REPORT TITLE PAGE

Implementing a Wait List Reduction Approach to Diagnostic Imaging

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EXECUTIVE SUMMARY

Introduction

Diagnostic Imaging has become widely used to assist in clinical diagnosis, prognosis and treatment determination. Waiting for diagnostic procedures has gained national attention, as long waits for essential diagnostic services can lead to adverse outcomes for patients related to delayed diagnosis.

The purpose of this project is to analyze and implement solutions to reduce ultrasound wait times within Central Health at James Paton Memorial Regional Health Centre (JPMRHC) with a primary focus on scheduling practices and their effect on wait times.

Methods

This project will be achieved using a mixed method of qualitative and quantitative analysis. Three changes will be made to ultrasound scheduling practices: booking by urgency classification and date, implementing a reminder call system and adhering to standards of practice.

Findings

Booking practices were changed to book appointments using a validated pended list based upon urgency classification and date. This intervention resulted in an overall decrease in wait times from highs of 600 days to an average of 83 days. This intervention consisted of another significant change where each technologist was booked for 12, thirty-minute exams a day. This increased overall productivity by 34.4%.

Central Health had identified the need for an appointment reminder process, and the data presented in this project strongly supports the premise that an effective appointment reminder call process would have a significant impact on no show reduction. Given the reduction in the no-show rate experienced during the 5 week project, hypothetically this could translate into an additional 230 appointments for ultrasound services per year at Central Health.

Standardized policy approaches stood to strengthen processes and establish expectations. These policies will need to be tested over a prolonged period of time to determine the full scope of the impact on patient outcomes and no shows and cancellation rates. Immediate improvement was seen in increasing patient safety by ensuring requisitions were complete thus ensuring the right person receives the right exam.

Recommendations

Fourteen recommendations are included in this report and are divided into three categories: 4 immediate actions, 3 future actions and 7 actions for consideration.

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1.0 INTERODUCTION
1.1 Project Objectives and Problem

Diagnostic Imaging has become widely used to assist in clinical diagnosis, prognosis and treatment determination. Waiting for diagnostic procedures has gained national attention (Canadian Institute, 2007. p.1), as long waits for essential diagnostic services can lead to adverse outcomes for patients related to delayed diagnosis.

The purpose of this project is to analyze and implement solutions to reduce ultrasound wait times within Central Health at James Paton Memorial Regional Health Centre (JPMRHC) with a primary focus on scheduling practices and their effect on wait times. Specifically, the project answers the following question: will changing booking practices to reflect best available evidence reduce wait times within ultrasound services at one facility? This is determined by gathering information regarding the factors affecting wait times in ultrasound services at JPMRHC and measuring several data sets for a comparative analysis of pre and post implementation strategies. Information was collected primarily though data collection on: wait times both retrospective and prospective, no show data, cancellation data, data on illegible and incomplete requisitions, focus groups, observational studies, patient surveys and literature research. In addition, close examination of current practices compared to best available evidence was made.

Implementation strategies were developed using change management principles and PDSA (Plan Do Study Act) cycles (Cleghorn, & Headrick, 1996. p.207) to establish three objectives related to ultrasound scheduling practices:

- Objective 1: To analyze current booking practices compared to best available evidence and adjust practices.
- Objective 2: To implement an appointment reminder system using a patient centered approach and assess implementation for impact on patients who fail to attend their appointments.
- Objective 3: To develop and implement booking policies regarding standards of practice.

Each practice was evaluated for impact on wait times. These objectives were implemented at one major referral centre, JPMRHC. Each change was thoroughly researched against available evidence and outcomes will be presented to Central Health's Senior Leadership and Board of Trustees. It was anticipated that practice changes resulting from the three stated objectives would increase productivity while reducing no shows, cancellations and overall wait times.

Answers to the questions posed in this project provides a template to reduce wait times in other Central Health facilities and will be pertinent to health care facilities worldwide. A report with recommendations for spreading the successes and lessons learned from the project to other modalities within Diagnostic Imaging (DI) will be given to Central Health at the end of this project.

Reduction of wait times is a priority for Central Health in order to increase patient safety and meet strategic goals regarding access (Central Health, 2011. p. 17). Over the past several years, Central Health has experienced excessive wait times with highs of up to 600 days for essential diagnostic services in ultrasound (Department of Health, 2013. p.7). The substantial waits for diagnostic services are difficult to address with limited equipment and limited trained professionals. This is considered a patient safety concern as patients are at risk for delayed diagnosis and treatment opportunities. Patients are referred for alternative exams due to the long wait times; exams that expose them to unnecessary radiation and may not be the most effective or appropriate method for optimal diagnosis (Laupacis & Evans, 2006. p.9).

Addressing wait times requires a multifaceted approach due to their complex nature. No singular action or process can eliminate or significantly reduce wait times to meet provincial access targets (Laupacis & Evans, 2006. p.10).

1.2 Client and Rationale

Central Health is a regional health authority within Newfoundland that services a population of approximately 95,000. The organization is comprised of 2 major referral centres and 10 smaller primary care sites, 4 of which offer ultrasound services. As evidenced by Central Health's strategic plan, this organization is committed to patient safety and access to services (Central Health, 2011. p. 17). This project identifies how Central Health can provide diagnostic ultrasound (US) services in a timely and efficient manner.

Both major referral centres, Central Newfoundland Regional Health Centre and JPMRHC, provide the following DI services available at both sites:

- General X-Ray
- Ultrasound (US)
- Computed Tomography (CT)
- Mammography (MG)
- Fluoroscopy (RF)
- Bone Density (BD)
- In addition, JPMRHC offers diagnostic services in MRI, Nuclear medicine and a breast screening program.

Central Health has two dual-service Health Centres which provide x-ray and US services, Baie Verte Peninsula Health Centre and Fogo Island Health Centre. In addition, Central Health has eight single-service sites that perform x-rays

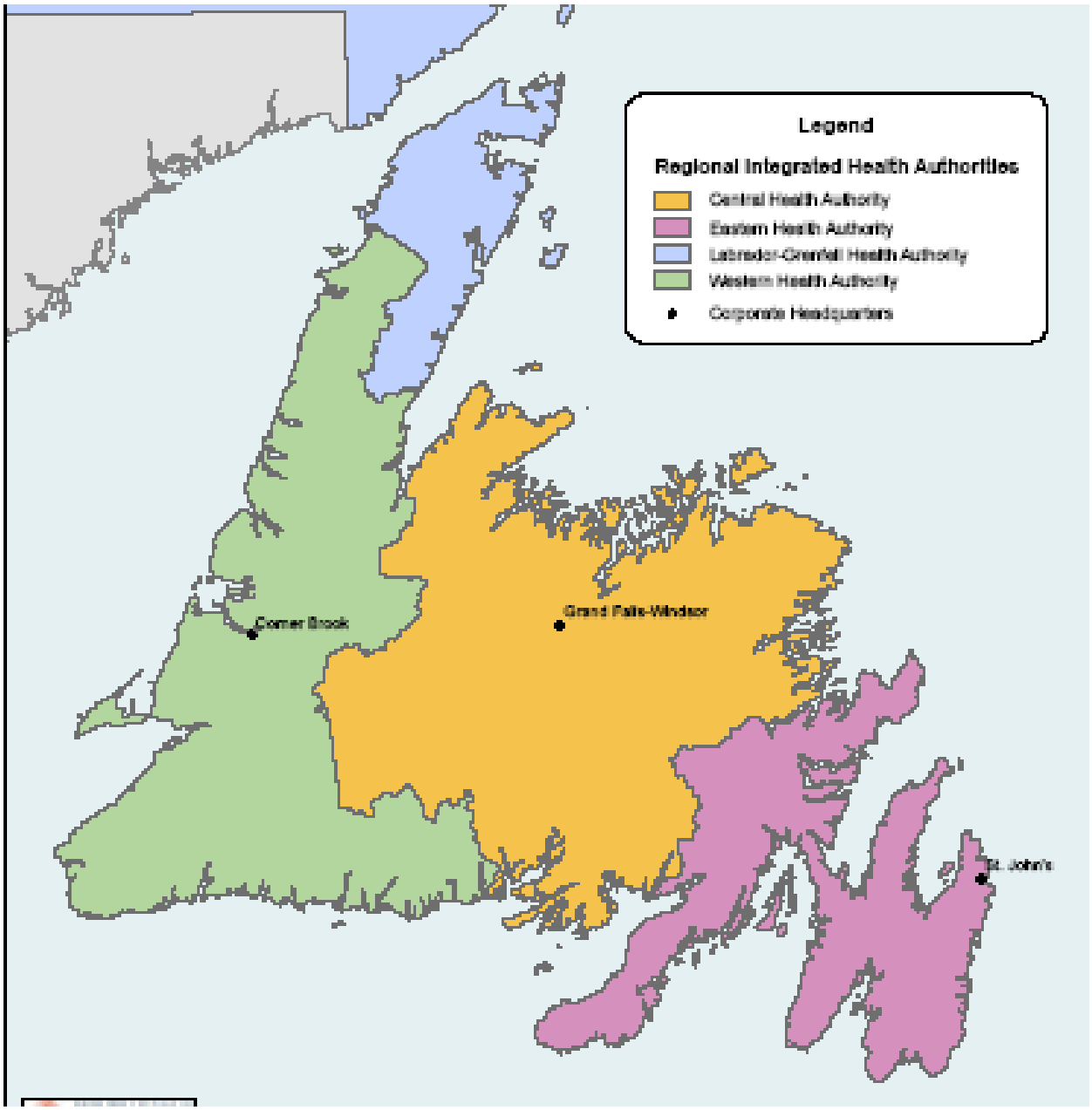

Figure 1: Regional Health Authority Map

Both CNRHC and JPMRHC are operationally similar in services offered and have high demands accompanied by high volumes of patients on the waitlist. The wait times for most DI procedures have increased over the past number of years, affecting access to care and services. Both major referral centres have 3 machines and funding for 3 ultrasound technologists. It is important to note that all diagnostic services within Newfoundland are provided by the government and wait times at the DI Department at JPMRHC have been increasing over the past number of years in all service areas, however, the area with the highest wait times at present is for US services. Currently wait times for US services within Central Health are in excess of an average of 200 days (Canadian Institute, 2011. p.12) compared to current wait times on average of 31 days for other health authorities within Newfoundland and Labrador (Department of Health, 2013. p.6).

Wait time data for Baie Verte and Fogo Island has not been analyzed. However, it is reported that the wait times are not significant and in some cases, an appointment is available same day or within a few days. These are small facilities where ultrasound services and x-rays are performed by the same staff person (Corporate Improvement Department, 2012. p.2). The volume of ultrasounds performed at these sites and potential capacity should be explored further as it may present as an additional wait time reduction strategy.

All information gathered and answers found through this project are pertinent to health care facilities worldwide. Participants in this research project have had the opportunity to share their knowledge and expertise regarding ultrasound services to assist in the development of operational policy, standardization of work practices and reduction of wait times for essential diagnostic services as well as increases in patient safety. Improvements made will increase work efficiencies and may result in increased job satisfaction.

A reduction in wait times will result in patients receiving diagnostic exams and procedures sooner. This will result in an earlier clinical diagnosis and therefore earlier treatment where applicable.

1.3 Background

In 2004, wait times gained national attention in Canada when the first ministers met and timely access to quality care was the high priority agenda item. They committed to reducing wait times in five priority areas, one of which was DI (Canadian Institute, 2007. p.1). At that time wait lists for essential diagnostic services were relatively unknown to the general public as well as health care professionals; in fact, there was no standard way of calculating wait times which created a vast diversity across the country (Canadian Institute, 2007. p.1).

Within Central Health, wait times in 2004 were unmonitored, but believed to be above the national average and certainly above the access target of 14 days for urgent exams and 30 days for non-urgent exams (Mercer, 2007. p.1). Wait times were unmonitored in DI in Newfoundland and Labrador up until 2008, when a standardized approach to collecting and reporting wait times were developed by the Department of Health and Community Services and were implemented at all regional health authorities in Newfoundland and Labrador (Department of Health, 2013. p.19). Since 2004, wait times at Central Health have steadily increased while waits are above access targets in all areas of DI services. Ultrasound waits reached highs of 600 days in 2013 (Department of Health, 2013. p.7).

