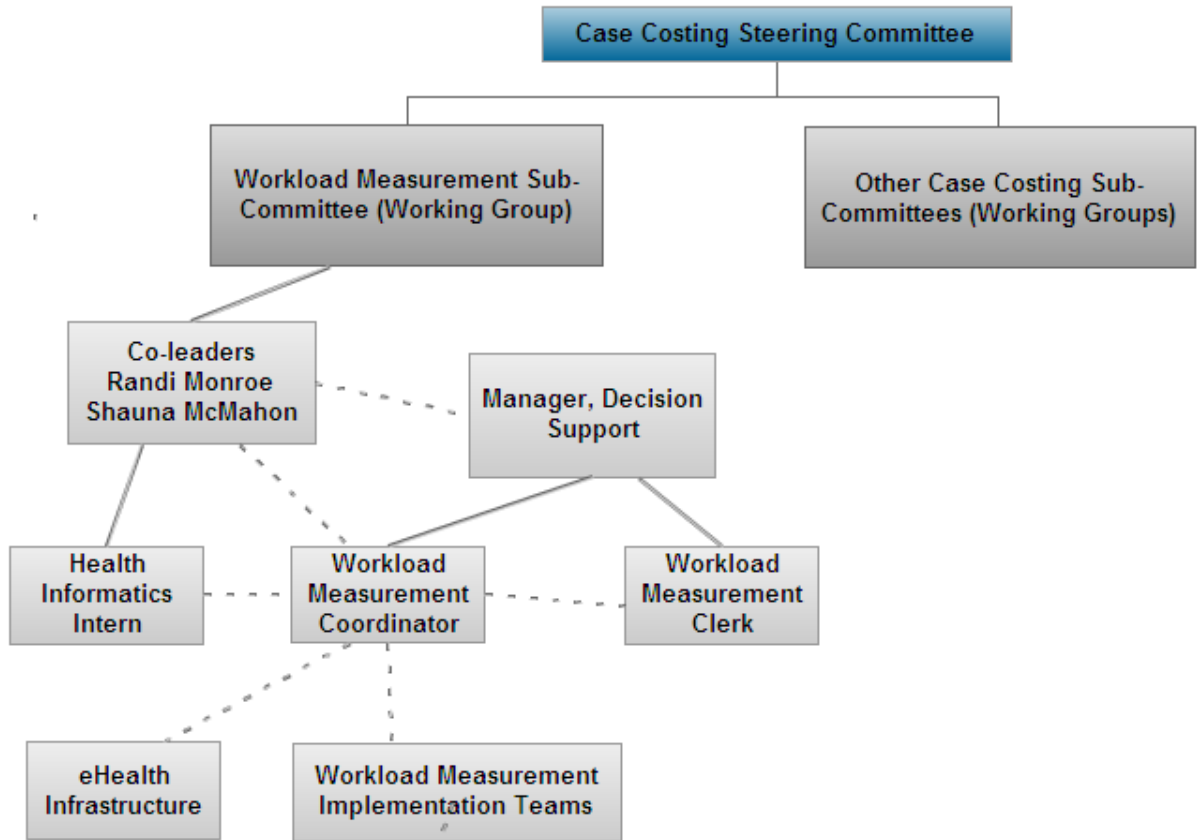
Communication Strategy

- A communication strategy for this project will be developed by the marketing and communication consultant;
- Regular meeting with the co-leads of the other Case Costing Working Groups (sub-committees)
- Regular meetings of the Workload Measurement Sub-committee will be held twice monthly on Wednesday mornings;
- Agendas will be generated by the Workload Measurement Coordinator with input from other sub-committee members. The agenda will be circulated by the Workload Measurement Coordinator prior to the meeting.
- Minutes from the Workload Measurement Sub-committee will be recorded and circulated by admin assistant staff in Health Information Services or Rehabilitation Services;
- A Monthly Project Update Report will be developed by the Workload Measurement Coordinator and sent to all team members and the Case Costing Steering Committee.
- Discussion as required among the sub-committee members.

Security

Emerald Dynamine™ will be accessed through individual username and password.
Active Directory aware.