Since Central Health has begun reporting its wait times for DI services to the province, this information is compared to wait times for like services and shared across all health authorities in the province. According to the 2011 Canadian Institute for Health Information report that compare health care facilities across the nation against the five

priority areas, it is noted that there remains a lack of work completed surrounding establishing a national benchmark for DI services (Canadian Institute, 2011. p.12). Analysis and trending for all priority procedures has occurred with the exception of DI (Canadian Institute, 2011. p.1) rather, each province has been asked to establish access targets for DI, as a result, little comparable information is available. In the progress report 2013, from the Health Council of Canada it states that since 2010 there has "been little improvement in the proportion of patients receiving care within the benchmarks" (Health Council of Canada, 2013. p.6). This, is another indicator that wait times must be addressed.

1.4. Argument and Major Findings

The combination of these three strategies - booking by best available evidence, implementing a reminder call system and adhering to booking policies - created a standard of practice for booking clerical staff. This standard of practice has had a positive impact from a service perspective by decreasing: no shows, clerical time spent addressing incomplete/illegible requisitions and prospective wait times.

Objective 1: Booking by best available evidence has led to changes in how exams are booked. In order to achieve this objective, an analysis of best available evidence regarding booking practices was reviewed. From there, standards of practice regarding the number of exams per technologist, types of exams and the number and type of exam slots per day were created. Based upon supporting literature from the United Kingdom's Practical Guide to Redesigning Radiology Services (Modernising, 2005. p.2) and Murray's six principles for improving access (Murray, 2011. p.1), exams were increased to 12, thirty-minute exams per technologist, per day; this was an increase of an average of 3 exams per technologist, per day. Restrictions for exam slots were removed and bookings were changed to reflect booking by date and urgency classification, versus booking by body part. This instantly created a smoothing effect on prospective wait times, whereby those for exams with short wait times were increased and those with long wait times were decreased. For example, this strategy decreased abdominal and pelvic wait times from highs of 365 and 210 days respectively, to an average of 188 days. This dramatic drop in overall wait times has had a positive impact on patient outcomes.

Objective 2: Measured retrospective and concurrent no show data and determined that reminder calls have positively impacted the number of no shows over the given time frame. Reminder call systems reduced no shows by 81.9%. This is supported by research conducted by Parikh et al (Parikh, Gupta, Wilson, Fields, Cosgrove & Kostis, 2009. p.548), Feldstein et al (Feldstein et al. 2009. p.5), and Goelen et al (Goelen, De Clercq, & Hanssens, 2010. p.315). Additionally information was collected regarding patient preferences for reminder calls for use in spread plans and future recommendations.

Objective 3: To accomplish objective three, the project measured retrospective and concurrent data of time spent addressing incomplete/illegible requisitions, the number of cancellations and the number of no shows. This change is supported by work completed

by Murray's six principles for improving access (Murray, 2011. p.3), the Practical Guide for Redesigning Radiology Services (Modernising, 2005. p.2) and Laupacis and Evans (Laupacis & Evans, 2006. p.12). This research project demonstrated that there was an 86.5% decrease in the time spent addressing incomplete/illegible requisitions and no significant change in the number of cancellations. It is recommended that standards of practice be monitored over a longer period of time to determine if there is an impact.

An incidental finding occurred as a result of this research which may have a great patient impact on receiving services sooner. When numbers of exams booked were compared to the number of exams completed there were a large number of exams unaccounted for. This potential efficiency should be explored further to identify potential patient service improvements.

1.5 Organization of Report

This report commences with an outline of the methodologies used to implement this research project as well as provincial data calculation methodologies that are imperative in understanding wait times. Here, information about data sources used as well as study limitations and delimitations are discussed. Next, overviews of available information in the literature regarding the projects objectives are analyzed. Using the information gathered from focus groups, observational studies and patient surveys, standards of practice regarding booking practices, reminder calls and policies were implemented. The findings from these interventions are outlined, followed by a detailed discussion of the results compared to the literature available on the objectives, as well as an analysis of the two policies used in this research project. Finally, the report concludes with 13 recommendations for further exploration and successful spread is outlined.

2.0 METHODOLOGY AND METHODS.

This project used several different qualitative and quantitative analysis techniques which are outlined below. In addition, a brief description of the calculation methods for wait times used by the Department of Health and Community Services is included.

2.1 Methodology

This project was achieved using a mixed method of qualitative and quantitative analysis. Three changes were made to ultrasound scheduling practices: booking best available evidence, implementing a reminder call system and adhering to standards of practice created by policies. These changes were implemented at one major referral centre, JPMRHC. Each change was thoroughly researched against available evidence and anticipated outcomes presented to Central Health's Senior Leadership and the Board of Trustees. Outcomes were evaluated to determine if the three changes made to scheduling practices reduced patient wait times for ultrasound services, were significant of the changes. A report with recommendations for spreading the success of the project to other modalities within DI will be given to Central Health.

2.2 Methods

The research project was designed to determine the three impacts of changes using several methods of data collection:

Literature review

- A literature review has been conducted to determine best available evidence for appointment bookings related to the number of exams per technologist, the type of exams to be booked and the number and type of exam slots per day. As well literature supporting or against reminder calls, and cancellations processes.

Document Review

- Current policy, process maps and practices have been reviewed, this information identifies current practices regarding the number of exams booked per technologist, type of exams booked, number and type of exam slots per day, processes for cancelling and rebooking processes for patients, patients who no show and processes for addressing incomplete/illegible requisitions. Additionally, Central Health information was collected on wait times both retrospectively and prospectively.

Focus Group

- Clerical staff, technologists and radiologists was invited to take part in a focus group discussion to identify the scope of the problem, potential areas for improvement or solutions and additional concerns with current processes.

Observational Studies

- Clerical staff, technologists and radiologists underwent 4 pre and 4 post observations to determine the impact of the changes.

Surveys

- Patient surveys were conducted to determine preferred method and time for appointment reminder calls.

Data Analysis

- Retrospective and concurrent data have been collected from Meditech's Community Wide Scheduling Module to determine impact of changes made to no shows, cancellations, empty appointment slots, number of exams booked per technologist, types of exams booked and the number of exams performed daily.
- Provincial wait time data submissions were tracked and trended throughout the duration of the project in addition to retrospective analysis.

2.3 Data Sources

Throughout this project, data has been gathered from JPMRHC Meditech system on wait times, no shows, cancelled appointments, empty appointment slots, number of exams booked per technologist, types of exams booked and number of exams performed daily for a period of 36 days. This information has been collected through Central Health's electronic documentation system. Information obtained from patient surveys, radiologists, technologists and clerical focus groups, support the project and provided insight into areas for improvement as well as potential actions to achieve improvement.

Two important outcome indicators for measuring success of the project are prospective and retrospective wait times. Below are definitions of each:

Prospective wait times

Provincially, Newfoundland and Labrador's regional health authorities collect and submit wait times for diagnostic services monthly to the Department of Health and Community Services. These wait times use a methodology knows as, third next available appointment. This concept calculates the "length of time in calendar days between the last working day of the month and the next day where there are 3 consecutive appointments available" (Department of Health, 2013. p.4). This is done by adding the number of patients who are still awaiting a particular service and theoretically scheduling them into an appointment slot. When all patients awaiting a service are theoretically booked, the number of calendar days including all week days, weekends, and statutory holidays up to the working day where there are 3 available appointment slots, is considered the third next available appointment; this is the prospective wait time for the service. It should be noted that this is a theoretical wait time and does not include or allow for factors such as no shows, empty slots, unfilled employee vacancies, vacation or sick leave. Nor does it consider the demands on the services related to repeat exams due to quality, follow up exams, emergency, in patient exams or obstetrical exams, as they are time sensitive. This wait time calculates urgent and non-urgent exams only. While there are many limitations to this methodology in regard to providing an accurate estimation of the time a patient would have to wait for a service it does provide a provincial and organizational standard and can be used for interprovincial comparisons and organizational trending. Further to this, as non-value added activities are removed from

the system and efficiencies are found, both the retrospective and prospective wait times begin to reflect one another.

Retrospective wait times

Another measure of wait times that are collected monthly by the regional health authorities and submitted to the Department of Health and Community Services is known as the 90th percentile. This is calculated by arranging the days patients waited for their exam from smallest to largest. In the example, patient A waited 90 days, patient B waited 110 days, etc.

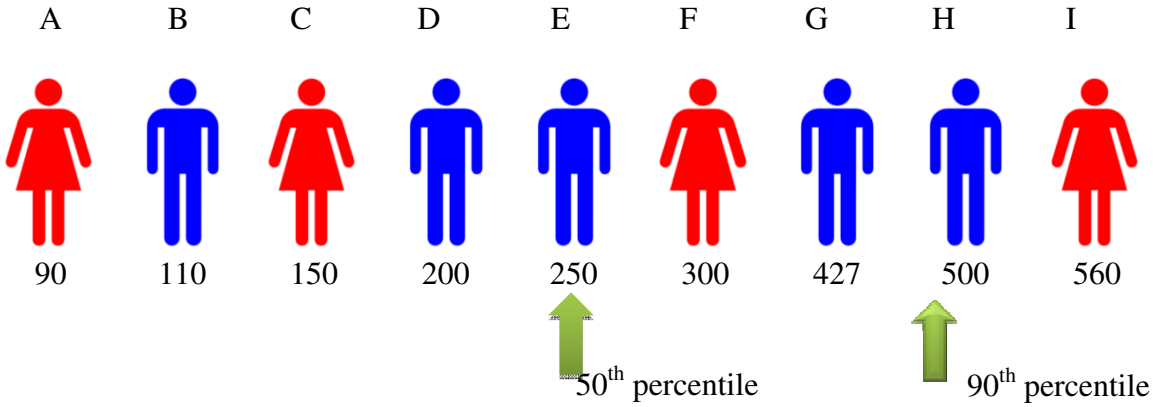

Figure 2: 50th and 90th Percentile

The 50th percentile wait time or median wait time is the length of time that 50% of the people on the list waited for their exam. In the above example, 50% of the patients were seen in 250 days or 50% of the patients waited greater than 250 days (Department of Health, 2013. p.12).

The 90th percentile wait time, indicates the length of time in which the majority of people (90%) received their service. In the above example, 90% of patients were attended to in 500 days or less and 10% of patients waited longer than 500 days. The majority of the patients received their exam within 500 days (Department of Health, 2013. p.12).

This data is a more accurate reflection of how long patients actually wait from the time the referral was received, until the patient received the service. Average wait times can be affected by just a few outliers that are waiting a long time where median wait times are not affected by outliers therefore, the median wait time is a more accurate measure. The gap between the prospective and retrospective data is a direct reflection of the amount of inefficiencies in the systems.

Changes to services are demonstrated in prospective wait time immediately as opposed to retrospective wait time where changes to services take much longer to be demonstrated in the data.

2.4 Limitations and Delimitations

The limitations of this project preclude recommending major purchases to reduce wait times such as automated reminder calls, ultrasound machines and hiring additional human resources, due to financial restraint.

As well, this project will not address standard times allotted for each procedure as this is being addressed through a provincial standardization committee, nor will it address ordering/performing unnecessary exams, physician education regarding best practices or clinical indication guidelines as the time constraints do not allow for this analysis. This project did not examine deferring exams to other facilities, but may be a future consideration of the organization.

Additionally, this research was conducted in a rural facility and findings may not be generalizable to the demand or capacity of larger facilities.

During the data analysis an additional limitation was discovered. The data analysis identified an unexplainable discrepancy between booking data and completed data. 6058 exams were booked and 5922 exams were completed, leaving a difference of 136. Some of the differnce could be accounted for through patients who refuse to proceed with the exam upon arrival, others have not followed proper instructions and can not be completed upon arrival and, as demonstrated through the validation process, others will have had the exam completed at another facility or at JPMRHC at an earlier time. This discrepancy identifies the need for further investigation and clearer documentation processes.

One of the limitations of this study was time, as immediate actions on these presenting problems was expected by Central Health's, Senior Leadership team. There was not sufficient time to gather comparable data from CNRHC to act as a control group; however, the lessons learned from this project will be applied to CNRHC.

Delimitations of the project are as follows: current practices and processes were captured through review of current policy, focus groups with clerical staff, radiologists and ultrasound technologists as well as thorough retrospective, concurrent and prospective data collection, this occurred over a period of five weeks.

Changes were made to clerical processes in one DI service at one referral centre in order to evaluate impact on wait times. This has been discussed and agreed upon with the VP lead for Diagnostic Imaging as well as Central Health's, and the University of Victoria's Ethics Committee. Changes were implemented over a five week period and evaluated to determine impact on wait times.

3.0 LITERATURE REVIEW

Information on wait times in ultrasound services is difficult to obtain as most healthcare wait times focus around the emergency department, operating rooms or endoscopy services. While not specific to DI or Ultrasound services, the concepts identified can be used to address wait times specific to ultrasound and other diagnostic modalities.

Literature is available on wait times from the Canadian Institute for Health Information, the Health Council of Canada, Provincial Wait Time Department, Canadian Association of Radiologists, Canadian Agency on Drugs and Technologies in Health and the Institute for Healthcare Improvement. All these organizations have conducted research specifically on wait times and wait time initiatives, however, there is little research tailored to DI and even less that is specific to ultrasound.

Research available on wait times addresses techniques that can be employed in any wait time area, some of which will be incorporated into this project, concepts such as smoothing or booking by urgency classification, wait list validation processes, understanding supply and demand, queuing theories and managing constraints. These concepts, while not specifically targeted at ultrasound services can be applied in this area.

Wait Time History

In 2004, after wait times gained national attention in Canada a commitment was made to reducing wait times in five priority areas, one of which was DI (Canadian Institute, 2007. p.1). At that time wait lists for essential diagnostic services were relatively unknown to the general public as well as health care professionals; in fact, there was no standard way of calculating wait times which created a vast diversity across the country (Canadian Institute, 2007. p.1). In the absence of a national benchmark for DI, each province was tasked to develop provincial access targets (Fitzpatrick, 2009. p.1). In 2007, this was established for Newfoundland and Labrador (Mercer, 2007. p.1).

Within Central Health, wait times in 2004 were unmonitored, but believed to be above the national average and certainly above the access target of 14 days for urgent exams and 30 days for non-urgent exams (Mercer, 2007. p.1). Wait times were unmonitored in DI in Newfoundland and Labrador up until 2008, when a standardized approach to collecting and reporting wait times were developed by the Department of Health and Community Services and were implemented at all regional health authorities in Newfoundland and Labrador (Department of Health, 2013. p.19). Since 2004, wait times at Central Health have steadily increased. While waits are above access targets in all areas of DI services, ultrasound waits reached highs of 600 days (Department of Health, 2013. p.7). Some of the factors that have had significant influence on wait times are changes in obstetrical guidelines, increased demands for services, position vacancies, scheduling processes, accommodated workers and a lack of standardized work processes (Diagnostic Imaging, 2011. p. 4).

Since Central Health has begun reporting its wait times for DI services to the province, this information is compared to wait times for like services and shared across all health authorities in the province. According to the 2011 Canadian Institute for Health Information report that compared health care facilities across the nation in the five priority areas, it is noted that there remains a lack of work completed surrounding establishing a national benchmark for DI services (Canadian Institute, 2011. p.12). Analysis and trending for all priority procedures has occurred with the exception of DI (Canadian Institute, 2011. p.1) rather, each province has been asked to establish access targets for DI, as a result, little comparable information is available. In the progress report 2013, from the Health Council of Canada it states that since 2010 there has "been little improvement in the proportion of patients receiving care within the benchmarks" (Health Council of Canada, 2013. p.6). Specifically Newfoundland and Labrador are noted as not having enough public access to wait time information with no website dedicated to wait time reporting (Fitzpatrick, 2009. p.1).

Wait time factors

In order to understand wait times there must be knowledge of the factors that affect wait times. Diagnostic Imaging is one of the fastest growing fields in healthcare (Otero, Ondategui-Parra, Nathanson, Erturk, & Ros, 2006. p.351). Laupacis and Evans assert that "Canadians are increasingly concerned about the length of time they wait for diagnostic imaging" (Laupacis & Evans, 2008. p.8). Long wait times for DI services is not unique to Newfoundland and Labrador, rather it is a nationwide problem. This poses the question: why wait times are so long? There are multiple factors that affect DI wait times across Canada. Primarily DI services are used for many reasons, partly because symptoms are often nonspecific or vague (Laupacis & Evans, 2006. p.10), diagnostic services are used to make diagnosis, to determine prognosis, to monitor progress, to determine the extent of a disease and to reassure patients (Laupacis & Evans, 2006. p.9). In fact, Otero et al. assert that patients demand DI services to rule out disease. (Otero et al. 2006. p.353).

Laupacis and Evans state that clinicians today, rely less upon their clinical skills to make a diagnosis and more upon diagnostic tests (Laupacis & Evans, 2006. p.11). In addition, DI exams are largely non-invasive and have few side effects. However, increased number of exams performed, particularly on a low risk population, tends to increase the number of false positives which lead to additional diagnostic procedures (Laupacis & Evans, 2006. p.11) such as: invasive procedures, surgical intervention and hospital stays (Otero et al, 2006. p.354). This additional demand on the services increases wait times.

Another compounding factor for wait times in US services are high wait times in other modalities: systems that would be optimally investigated by CT may be sent for US exams if CT waits are high, other time's clinicians are unaware of the optimal test to view a particular type of pathology (Laupacis & Evans, 2006. p.12).

Laupacis and Evans discuss decreased communications between radiologists and clinicians as a reason that impacts wait times, where radiologists are attempting to

determine optimal exam options with little clinical history (Laupacis & Evans, 2006. p.12).

The Canadian Association of Radiologists recommend that provinces develop strategies that are aimed at addressing the wait times for speciality care (Fraser, 2013. p.1), such as US services. In addition the Canadian Association of Radiologists encourages governments to work with healthcare organizations to develop standardized, evidence based, pan-Canadian benchmarks for all DI services (Fraser, 2013. p.1).

A 2009 report by the wait time alliance explains that DI benchmarks have not been established; rather access targets have been created and vary by region (Fitzpatrick, 2009. p.1).

It is widely recognized that demand for services is impacted by the aging population and improved technology that can: see more, see clearer, see faster than ever before (Otero et al. 2006. p.351), with all these factors "radiology departments need to be actively involved in controlling their utilization of their own services" (Otero et al. 2006. p.354).

Booking practices

Literature specific to the trialed booking changes are supported by utilization management literature that refers to obtaining best patient outcomes through the use of proper health resources (Otero et al, 2006. p.352). In addition, lean management literature supports creating standards of work to improve efficiency (Holden, 2011. p.266). This type of management is reflective of booking appointments using a systematic approach.

In 2005 a Practical Guide to Redesigning Radiology Services was released in the United Kingdom (UK) and out lined points for improvement followed by 13 case study examples of improvements made to ultrasound services. This information was brief, but did identify several success factors that are examined in this research project such as: validating the pended list, using a call reminder system, employing simple scheduling rules, ensuring quality patient information on referrals, avoiding carved out exam slots, and reducing the wait time by using chronological date (Modernising, 2005. p.2).

Murray 2011, discusses six principles for improving access. First there must be an understanding of supply and demand. Murray asserts that booking services by urgent and non-urgent is a dated approach to health care services, rather the aim should be to do today's work today (Murray, 2011. p.1). Murray identifies that booking by urgency classification produces an even workflow but ultimately results in delayed information (Murray, 2011. p.1). While this is not the approach this research is taking, mainly due to the large numbers of people awaiting services, it is a worthy goal and would be a marked service improvement.

Murray goes on to explore the improvement principle of recalibrating the system, where the focus shifts to getting rid of the backlog of exams awaiting services (Murray, 2011. p.2). This approach can be accomplished by ensuring booking practices are standardized,

technologists are booked to capacity and every effort is made to ensure patients attend their appointments or are removed from the list if no longer required or chooses not to proceed with the exam. Removing patients from the list is accomplished though administrative and clinical validation processes.

Murray's discussion regarding queuing theory fits with the research this project is implementing through booking practices. Murray explains that wait times are created through variation: this is created when exam slots are left open because a particular type of exam could not be found to fill the slot. This is the existing practice at Central Health. Booking clerks are able to fill appointment slots with specific exam types. Murray asserts that removing this restriction is "one of the more dramatic ways to reduce demand" (Murray, 2011. p.2).

The last principle discussed is managing constraints or removing waste in the system, ensuring that technologists are free to do the work they are specialized in and that all other work is performed by others (Murray, 2011. p.3), this principle addresses removing waste and maximizing value added activities.

Reminder calls

The literature review provided nothing specific to US. However, the concept of reminder calls and the results of studies can be generally applied. Academic literature generally supports the use of reminder calls for appointments and indicates that this technique can decrease no show rates (Parikh, Gupta, Wilson, Fields, Cosgrove & Kostis, 2009. p.548). Cha et al. conducted a study that compared mail out services to mail notification plus telephone reminders. This study found that the reminder call group had a significantly higher attendance rate ($p=0.038$) (Cha, Lee, Ro Joo, Shin, & Park, 2011. p.3139). Previous attendance rates were 72% compared to 90% for the reminder call group (Cha et al. 2011. p.3139). One noted limitation of this study is the size of the population, only 40 patients were included in the reminder call group and 50 in the control or mail only group (Cha et al. 2011. p.3139).

Another study by Goelen et al. concluded that reminder calls increased attendance rates by 4% compared to the control group (Goelen, De Clercq, & Hanssens, 2010. p.315). This study used a larger population size of 3880 patients. Feldstein et al. concluded that there were benefits for using reminder calls, stating that clients were 1.51 times more likely to attend after receiving a reminder call (Feldstein, Perrin, Rosales, Schneider, Keels, Schoap & Glasgow, 2009. p.6), and attendance increased from 63.4% to 80% (Feldstein et al. 2009. p.5).

While yet another reminder call study conducted by Goel et al. demonstrated program enrolment increased from 10 to 24% (Goel, George & Burack, 2008. p.515). This study used a sufficient sized population of $n=610$ in the control group and $n=599$ in the intervention group, additionally this study was tested over time (Goel, George & Burack, 2008. p.515). Murray discusses contingency plans as an improvement principle: contingency plans are used to have supports in place to address variation versus reacting to variation (Murray, 2011. p.2). Reminder calls is one method of advance preparation to

reduce no shows. This effort decreases the daily variation in service utilization. Additionally, utilization management concepts help to reduce inappropriate variation and inefficiencies in practice (Otero et al. 2006. p.357).

Policy

Policies help to solidify expectations and practice. As Bridgman explains, policies and the building of policies are essential for effective results and that good content is essential in producing the desired outcome. While good processes are important, they sometimes produce bad results. However, there is no substitute for polices with good content (Birdgman, 2003. p.101). Murray identifies influencing demand as another principle for improved access where clarification is made regarding which work is performed by each service (Murray, 2011. p.3). This type of approach matches closely with clinical ordering criteria that details which modality: CT, US, or MRI would be best suited to view which type of pathology. Additionally, ordering criteria could be exam specific. For example, a kidney exam should be ordered to view a kidney related issues, versus ordering a complete abdominal exam. Ordering criteria is a limitation of this study, however, it is recommended that this area be explored further for potential impact on wait time reduction.

Reducing a wait time is no easy tasking "Because of the complexities of healthcare and resource constraints, there is no simple solution that will ensure Canadians rapid access to the best imaging technologies while avoiding unnecessary testing" (Laupacis & Evans, 2006. p.12). However, each test of improvement streamlines the process and reduces waste. Standard approaches to cancelling appointments, rescheduling no shows and booking appointments using requisitions with all required information reduces wasted exam slots. This is supported by the successful improvements made to US services in the UK where quality patient information was captured on all referrals prior to booking appointments to ensure the correct exam was completed to capture the correct information (Modernising, 2005. p.2)

4.0 CONCEPTUAL FRAMEWORK

This project approaches the research question using a deductive theory testing approach.

In order to answer the research question three changes were made to booking practices and evaluated based upon indicators for each change, as well as, overall impact to patient wait times prospectively. Wait times are currently monitored and reported monthly to the province of Newfoundland and Labrador. This was tracked and trended throughout the duration of the project to answer the research question: will changing booking practices to reflect best available evidence reduce wait times with in US services?

To begin the project, data was gathered from multiple sources: literature, Meditech system, current policies and processes. To further the baseline information, focus groups were conducted with the clerical staff, technologists and radiologists. In addition, observational studies were conducted before and after the changes to determine impact. Furthermore, a patient survey was conducted to identify patient preference for receiving notification and reminders of their appointments, these three activities helped to build the foundation of understanding for this project.

The first objective: booking by urgency classification and date, was a direct change to booking practices. Previously, appointments were booked according to body part, for example, an US of the breast could only be booked in a select number of slots every day, as a result, slots are left unfilled closer to the day of the appointment in case a requisition for a breast US should arrive in the department. This results in slots being unfilled and uneven wait times dependent upon the area to be examined. To monitor change, empty or unfilled appointments were tracked and trended from the Central Health Meditech System both retrospectively and concurrently to identify if slots were filled as a result of the changes resulting in fewer missed opportunities for patient appointments, as well this change was anticipated to have a smoothing effect on the overall wait times where all patients have the same wait time regardless of the area of the body to be examined, creating a more equitable service for all patients. To accomplish this, a pended list was used to book appointments, as opposed to folders of requisitions. This list was first validated for accuracy, validating the list was expected to remove small numbers of patients from the list. Next the scheduling module was modified to reflect 12 exam slots per technologist, per day with no restrictions to exam types, in doing this the emergency slots were decreased from 6 to 2. This change was expected to increase overall productivity.