Governance Structure



Capital Health - Workload Measurement Sub-Committee

Project Information

Project Name: Implementation of the Workload Measurement System – Emerald
Dynamine[™] and *Dynaboard*[™]

Project Sponsors: Case Costing Steering Committee

Workload Measurement Sub-committee team members:

Team Member	Department	Team Member	Department
Crystal Aker	Decision Support - IWK	Carol MacEachern	Surgical Specialties Health Services
Cindy Bayers	Marketing and Communications	Trent MacIsaac	Heart Health and Critical Care
Eileen Carey	Addiction Prevention & Treatment	Melanie Mader	Rehab and Supportive Care
Deborah Everett	Food and Nutrition	Yvonne Martin	Performance Excellence
Lygia Figueiredo	Continuing Care	Judy MacKay	CV & Pulmonary Health in Motion
Dorothy Forse	Finance & Decision Support	Shauna McMahan	Health Information Services & IT
Louise Gorman	Health Info Services	Randi Monroe	Rehab and Supportive Care
Marsha Greenan	Finance & Decision Support	Bob Parliament	Information Technology
Mary Ellen Gurnham	Professional Practice	Elsie Rolls	Veterans' Affairs
Joan MacDonald	Finance & Decision Support	Tara Sampalli	NS Environmental Health
Kim Munroe		Elizabeth Schurman	Decision Support - IWK
Workload Clerk (to be hired in May 2011)		Workload Coordinator (to be hire in May 2011)	

Additional Resources

The Project Team will utilize additional resources as needed:

Project Costs

Dynamine™ and Dynaboard™ software by Emerald has been purchased (see the contract, Page 29).

The review and development of instruments (Dynaworks™) under the leadership of Emerald staff will occur during the summer/fall 2011. The cost for this service will be calculated at this time (see the contract, top of Page 11).

HL7 Listener (for the server to accept messages) – approximately \$1,000

Additional staff – Two Workload Measurement Coordinators

Operational maintenance.

Project Deliverable

- Functioning and easy-to-use tool for entering workload data at a patient level
- Integration of workload data with Admission, Discharge, Transfer data, Scheduling/Payroll data and Discharge Abstract Database data to produce performance indicators and provide data for Case Costing