The second objective: implementing appointment reminder calls, was trialed to determine impact on the number of patients who are considered to be a no show for their appointment. It is anticipated that the current average number of no shows will decrease with patient reminder calls a few days prior to their appointment. Before and after data collected from Meditech was compared to determine if an actual change had occurred.

The third objective: establishing standards of work was aimed at creating consistent practices for processing patient requisitions that are incomplete, who cancel appointments or who are a no show. Previously, observation has indicated that a lot of clerical time is spent on rebooking appointments for patients who cancel or are a no show. Likewise, clerical staff use a lot of time attempting to obtain missing information on exam requisitions. This data is currently tracked in the Community Wide Scheduling Module and was extrapolated to determine if there is support to establish a standard process surrounding these issues. It was expected that implementing this policy would decrease cancellations and decrease the time spent processing incomplete requisitions.

At the conclusion of this project it was anticipated that prospective and retrospective wait times will decrease as a result of the changes made and that changing booking practices to reflect best available evidence can reduce wait times with in US services.

5.0 FINDINGS

Three changes were made to booking practices and evaluated for impact to specific indicators as well as prospective wait times to answer the question: will changing booking practices to reflect best available evidence reduce wait times with in US services? The findings are discussed below.

5.1 Data Gathering

Focus Group
Staff focus groups were conducted by peer groups, radiologists, technologists and clerical staff, to reduce perceived pressures to participate and to increase free flow of information. These focus groups were conducted by a neutral third party (Appendix A).

Some of the factors impacting wait times and potential solutions are outlined below in Table 1.However, all focus groups agreed that long wait times lead to adverse patient outcomes.

Table 1: Identified Factors and Solutions

Factors affecting wait times	Potential solutions
Duplicate requisitions	Implement a clerical checking process
All requisitions are marked as urgent	Reassess injured workers
Multiple location requisitions (sent to more than one facility)	Book more exams per day (identified by the radiologist group only)
Vacant positions	Create physician ordering guidelines
Accommodated workers	
No shows (Identified by the radiologists and clerical group only)	
Very accommodating for rebooking of appointments (identified by the clerical group only)	

This information provided support for the work chosen for this project as well as recommendations for future advancement in wait time reduction. Aggregated results of the focus group questions are attached in Appendix B.

Observation Studies
Observational studies were conducted with 3 groups: clerical staff, technologists and radiologists. These groups were observed by a neutral third party for 6 hours before and 6 hours after the interventions. Observational studies conducted with the clerical group provided raw data for time spent addressing no shows, cancellations and incomplete and illegible requisitions, as well as, areas for reducing non-value added activities; numerous positive differences were demonstrated. Clerical observations showed high numbers of interruptions before changes and a 70.8% decrease in interruptions after the changes were implemented. Additionally, a decrease in the number of phone calls regarding

appointment times of 85.3% was seen. A small decrease in the number of interactions with technologists was noted accompanied with an overall increase in the number of interactions with radiologists.

The number of appointments booked over this time period increased by 65%. However, time spent filling an appointment slot was not affected by the changes. Time spent processing incomplete requisitions decreased by 86.5%. Technologists observations showed overall decreases in the number of interruptions by 69.2%, this was particularly evident in the number of phone calls received regarding appointment instructions which decreased by 100%. An unanticipated outcome of reminder calls was a 60% decrease in the number of patients who attended appointments who have already had the exam completed. Furthermore, an increase was demonstrated in the number of exams performed during the observed periods by 57.1%. Radiologist's observations showed a decrease in observation interruptions by 16.7%.

There appears to be a relationship between the number of interruptions and the amount of value added activities performed for each group, Pre and Post observational data is attached in Appendix C.

Patient Surveys

The survey was completed with n=194 patients and concluded that 80% of patients prefer to be notified by mail and 91% preferred to be notified 3 weeks in advance, additionally 86% stated they would benefit from a reminder call; this information is very useful for future reminder call implantation plans. A full display of questions and answers is available in Appendix E and F.

5.2 Booking Practices

Booking practices at JPMRHC have previously consisted of booking exams in restricted slots according to the body part being examined. Retrospective data indicates that this practice led to considerable variation in wait times.

Validation

To commence booking by urgency classification and date the pended list of exams had to be validated for accuracy. All requisitions were compared to the pended list. There were a total of 2532 exams on the pended list. Fifty one people on the pended list had no corresponding requisition. These names were investigated further in the provincial wide imaging system, PACs, to determine if their exams were completed. Of the 51 with no requisition, 39 already had the exam completed. The remaining 12 were followed up with the referring physician to determine if the exam was still required. Four were determined by a physician that the exam was no longer required and the 8 remaining patients received a new requisition and were placed back into the pended list.

The pended list contained 700 exam request older than 2012, these were validated to determine necessity. These exams were compared with the Meditech system and to the PACs: 3 were deceased, 385 had already had the exam completed or the problem

attended to and 42 had moved. When the administrative validation was completed, 430 patients were removed from the list, leaving 270 patients to receive services.

Exam Slots

Exam slots in the Meditech scheduling module were modified to reflect exam urgency classification and date versus body part. This resulted in less restriction for booking clerks and overall reduction in the number of unfilled appointment slots from an average of 25 exams per week to 9. See Figure 3 and Table 2 for detailed information. This is an average decrease in unfilled appointment slots of 64%.

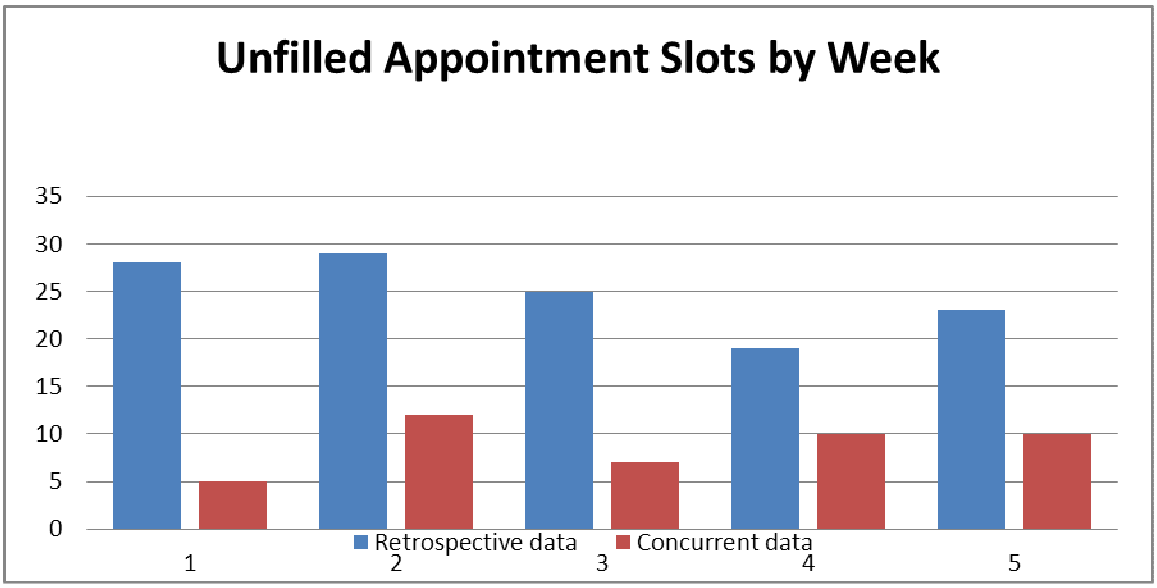

Figure 3: Unfilled Appointment Slots by Week

Table 2: Unfilled Appointment Slots by Week

Retrospective data	28	29	25	19	23
Concurrent data	5	12	7	10	10

Historically, the number of exams performed on average per technologist was 9 exams per day. With referrals being received at a much higher rate the wait times for services continued to increase with each passing day (Figures 4, 5 and Tables 3, 4). With maximum booking slots of 13 thirty-minute exams per technologist, per day, the maximum number of exam slots per week is 130 exams using the current complement of 2 technologists.

The 12 months of retrospective data was analyzed (January through to December 2013) and it was discovered that there were a total of 7273 referrals received (Figure 6) during that time period and 4752 exams completed (Appendix K). This is a difference of 2521 more referrals received than exams completed. This weekly average of 48.3 more referrals received than exams completed needed to be addressed. Booking practices were focused upon booking 12, thirty-minute exams per technologist per day. This increased the average number of exams completed from 9 to 12.1 per day (Figure 7 and Table 5),

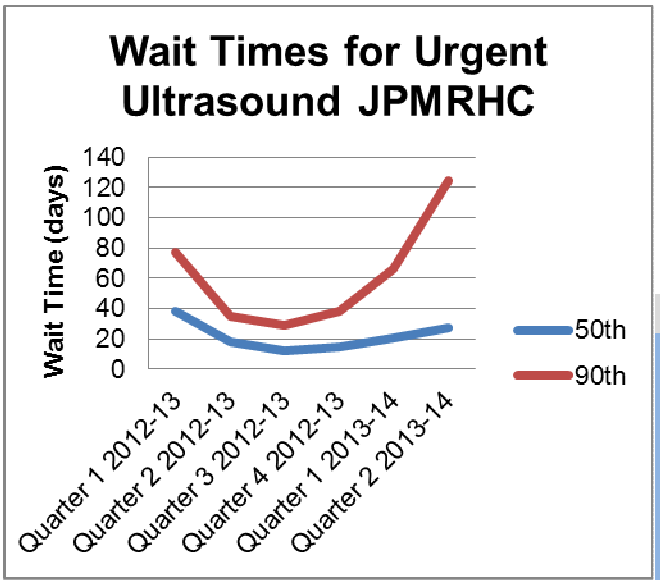

Figure 4: Urgent Retrospective Wait Times

	50th	90th
Quarter 1 2012-13	38	77
Quarter 2 2012-13	18	35
Quarter 3 2012-13	12	29
Quarter 4 2012-13	15	38
Quarter 1 2013-14	21	66
Quarter 2 2013-14	27	125

Table 3: Urgent Retrospective Wait Times

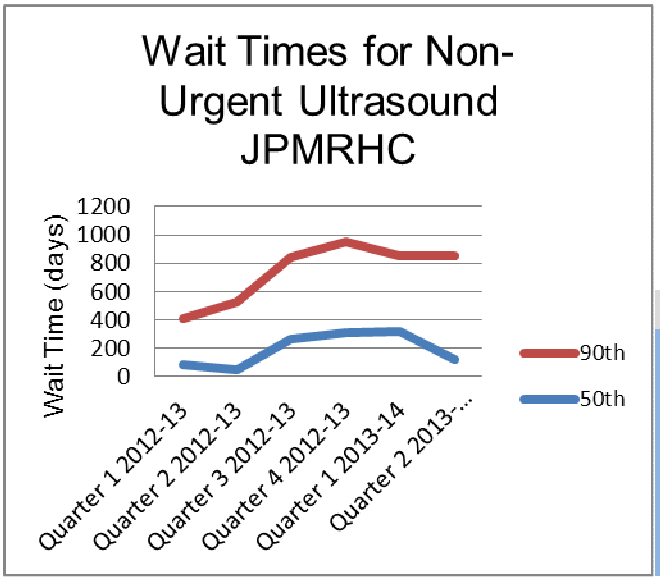

Figure 5: Non-urgent Retrospective Wait Times

	50th	90th
Quarter 1 2012-13	82	330
Quarter 2 2012-13	48	483
Quarter 3 2012-13	266	576
Quarter 4 2012-13	308	647
Quarter 1 2013-14	322	533
Quarter 2 2013-14	125	728

Table 4: Non-urgent

with open emergency slots reduced from 6 to 2, which is reflective of the current demand (Figure 8). This increased productivity by 34.4%.

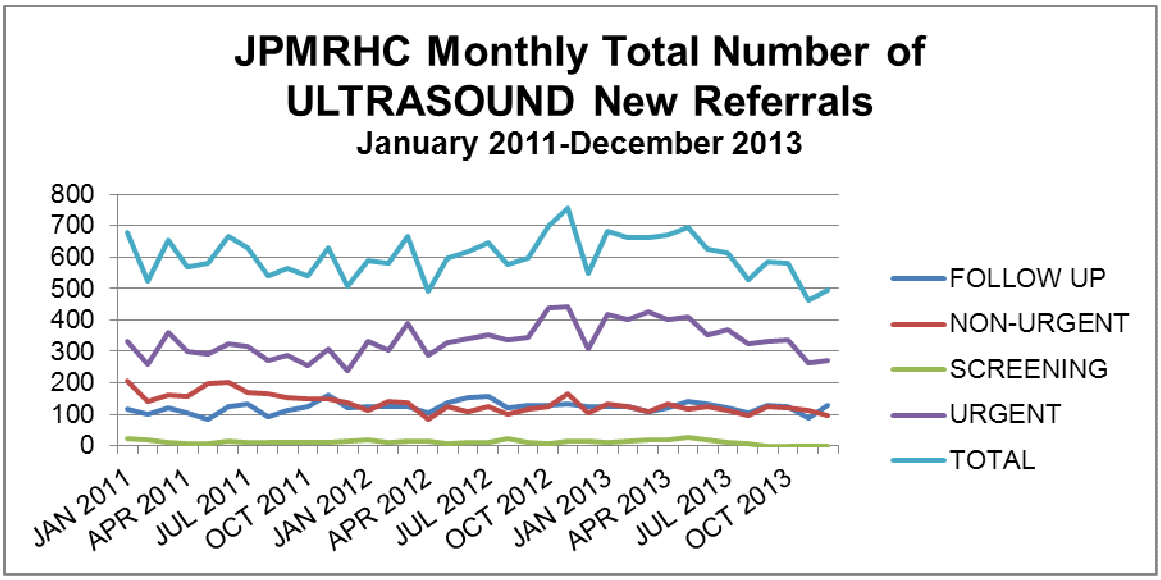

Figure 6: Monthly New Referrals

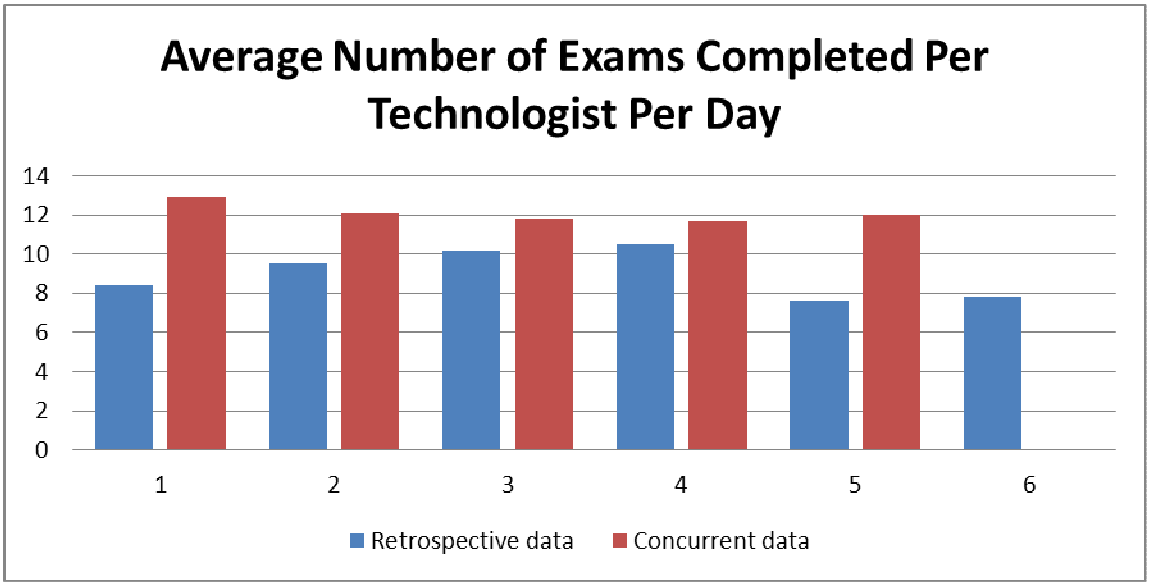

Figure 7: Exams Completed Per Technologist, Per Day

Table 5: Weekly Average of Exams Completed Per Technologist Per day

Retrospective data	8.4	9.5	10.2	10.5	7.6	7.8
Concurrent data	12.9	12.1	11.8	11.7	12	

Concurrent data, data collected simultaneously throughout the duration of the test, was collected from Jan 20th through to Feb 21st. This 5 week period showed a sustained increase in the number of exams performed per week.

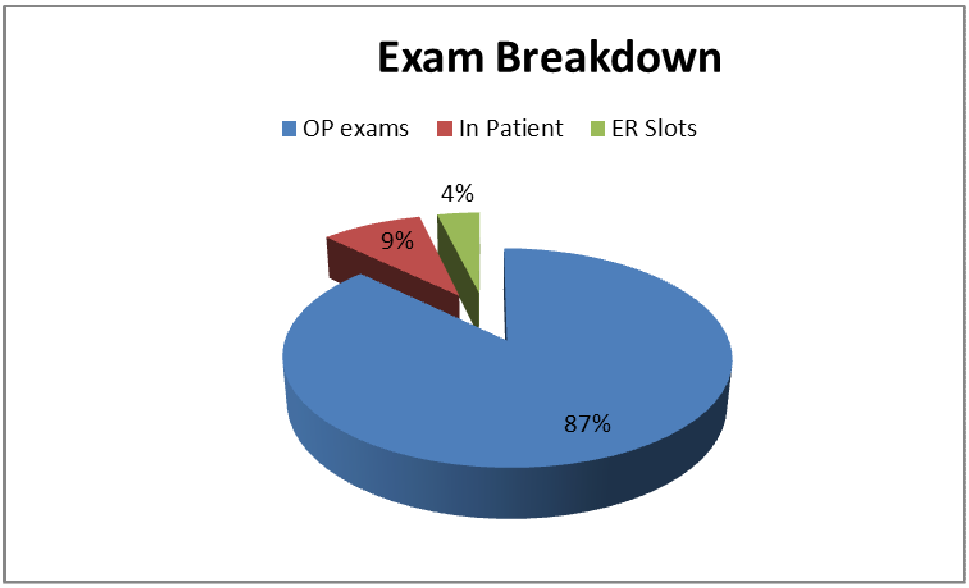

Figure 8: Exam Breakdown

This improvement change had a smoothing effect on the wait time, where prior to the change, each body part had a different wait time; now all wait times are equal and results in a more equitable service. This change is noted by an asterisk in Figure 9 and Table 6 below. As anticipated, both urgent and non-urgent breast and carotid services experienced a slight increase in prospective wait times, while pelvis and abdominal wait times took a sharp decrease in wait times, for detailed information see Table 6.

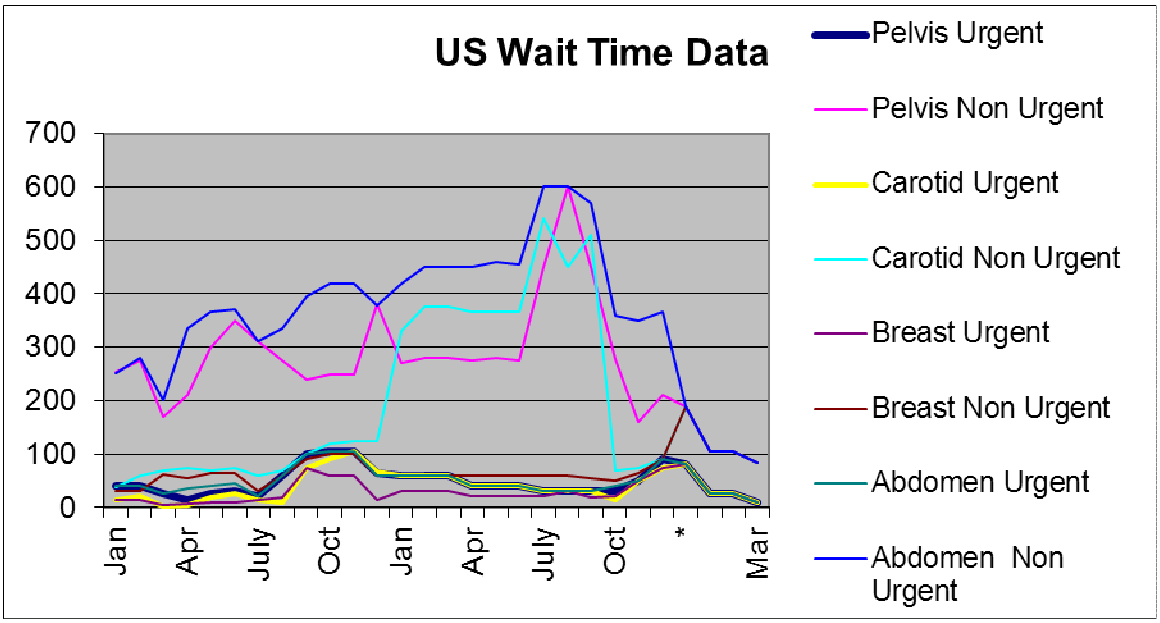

Figure 9: Prospective Wait Times

Table 6: Prospective Wait Time Data

Exams	2012											2013		
Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Pelvis Urgent	40	40	25	15	25	30	21	60	100	105	105	65	60	60
Pelvis Non Urgent	254	275	170	210	300	350	310	275	240	250	250	380	270	280
Carotid Urgent	14	21	2	5	20	25	14	10	75	90	105	68	60	60
Carotid Non Urgent	38	60	70	74	70	75	60	70	100	120	125	125	330	375
Breast Urgent	14	14	4	6	10	10	14	20	75	60	60	14	30	30
Breast Non Urgent	30	30	63	55	65	65	30	60	90	100	100	60	60	60
Abdomen Urgent	40	40	25	36	40	45	21	60	100	105	105	60	60	60
Abdomen Non Urgent	252	280	200	335	365	370	310	335	395	420	420	378	420	450

	2013											2014		
Month	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	*	Jan	Feb	Mar
Pelvis Urgent	60	40	40	40	30	30	30	30	50	90	82	26	27	10
Pelvis Non Urgent	280	275	280	275	450	600	450	277	160	210	188	105	104	83
Carotid Urgent	60	40	40	40	30	30	30	14	50	75	82	26	27	10
Carotid Non Urgent	375	365	365	365	540	450	510	70	75	90	188	105	104	83
Breast Urgent	30	21	21	21	21	30	20	21	50	75	82	26	27	10
Breast Non Urgent	60	60	60	60	60	60	56	50	65	90	188	105	104	83
Abdomen Urgent	60	40	40	40	30	30	30	40	50	90	82	26	27	10
Abdomen Non Urgent	450	450	460	455	600	600	570	360	350	365	188	105	104	83

Note. * indicates the period in time when booking by urgency classification and date occurred.

To address potential variation by month, two years of prospective data, 2012 and 2013, are compared to our test months in 2014. This data shows that there is an overall decrease in prospective wait times as well as equitable wait times for all services based upon urgency classification and date (Figure 10).

If urgent and non-urgent data for 2012 and 2013 were averaged and compared to the 2014 data the following is identified. In 2012, the wait time for urgent exams is comparable to the 2014 data, from 23.3 days in 2012 to 21 days in 2014. However, non-urgent exams in 2012 had higher waits, with an average of 143.5 days compared to 97.3 days in 2014. All 2013 data is significantly higher with urgent averages of 52.5 days and non-urgent averages of 284.2 days (Table 7).

Incidental Finding

During this analysis of data an unexplainable discrepancy between exams booking and exams completed was identified. The data extrapolated from the Meditech system demonstrated the following information:

- 7234 exams booked last year.
- Of the 7234 booked exams, 540 were cancellations and 636 were no shows. This leaves a total of 6058 booked exams.
- In 2013, for six months, JPMRHC had three technologists, to remove the variable of the third technologist, the exams completed by the third technologist were

removed from the data. The third technologist completed 1170 exams in the first 6 months of 2013.

- The data reveals that 4752 exams were completed by 2 technologists for a total of 5922 exams completed in 2013, leaving a difference of 136. Some of this difference could be accounted for through patients who refuse to proceed with the exam upon arrival, others have not followed proper instructions and can not be completed upon arrival and, as demonstrated through the validation process, others will have had the exam completed at another facility or at JPMRHC at an earlier time.

This discrepancie is not clearly documented and is noted as limitation of this study.