Project Plan

Separate Document

Project Dates

Start Date – March 1, 2011

End Date -

Approval

Chairperson, Case Costing Steering Committee

Signature

Date

APPENDIX D – Excerpt from the Project Plan

ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names	ov 07
1	Hire Workload Measurement Coordinator and Clerk (Start date)	1 day?	Mon 11/06/27	Mon 11/06/27			M T
2	Communication	99 days?	Fri 11/06/17	Wed 11/11/02		Cindy Bayers	
3	Communication 1	1 day?	Fri 11/06/17	Fri 11/06/17		Cindy Bayers	
4	Communication 2	1 day?	Mon 11/07/25	Mon 11/07/25		Cindy Bayers	
5	Communication 3	1 day?	Tue 11/08/02	Tue 11/08/02		Cindy Bayers	
6	Communication 4	1 day?	Tue 11/09/06	Tue 11/09/06		Cindy Bayers	
7	Communication 5	1 day?	Mon 11/10/17	Mon 11/10/17		Cindy Bayers	
8	Communication 6	1 day?	Wed 11/11/02	Wed 11/11/02		Cindy Bayers	
9	Weeks 1,2,3 - Information Gathering	103 days	Wed 11/05/11	Fri 11/09/30			
10	Gather and Provide List of Functional Centres	5 days	Wed 11/05/11	Tue 11/05/17			
11	Gather and Provide List of Service Providers	10 days	Thu 11/06/02	Wed 11/06/15			
12	Gather and Provide List of Activities for Workload Instruments (Dictionary)	20 days	Tue 11/07/05	Mon 11/08/01		WM Coordinators	
13	Review List of Activities for Workload instruments and Assist in the Development of Time V	5 days	Mon 11/08/15	Fri 11/08/19			
14	Refine Configuration for Functional Centres & Workload Instruments	10 days	Mon 11/09/19	Fri 11/09/30			
15	Emerald Pre-Implementation	15 days	Fri 11/05/27	Thu 11/06/16			
16	Provide ADT Interface Specifications (ADTI)	1 day	Fri 11/05/27	Fri 11/05/27		Emerald Technical Consultant	
17	Provide Scheduling / Payroll Interface Specifications (SI)	1 day	Mon 11/05/30	Mon 11/05/30		Emerald Technical Consultant	
18	Provide Template for Facility and Functional Centre Configuration	1 day	Wed 11/06/15	Wed 11/06/15		Emerald Implementation Consultant	
19	Provide Template for Service Provider Configuration	2 days	Wed 11/06/15	Thu 11/06/16		Emerald Implementation Consultant	
20	Provide Template for Workload Instrument Configuration	2 days	Wed 11/06/15	Thu 11/06/16		Emerald Implementation Consultant	
21	Provide Template for ADTI Mapping	2 days	Fri 11/06/10	Mon 11/06/13		Emerald Technical Consultant	
22	Provide Template for SI Mapping	2 days	Fri 11/06/10	Mon 11/06/13		Emerald Technical Consultant	
23	Capital Health Pre-Implementation (non-Technical)	87 days?	Tue 11/05/03	Wed 11/08/31			
24	Develop Project Charter	7 days	Thu 11/06/02	Fri 11/06/10		WM Sub-Committee	
25	Define tasks and major responsibilities	45 days	Thu 11/06/30	Wed 11/08/31		WM Coordinator	
26	Assess Unit Readiness	63 days?	Wed 11/05/04	Fri 11/07/29			
27	MIS Standards	10 days	Fri 11/06/17	Thu 11/06/30		MIS Coordinator	
28	STAR Registration	42 days	Wed 11/05/04	Thu 11/06/30		Decision Support	
29	Computer Comfort	6 days	Fri 11/07/22	Fri 11/07/29		WM Coordinator	
30	Manager Readiness	6 days	Fri 11/07/22	Fri 11/07/29		WM Coordinator	
31	Computer Hardware	5 days?	Mon 11/07/11	Fri 11/07/15		CH IT Dept	
32	Workload Measurement Roll-out Plan	48 days	Fri 11/05/06	Tue 11/07/12		WM Sub-Committee	
33	Draft Change Management Strategy	60 days	Mon 11/05/09	Fri 11/07/29		Cindy Bayers	
34	Project Plan to Case Costing Steering Committee	0 days	Thu 11/05/26	Thu 11/05/26			
35	Develop Roles and Responsibilities	13 days	Mon 11/08/15	Wed 11/08/31		WM Coordinator	
36	Implementation Teams	13 days	Mon 11/08/15	Wed 11/08/31			

Project: Capital_Health_Project_Plan_ Date: Thu 11/08/04	Task	Milestone	External Tasks
	Split	Summary	External Milestone
	Progress	Project Summary	Deadline

Page 1

Continued...