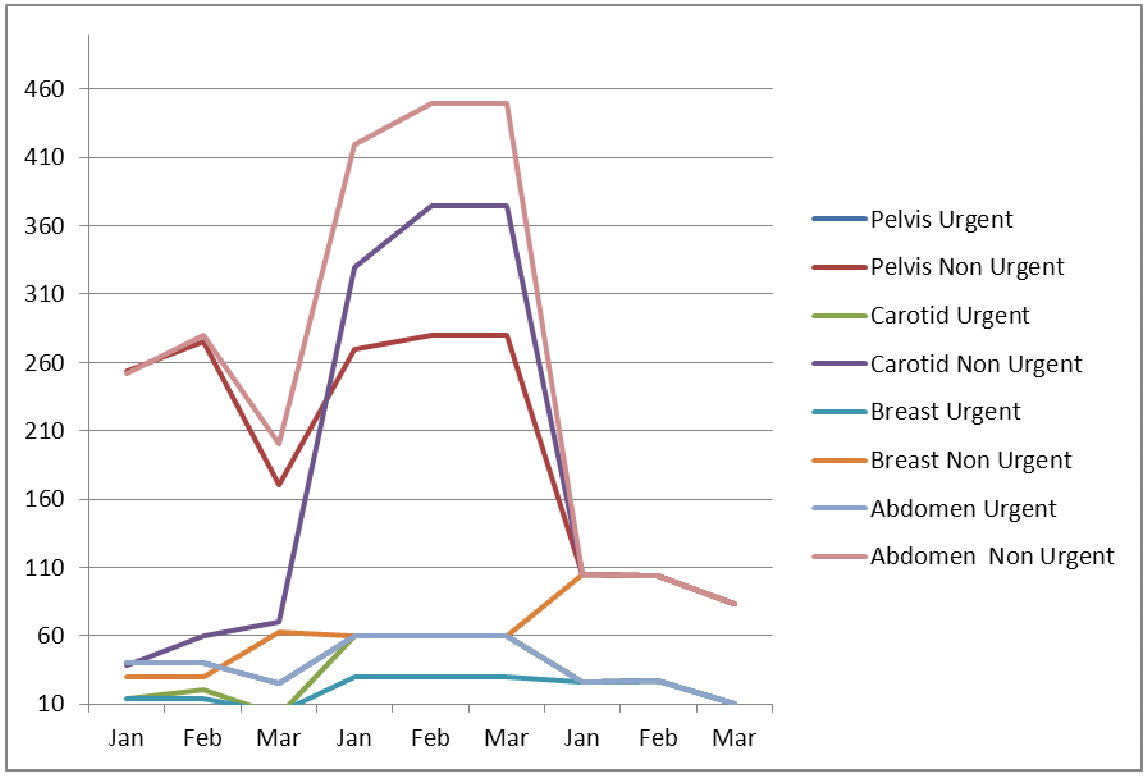

Figure 10: Prospective Wait Times by Comparable Months

Table 7: Prospective wait time Data by Comparable Months

Exam	2012			2013			2014		
Month	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar
Pelvis Urgent	40	40	25	60	60	60	26	27	10
Pelvis Non Urgent	254	275	170	270	280	280	105	104	83
Carotid Urgent	14	21	2	60	60	60	26	27	10
Carotid Non Urgent	38	60	70	330	375	375	105	104	83
Breast Urgent	14	14	4	30	30	30	26	27	10
Breast Non Urgent	30	30	63	60	60	60	105	104	83
Abdomen Urgent	40	40	25	60	60	60	26	27	10
Abdomen Non Urgent	252	280	200	420	450	450	105	104	83

5.3 Reminder Calls

Appointment reminder calls were implemented from Jan 17th 2014, through to Feb 20th 2014, with calls consisting of a scripted approach that spoke directly to the patients (Appendix D). Previous no show rates were between 5-10% with average of 7.38% of patients booked for appointments failing to attend (Figure 11 and Table 8). Retrospective data was collected over the past 11 months, November data was excluded because of an update to the Meditech system that provided unreliable data for no shows and cancellations. This data shows that in the previous 11 months 636 patients failed to attend their appointments, these averages to 13.25 exams per week or 2.65 exams per day. Upon reminder call implementation, daily no show data was collected concurrently. From the 26 days of data, there were 23 no shows, this equates to a no show rate of 3.6% or an average of 4.42 exams per week or 0.8 missed exams a day (Appendix G). This is an 81.9% decrease in no shows.

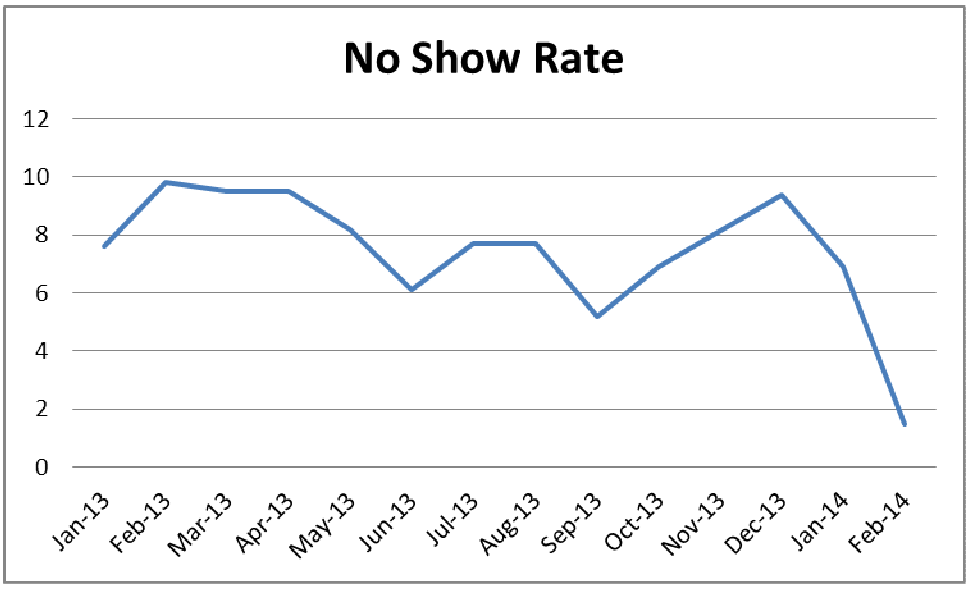

Figure 11: No Show Rate

Table 8: No Show Data

	2013											2014	
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Jan	Feb
# No shows	57	68	75	75	60	41	56	52	24	39	40	41	6
# of Booked Exams	746	693	788	782	725	668	726	668	458	558	422	592	389
No show Rate	7.6	9.8	9.5	9.5	8.2	6.1	7.7	7.7	5.2	6.9	9.4	6.9	1.5

Note. November 2013 data is not included in this data set as information obtained was not reliable due to an upgrade in the Meditech system.

No Show rate is calculated as the number of no shows divided by the number of booked exams (Table 8). This was a more accurate depiction of the data due to a variation in the number of technologists and the number of exams booked; to compensate for these variables a no show rate is more accurate. Based upon the above data this change is significant.

5.4 Policy Changes

Two policies were introduced during this research project: one surrounding patient cancellation and no shows (Appendix H) and one surrounding incomplete or illegible requisitions (Appendix I). Prior to implementation of the patient cancellation and no show policy one patient could be rebooked an endless number of times. The policy limited this rebooking to one time for cancellations and one time for urgent no shows.

The next cancellation and all other no shows are returned to the family physician. This was implemented on Jan 17th, noting the following impacts. The average number of no shows prior to policy implementation was 2.65 per day compared with 0.8 per day post policy implementation. Average number of cancellations received prior to policy implementation were an average of 49 cancellations per month or 2.42 per day compared with an average 28 cancellations per month or 1.4 cancellations per day after the implementation of the policy. This is a 42.9% decrease in the number of cancellations based upon averages. When cancellation data is compared as a percentage of booked exams the data shows that there is no difference (Figure 12).

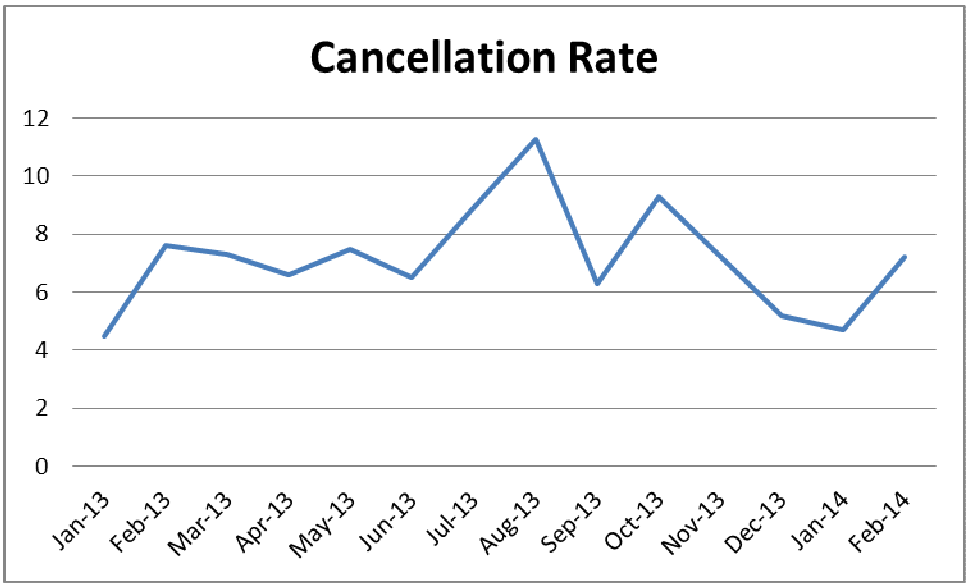

Figure 12: Cancellation Rate

Table 9: Cancellation Data

	2013											2014	
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Jan	Feb
# Canceled	34	53	58	52	55	44	65	76	29	52	22	28	28
# of Booked Exams	746	693	788	782	725	668	726	668	458	558	422	592	389
Cancellation Rate	4.5	7.6	7.3	6.6	7.5	6.5	8.9	11	6.3	9.3	5.2	4.7	7.2

Note. November 2013 data is not included in this data set as information obtained was not reliable due to an upgrade in the Meditech system.

A cancellation rate is calculated as the number of cancellations divided by the number of booked exams (Table 9). This was a more accurate depiction of the data due to a variation in the number of technologists and the number of exams booked; to compensate for these variables a cancellation rate is more accurate. Based upon the above data this change was not significant.

Incomplete or illegible requisition policy was followed up with supportive memorandums (Appendix J) to all physicians, as well as special letters to repeat offenders in violation of the policy. All incomplete requisitions were returned according to the process outlined in Table 10.

Table 10: Incomplete or Illegible Processing

IF	Then
No client identifier	Requisition returned to clinician
No second identifier	1. Verify client's second identifier in Meditech 2. Document on requisition that second identifier was confirmed by Meditech 3. If unable to confirm the second identifier the requisition is returned to clinician
No clinician information	Requisition returned to clinician
No history (where applicable)	Requisition returned to clinician
No exam specified	Requisition returned to clinician
Illegible	1.Confirm information with clinician 2.Clinic to fax completed requisition 3.If unable to get complete requisition; return to clinician

Based upon observational data, clerical staff spent 111 minutes of their time addressing incomplete/illegible requisitions. Post implementation, clerical spent 15 minutes of their time addressing incomplete/illegible requisitions. Time spent processing incomplete/illegible requisitions decreased by 86.5%. It should be noted that this data is based upon a limited number of observations.

5.5 Wait Times

Overall impact on wait times though all interventions combined demonstrated a decrease on prospective wait times. Prospective wait times decreased from highs of 365 days to averages of 83 days by mid-March (Table 4). Retrospective wait times are unable to be assessed for impact due to their delayed reporting.

6.0 DISCUSSION

As the population ages the demand for diagnostic services will increase, therefore the need to implement wait time strategies that are effective is imperative. Below improvements made to the US services are discussed in relation to the literature review and findings from the research project.

Since 2011, the number of referrals received for US at the JPMRHC exceeds the number of procedures performed. Data from January through to December 2013 revealed that on average there are 48.3 more referrals received per week than ultrasounds being performed. As of January 2014, there were 2532 patients on the waitlist for US at the JPMRHC. If the number of referrals and the number of ultrasounds performed continues and the status quo is maintained, there would be approximately 2511 additional patients waiting for services a year from now. This would bring the waitlist for US alone at JPMRHC to approximately 5050 individuals. This depiction stresses the importance of addressing the wait times in US services at JPMRHC.

Several qualitative measures were taken to enhance data and understanding of wait times, below is a discussion regarding each of these research issues.

6.1 Data Gathering

In addition to the literature review, qualitative and quantitative data was collected from the organization in three methods: focus group discussions, observational studies and a patient survey. These research methods are discussed in relation to outcomes and impacts on the study.

Focus Group

Three focus group discussions were held: one for radiologists, one for technologists and one for booking clerks. Together these three groups are the components that make up the US service. Each of these groups hold specialized knowledge and no one part is able to function independently to provide the service. Focus group sessions were useful in guiding the conversation around wait times. It is noted that the technologist and clerical group, stated that they were pleased to be included in improvements to the service and that this was the first time they had been asked to be involved. The first question was aimed to connect wait times to patient outcomes and to develop an understanding regarding the importance of wait time reduction. All groups were able to connect long wait times to adverse patient outcomes and stated the importance of reducing wait times. Generally all three groups provided similar information and ideas regarding the impact wait times have on patients of Central Health. Everyone was able to share an unfortunate story of a patient who was diagnosed with a poor prognosis after waiting far past recommended access targets for US services. One radiologist stated that she now reports these incidences as occurrences in the electronic reporting system as she feels that they are unintended outcomes related to long wait times. It was revealed that because of the

long wait times most physicians mark requisitions as urgent “clogging the system” making “true urgent patients” wait unnecessarily.

When exploring the factors that negatively impact wait times it was felt that multiple location requisitions was an issue, this is where a physician may send a requisition to more than one facility hoping to get their patient attended to sooner, however, often times the patient attends appointments at both facilities. Again it was felt that multiple location requisitions may be directly correlated to high wait times. Technologists identified that vacant positions for extended periods of time and accommodated workers due to injuries has negatively impacted wait times. Often times accommodated workers may be granted additional time to perform exams or be limited to the number of exams they can perform per day. A discussion was held regarding no shows, and on this topic groups varied in their opinions. The clerical and radiologist group felt that the no show rate was significant and negatively impacted patients; however, the technologists felt it probably was not an issue.

Solution focused conversation highlighted a process to catch duplicate requisitions in the system, clerical staff could check requisitions against exams already pended and exams completed after hours and on weekends prior to pending the exam. The discussion revealed that physicians often send patients for after hour emergency exams and prior to departure from the rural facility. Physicians will fax a copy of the requisition to the receiving facility and give the original requisition to the patient. The patient receives their exam as an emergency after hour’s exam and the booking clerk uses the faxed requisitions to book a second, unnecessary exam the next day. During observational studies conducted, this was observed 5 times and resulted in an equal number of wasted exam slots. Based upon observations, implementing this one action would save approximately 1 exam slots a day. Removing just this amount of waste in the system could potentially open up and estimated 261 appointment slots per year.

It felt that injured workers could be reassessed to determine if capabilities have improved. Radiologists indicated that more exams could be booked per day and this would balance no shows. Radiologists continued to express the view that technologists are not working to their full capacity and could do more exams per technologist, per day.

Some things that were suggested are outside the scope of this research project but nonetheless should be kept in view for future wait time reduction strategies, such as: development of physician ordering guidelines with an aim to decrease occurrences where patients are ordered an hour long exam, but the history indicates that a thirty-minute exam is required to capture information requested. For example, ordering an abdominal exam (sixty minutes) versus ordering a gallbladder or other organ specific exam (thirty minutes).

All groups reported that DI has been overly accommodating in regard to allowing patients to cancel their exam or no show multiple times for their appointments. Clerical staff voiced concerns that half the day is consumed with rebooking appointments and filling these new vacancies. Filling vacancies is a very time consuming process.

Observational studies conducted, demonstrated that it took an average of 8.75 minutes to fill an empty appointment slot by phone. All groups felt that a lot of time is wasted on rebooking and last minute attempts to fill empty slots.

Actual no show data was discussed. All groups were surprised by the accumulated number of no shows. Technologists identified that because each US room is experiencing no shows the global picture was not understood. All groups felt that decreasing no shows can drastically decrease wait times, each no show was rebooked and may be more likely to fail to attend a second appointment.

Discussion was held regarding current practices that have a positive impact on wait times. Clerical staff indicated that attempts are made to fill slots due to last minute cancellations with patients who are geographically, located close to the hospital or with in-hospital patients who are awaiting services or emergency patients.

Observational Studies

Observational studies were conducted with three groups, the clerical, technologists and radiologists. These were conducted on separate occasions both before and after interventions to measure impact. Each group was observed on eight separate occasions, four before the intervention and four after. These observations concluded that the three changes to booking practices positively impacted all three groups where by the number of interruptions were decreased. Interruptions are comprised of the number of phone calls related to appointments and the number of interactions with the other two groups. The clerical group experienced the largest decrease in interruptions with a 70.8% decrease, followed by the technologist group with a 69.2% decreased and the radiologist group having a 16.7% decreased in interruptions. Of those interruptions, most noticeably is a decrease in the number of phone calls regarding appointments for all three groups.

An unanticipated, but positive outcome of reminder call implementation was displayed during the post intervention observations, where there was a decrease in the number of patients who attended appointments who had already had the exam completed.

Patient Survey

Central Health is committed to the adoption of a patient friendly and effective standardized scheduling practice across the region. Consistent with best practice research, the data collected from the patient survey depicts the specific desires of the residents of Central Health and can be used in the development of a permanent reminder call system. Clerical staff conducted a survey with the patients they were reminding of their appointment. Central Heath strategic directions infer that in order to develop a patient friendly and effective scheduling practice the information should be collected from the patients themselves (Central Health, 2011. p.16). This information, where possible, is best used to inform strategies to reduce wait times. The survey provided information on preferred notification processes and other possible contributory factors to wait times.

Data was collected from 194 survey respondents who answered a series of questions tailored to assess notification practices and processes for US services at JPMRHC. The

data was analyzed by using SPSS/PASW 2010. The percentages can be found appended to this document (Appendix F). Furthermore, a copy of the patient survey is located in Appendix D. Although 98% of the respondents indicated that their appointment notice was sufficient, there are areas identified where improvement is required. As noted, 93% of patients indicated they would like notification when their referral is received by the DI department.

There are three findings from this survey that will make a permanent reminder call process more successful. All three findings are patient-centered approaches and if adhered to should enhance the outcomes found in this research project.

- 80% of patients concluded that they prefer to be notified by mail. While representing an accurate response from the current population, this may change over time as the primary population receiving diagnostic services becomes the population currently entrenched in technology.
- 91% of the patients preferred to be notified of the appointment three weeks in advance, which is occasionally achieved by Central Health; however, observational studies indicated that there is a wide variation in this practice.
- 86% stated they would benefit from a reminder call, which strongly supports a permanent implementation of a of reminder call system. Compared with the findings from this research project, it is indicative that the percentage of patients who would actually benefit from a reminder call may be even higher than 86%.

In addition to findings in the literature, this is evidence of the benefits of an appointment reminder call system.

6.2 Booking Practices

In order to impact systems and create efficiencies, standardization must first be obtained. Without standardization, variations in routines and system inefficiencies are difficult to detect. Staff had many suggestions for improvement based upon questions asked at the focus group discussions also additional areas for improvement were identified through the observational study. Below the improvements identified in the gathering data phase of the research and implemented changes are discussed.

Validation

A Pended list is an electronic record of all referrals received and not yet booked into an appointment slot. Using a pended list will ensure that the oldest urgent referral and the oldest non-urgent referral is booked first. This helps to ensure an equitable service.

Current practices, where by booking clerks consistently worked from paper referrals versus booking from a pended list has resulted in appointments being booked out of sequence and considerable time is spent looking for referrals as evidenced by the observational studies. There are many pended appointments without referrals which is a quality and patient safety issue. It was identified that appointments need to be booked not only from the paper referral but from the pended list as well and that reorganization of the booking and filing process needed to be changed in order to decrease US wait times. Observations of the clerical area, reorganization and standardization of booking

process will allow staff to increase efficiency, patient safety, decrease errors such as, lost referrals. It was expected that the booking clerk would have fewer interruptions and more time to book appointments.

An administrative validation was conducted on the pended list. This validation consisted of ensuring each patient awaiting service had a corresponding requisition. A thorough review of all appointments waitlisted was reconciled to their paper requisition. Patients who were deceased were removed from the pended list, names remaining on the pended list without a corresponding requisition were investigated to identify if the exam was completed though a search in PACs. At the end of the administrative validation, 12 people were found to have no paper requisition and no exam completed, their physicians were contacted and new referrals were received where physicians deemed the exam necessary. Four of 12 referrals were deemed no longer required by the referring physician. This intrigued the thought of conducting a clinical validation on referrals older than six months, whereby physicians would review requisitions to determine if the exam is still required; however, this falls outside the scope of this research project but is something that should be kept in view. Murray 2011, identified that pended list need to be accurate (Murray, 2011. p.2). The importance of an administrative validations is clearly demonstrated in this example, without completion of this work, 8 people would never have received an appointment as staff would have continued to practice booking from paper referrals, and the lost requisitions would never have been identified. This is a positive change toward a safer more efficient service.

Patients who were awaiting services from 2012 and earlier were investigated separately to determine if theses exams were still required, for example: a request for a gallbladder US that is a year old has likely been attended to through other imaging sources such as CT or clinical indications based upon signs and symptoms. In some cases patients had had surgical procedures to address their original complaint and no longer required the exam requested. There were 700 exams older than 2012, these were reviewed and a total of 430 were removed from the pended list. Three were removed because they were deceased, 42 had moved and 385 had the exam already completed or the problem attended to. This significant removal from the pended list demonstrates the value in conducting this type of intervention.

Exam Slots

Observational studies with booking clerical identified booking practices that were biased toward specific body parts. For example, folders in the filing cabinet were classed according to body part being examined. Within each folder: abdominal, pelvis, thyroid or breast, requisitions were first sorted by classification: urgent, non-urgent, follow up, or screening and then filled from oldest on top to newest at the bottom. The scheduling module in Meditech was built to support this process. For example, the 0800 slot could only accommodate fasting exams that were 60 minutes such as an abdominal exam. Restrictions were placed on the booking slot to only allow clerical staff to book exams listed for that time slot. When the data was analyzed, it was very clear that patients awaiting an abdominal exam waited the longest and patients awaiting breast ultrasounds waited the shortest amount of time. Wait times varied dependent upon the body part

being booked. In addition exam slots went empty when patients cancelled appointments as only a limited type of exam could be booked into that slot.

Murray, 2011 supports booking by urgency classification and date, regardless of the body part associated to clear the backlog of waiting appointments. This produces equitable services (Murray, 2011. p.1). To implement this change the filing cabinet was rearranged to reflect urgent, non-urgent, follow up and screening folders. In each folder were requisitions from all body parts were arranged by date. Instantly this created a smoothing effect on the wait time, removing extremely long and extremely short wait times. As anticipated abdominal and pelvic wait times decreased sharply, while breast wait times increased slightly.

Next, appointment slots in the scheduling module were changed to support this type of booking system, where any slot can be booked for any body part. This increases the chances of filling a last minute cancellation, as there were more requisitions to choose from. This initiative is supported by Murray 2011 and the Practical guide to Redesigning Radiology Services from the UK.

Table 11: Previous and Current Exam Slots

Previous US slots	
0800	Pelvic exam
0830	Breast or thyroid exam
0900	Abdominal or OBS exam
0945	Extremity exam
1000	Pelvic exam
1100	Pelvic exam
1130	Limited Abdominal exam

New US slots	
0800	Double booked
0830	Any booking
0900	Not booked
0930	Any booking
1000	Not booked for break
1015	Any booking
1045	Any booking

The result of this action was an overall decrease in empty appointment slots from an average of 25 per week to 9 per week. This is a 64% decrease in the number of unfilled appointment slots. This has significant potential to increase the overall number of exams completed annually.

In addition to changing how exams could be booked, clerical staff was directed to focus on booking a minimum of 12, thirty-minute exams per day, per technologist. This action increased the average number of exams performed from 9 to 12.1 per day. Additionally, emergency slots were reduced from 6 to 2 to be more reflective of the demand for services. This initiative increased productivity by 34.4%.

If this work could be sustained, this one improvement initiative could stand to increase the number of exams performed a year by 1560 exams using 2 technologists, this can have a significant impact on decreasing both prospective and retrospective wait times.