Cont'd APPENDIX D – Excerpt from the Project Plan

ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names	ov 07
							M T
37	Workload Measurement Coordinator	13 days	Mon 11/08/15	Wed 11/08/31			
38	Workload Measurement Clerk	13 days	Mon 11/08/15	Wed 11/08/31			
39	Unit Area Manager	13 days	Mon 11/08/15	Wed 11/08/31			
40	Clinical Nurse Educator	13 days	Mon 11/08/15	Wed 11/08/31			
41	Sign off Project Plan by Case Costing Steering Committee	0 days	Wed 11/08/03	Wed 11/08/03			
42	Project Charter for Implementation Project	32 days	Tue 11/05/03	Wed 11/06/15		WM Coordinator	
43	Capital Health Pre-Implementation (Technical)	115 days?	Tue 11/05/24	Mon 11/10/31			
44	Review ADT Interface (ADTI) Functional Specifications (Meeting #1)	23 days	Mon 11/06/13	Wed 11/07/13	16	Capital Health Integration Specialist	
45	Review ADT Interface (ADTI) Functional Specifications (Meeting #2)	1 day?	Mon 11/07/25	Mon 11/07/25	44		
46	Build ADT Interface (ADTI)	97 days	Mon 11/06/13	Tue 11/10/25		Capital Health Integration Specialist	
47	Provide samples of ADT Messages for Testing	3 days	Wed 11/10/26	Fri 11/10/28	46	Capital Health Integration Specialist	
48	Initial Test of ADT Messages	1 day	Mon 11/10/31	Mon 11/10/31	47	Emerald Technical Consultant	
49	Review Scheduling Interface (SI) Functional Specifications	3 days	Thu 11/07/21	Mon 11/07/25	17	Capital Health Integration Specialist	
50	Prepare and submit SI build request to SAP	1 day?	Tue 11/07/26	Tue 11/07/26	49	CH Integration Specialists	
51	Discuss Gaps in SI Requirements	1 day	Wed 11/07/27	Wed 11/07/27	50	Capital Health Integration Specialist, Emerald Technical Consultant	
52	Build Scheduling Interface (SI)	1 day?	Fri 11/08/19	Fri 11/08/19	51		
53	Provide samples of SI Messages for Testing	4 days	Mon 11/08/22	Thu 11/08/25	52	Capital Health Integration Specialist	
54	Initial High Level Test of SI Messages	2 days	Fri 11/08/26	Mon 11/08/29	53	Emerald Technical Consultant	
55	Complete & Provide Facility and Functional Centre Configuration Template	5 days	Thu 11/06/16	Wed 11/06/22	18	Capital Health Workload Coordinator	
56	Complete & Provide Service Provider Configuration Template	10 days	Fri 11/06/17	Thu 11/06/30	19	Capital Health Workload Coordinator	
57	Complete & Provide ADTI Configuration Template	5 days	Wed 11/06/15	Tue 11/06/21	21	Capital Health Workload Coordinator, Capital Health Integration Specialist	
58	Complete & Provide SI Configuration Template	7 days	Wed 11/06/15	Thu 11/06/23	22	Capital Health Workload Coordinator, Capital Health Integration Specialist	
59	Complete & Provide Workload Instrument Configuration Template for Currently Existing Workload Instruments	10 days	Wed 11/08/03	Tue 11/08/16	20	Capital Health Workload Coordinator	
60	Hardware Design - Patricia will provide more detail	1 day?	Tue 11/05/24	Tue 11/05/24			
61	Weeks 2, 3, 4 - Configuration Dynamine & Installation on Capital Health Server	53 days	Wed 11/06/22	Fri 11/09/02			
62	Configure Dynamine	50 days	Wed 11/06/22	Tue 11/08/30			
63	Configure Facility Parameters	1 day	Thu 11/06/23	Thu 11/06/23	55	Emerald Implementation Consulta	
64	Configure Functional Centres	2 days	Fri 11/06/24	Mon 11/06/27	63	Emerald Implementation Consulta	

Project: Capital_Health_Project_Plan_ Date: Thu 11/08/04	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

Page 2

APPENDIX E – ADT Interface Project Plan

The ADT Interface Project Plan was developed by Emerald Health Information Systems and updated by Capital Health IT staff.

ADT interface integration project plan (original from Emerald, update by G. MacWilliam – June 20th, 2011)

		To do	Elapse time	Client Effort time	Client resource	Followup work	Marsh's mpp file
1	Preparation	ADTI specification ADTI Configuration sheet	½ week	2 hr	Registration specialist HL7 and interface specialist	Configuration of interface engine	45,46
		Meeting 1: fill in Config Sheet. Gap analysis	2-3 weeks	4 Hr	STAR DBC Interface developer HIS rep Decision support rep		
2	Configuration	Provide HL7 codes	½ week	4 hr	HL7 and interface specialist Workload system admin STAR DBC HIS Rep Decision support rep Interface developer	Set up Mapping tables	47 and 67 Following 45,46, 56, 64,65, 72, 73
		HL7 sample messages					49
		Meeting 2: discuss mapping setup					58-a
3	Preparation for integration testing	Meeting 3: Integration test plan development	½ week	3 Hr	Registration specialist Workload system admin Decision support rep		58-b
4	Conduct integration	Meeting 4: run the test plan and record results	1 ½ week	3 – 10 Hr	HL7 and interface specialist STAR DBC Decision support rep System tester	Troubleshooting raised issues	86-a Following 58-b,47, 67
5	Flood test	Validation, Look for missing mapping and new events	1 week	2 Hr	HL7 and interface specialist STAR DBC System tester Decision support rep Interface developer	Monitoring un-expected unprocessed messages	86-b Following 86-a
6	Live feed soaking	Validation with ADT system	2 weeks before go live 3 weeks before go-live. There will be a lot of validation for the application teams to do.	4 Hr	HL7 and interface specialist Workload system admin STAR DBC System tester Decision support rep Interface developer	Monitor patients in units	87-b Before 107