Combined, these efforts have changed the way exams are booked and have had a positive impact on services to improve equity. The outcome of using a pended list and booking

patients based upon oldest urgent and oldest non-urgent referral received, regardless of body part being examined, has a smoothing effect on the wait times. This was most dramatically seen in wait times for non-urgent abdominal and pelvic exams that have waited as long as 600 days for an exam while non-urgent breast exams, during the same period, waited 60 days. With the new booking practice, all patients wait the same amount of days for urgent exams, 10 days, and non-urgent exams, 83 days.

Incidental Finding

During the course of this research project a discrepancy was noted among the data that was collected from Meditech. It was noted in 2013, for a 6 month period, JPMRHC employed 3 technologists, which is reflected in the 7234 exams booked. Additionally, during this time frame the data identified that there were 540 cancellations and 636 no shows, which leaves a total of 6058 booked exams. To remove the variable of the third technologist, the 1170 exams performed by that technologist was removed from the data, leaving a total of 5922 exams completed in 2013. This creates a discrepancy of 136 exams. This discrepancy is difficult to explain as there is no written documentation surrounding these patients. Based upon observational data it could be explained that a percentage of the 136 exams could have come from patients who attended the appointment but had not followed proper preparation instructions and therefore could not have the exam completed at that time. Additionally, some patients will refuse to proceed with the exam during the explanation and consent portion of the exam. Information gathered from the validation process demonstrated that some of these exams could have been patients who attended and upon commencement of the exam the technologist who reviews the history would have discovered that this exam was already completed, either at an earlier time or at another facility.

To move beyond the lack of explanation regarding reasons the exams were not completed, the more concerning issue is the lack of documentation surrounding these events. This was an incidental finding of this research but will need to be further addressed by Central Health to increase patient safety and improve efficiency.

6.3 Reminder Calls

The Community Wide Scheduling Module in Meditech indicates that between 5%-10% of patients do not show for scheduled appointments, with an average of 7%. This data indicates that in 2013, approximately 636 US appointments were not attended and thus classified as no-shows. Some of these appointment slots were filled by inpatients and emergencies; nonetheless, there are a significant number of appointment slots vacant over the span of a year.

Previous practice regarding notifying patients of appointment times was via mail approximately two-three weeks prior to the scheduled appointment. There was no phone reminder call process in place. Presently, due to long wait times the length of time between referral received and notification of appointment by mail is significant and there is no process to advise a patient that the referral has been received. As evidenced by the observational studies, this significant waiting period is reported to have an adverse

impact on the clerical staff in the department as a substantial volume of calls come to the DI appointments clerk from patients inquiring if their referral has been received and when could they expect an appointment. The clerical staff report to be overwhelmed by the volume of calls. As a result, there are times when calls are not returned, which is anticipated to increases the number of calls to the department.

This research project included the implementation of a telephone reminder process for appointments. In this targeted intervention, the retrospective and concurrent no show rates have been compared to determine if there is a significant difference as a result. Through this comparison it was determined that appointment reminder calls are beneficial and what is reasonable and achievable in terms of a no-show rate (Figure 9).

Reminder calls was completed from January 17 to February 20th 2014. There were 26 days in which patients were reminded of their appointments. Appointment reminders occurred between 3-5 days prior to the appointment. There is variation due to weekends and holidays. During that time, there were 634 US reminder calls completed, of these 23 were no-shows. This is a 3.6 % no show rate, compared with a previous no show rate of 7.4%. That is an 81.9% decreased in no shows by using a reminder call system, this is consistent with the literature which shows that reminder calls can increase attendance from 72% to 90% (Cha et al. 2011. p.3139). If these results can be sustained, it is estimated that the reduction from a 7.4% to a 3.6 % no show rate could reduce the number of no shows by approximately 406 appointments a year, based on booking 24 appointments per day, this equates to an increased productivity of 16.9 additional days of US appointments a year.

The clerical support staff attempted to contact all patients; however, there were patients that were unable to be contacted by telephone to remind them of their appointment. A post intervention chart audit was conducted of the patients who no showed for their appointments identified that 20 of the 23 no shows were patients that could not be contacted by telephone to remind them of their scheduled appointment. This is noteworthy information and highly suggestive of the positive impact reminder calls can have on no shows. Of the patients who were notified only three failed to attend there appointment. If the patients who were unable to be contacted by phone were removed from the data, this would produce a 0.6% no show rate. While this is hypothetical, it is indicative of the significant impact reminder calls can have on patient attendance.

6.4 Policy Changes

During observational studies it was noted there was no clear instructions on what and how to cancel or rebook exams, either from no shows or cancellations. In addition multiple incomplete and illegible requisitions were being received.

Below is a complete analysis of two policies used in this research project entitled “Client Cancelation and No-show” (Appendix K) and “Requisitions- Incomplete/Illegible” (Appendix J). This policy affects DI patients throughout the health authority who are awaiting scheduled services. These policies are aimed at maximizing utilization and

providing optimal use of clinical resources, such as US appointment times, proper exam bookings and reduced empty slots, through a standard approach to patients who do not show or cancel their appointments. The following sections will discuss the policy background, the policies implemented, the determinants of success and the policy communities are identified. The analysis concludes with a discussion regarding the model that these policies most closely identify with, as well as the challenges, potential solutions and indicators associated with these policies and how these policies could benefit from using a logic model.

Policy Background

In 2013, there were a total of 636 no shows, and 540 cancellations for the US services at JPMRHC. These unfilled exam slots are considered missed opportunities and have a significant impact on wait times. Current standards of work surrounding no show or cancellations are left to the individual employee, but typically consist of rebooking patients in the next available exam slot. Each no show or cancellation should be accompanied by a written notation on the patient's chart to document the actions taken to address the occurrence, such as rebooked appointment, requisition returned to physician or exam cancelled. In 2013, there were 1176 missed opportunities. Likewise, observational studies demonstrated that requisitions examined for incompleteness and illegibility consumed 30% of the clerical's time contacting physicians' offices or searching the organizational computer system to locate the missing information. This results in insufficient time to book appointments and results in empty slots for essential services as well as increases the risk to patients regarding receiving the right exam. With wait times of 600 days in certain modalities (Department of Health, 2013. p.7), Central Health cannot continue to allow these missed opportunities to go unmanaged.

Corrective Policies

Implementing two policies created a standard approach to manage patients who no show or cancel their appointment, as well as addressing incomplete or illegible requisitions. In addition to standardization, the policies build in a more uncompromising approach that aims to discourage patients from canceling or missing appointments unnecessarily and decreases non-value added activity and increases time spent on booking appointments.

The following identifies the policies prescriptive approach and outlines what actions to take if a patient fails to show or cancels their appointment (Central Health, 2013).

No Show:

- If the exam is urgent, staff will attempt to contact the patient to confirm that they received notification of their exam. If notification was not received, a new exam is booked (Central Health, 2013. p.2).
- If the exam is non-urgent, the requisition is returned to the referring clinician (Central Health, 2013). Patient is removed from the wait list and reason is documented (Central Health, 2013. p.2).

Cancellation:

- Patients are permitted to cancel and reschedule their appointment once (Central Health, 2013. p.2).

- A second attempt to reschedule will result in the requisition being returned to the referring clinician (Central Health, 2013. p.2).

These actions are to be followed at all times unless exceptional circumstances, such as storms, illness or family crisis arise.

The prescriptive approach for handling incomplete/illegible requisitions that arrive at the DI department is as follows illustrated in Table 10.

Success

These policies will be considered successful if the following objectives are met:

- Objective 1: Staff adheres to the policy and a standardized approach is applied.
- Objective 2: Wait times for services are reduced as a result of decreased no shows and or cancellations and increased time is spent on booking.

When considering these policies under Marsh and McConnell's dimensions of policy success (Marsh & McConnell, 2010. p.571), these policies are established in such a way, that it is believed that upon permanent implementation it will be successful. When examining process, these policies are founded on legitimate grounds that there is a lack of standards surrounding how these incidences should be handled, coupled with the fact that wait times for certain essential services are over 600 days (Department of Health, 2013. p.7). These policies are supported by the Newfoundland and Labrador Department of Health, as well as Central Health's Senior Leadership team and are based upon similar policies in the other health authorities across the province (Central Health, 2013. p.2). A wait time committee was formed within Central Health whose mandate is to strategize ways to decrease wait times for essential services, this committee approves of these policies (Corporate Improvement Department, 2013 .p.2). Upon implementation, government will be seen as being successful in decreasing wait times for essential services, increasing patient safety and therefore increasing access to services.

These policies are an efficient use of resources and benefit those awaiting essential services. For the purposes of this research project the draft policies have been implemented and assessed for effect.

Policy Community

The policy community refers to the individuals or groups who have influence, input or a common reference in regard to a policy (Atkinson & Coleman, 1992. p.155). Both policies have a large policy community that has all had significant contributions in identifying the need, researching the topic, creating or supporting these policies. Those involved and their contributions are discussed below.

Patients were central members in the policy community. Central Health is driven by the desire to increase patient satisfaction, increase patient safety and improve access to services for timely, efficient, and effective care for patients (Central Health, 2011 .p.17). Patients themselves have voiced concerns, both informally and formally through a complaint system, regarding the long wait times for certain diagnostic procedures and felt that all appointments slots should be filled (Corporate, 2012. p.1). In addition there have

been suggestions that some action should be taken to address the growing problems associated with patients who cancel their appointments or fail to attend them (Corporate, 2012 .p.1). The management group at Central Health agreed with this concern and identified merit in addressing this issue as one part of multifaceted approach to reducing wait times (Corporate Improvement Department, 2012 .p.2). In addition the Central Health management group recognized the risk associated with incomplete and or illegible requisitions and support the efforts to decrease the risk of patients getting the wrong exam and unnecessary exposure to radiation.

Management formed a wait time committee and one portion of their work was dedicated to developing policies to address cancelations and no shows and incomplete or illegible requisitions (Corporate Improvement Department, 2013. p.2). They conducted research and gathered sample policies and supporting literature to create policies that would fairly and equitably address patients who cancel appointments, those who fail to attend their appointments and a policy to address requisitions that arrive in the DI department that are incomplete or illegible. The main goal was to create a standard of practice that all clerical staff would implement and as a result create an expectation and understanding among the patients and referring physicians (Corporate Improvement Department, 2013. p.1). This group held the power to pursue the issue further and ensure it was addressed.

Front line staff was the next members in the policy community to be involved. Their input and feedback was vital to the successful implementation of these policies. It was important to incorporate their suggestions to ensure the policies would address the issues at hand and be useful to the clerical who are responsible for enforcement (Corporate Improvement Department, 2013. p.2).

The Senior Leadership of the organization were in full support of the policies as no show rates accounted for over 1170 missed opportunities annually within the DI Department and were contributing to increased wait times for essential services (Corporate Improvement Department, 2013. p.1). In addition, data collected regarding incomplete/illegible requisitions show that in 30% of clerical time is used to address incomplete/illegible requisitions, this group held the attention of the Department of Health and Community Services (DoHCS) within government and played a key role in gaining their support.

The focus group discussion with the radiologists identified that they felt that the number of patients who failed to attend appointments have a significant impact on wait times and overall access to the services. Additionally, observational studies demonstrated that patients who cancel their appointments create extensive work for clerical who attempt to fill these last minute appointments that are often difficult to fill and are very time consuming. In regard to incomplete and illegible requisitions, radiologists felt that this resulted in increased potential for error, patient risk and increased time wasted at the clerical level. This particular group has a strong voice and tends to be heard by government.

At the government level, the Department of Health and Community Services support these policies as a method to reduce wait times (Corporate Improvement Department, 2012. p.3). One program within the department focuses on access; this program was in consultation with Central Health during the development of these policies as well as being supportive during the research phase of the policy building (Corporate Improvement Department, 2013. p.2).

All groups involved are connected by the same purpose; patient-centered care. Because of this common connection all members of the policy community were agreeable and supportive of these policies.

While patients were central to the permanent creation of these policies they will be the primary focus in communication efforts upon implementation. Copies of the policies will be available on the Central Health website and all appointment letters will include excerpts from the cancellation and no show policy (Corporate Improvement Department, 2013. p.2). The enforcement of the incomplete and or illegible requisitions policy has been communicated to all physicians through the form of a memo, followed by clerical enforcement and management addressing individual physicians regarding continued noncompliance. The policies communication plan may be considered lacking in public involvement as common forms of public communication tools have not been employed such as: online discussion forums, web consults or social medial. However, the concerns and ideas of the public have been heard and the policy itself is a product of that.

Rational Comprehensive model

These policies most closely resembles the rational comprehensive policy making model, as the objectives are distinct and are directly related to accomplishing the goal of reducing wait times for essential services as well as standardizing processes (Lindblom, 1959. p.82). While there are many additional factors that affect wait times outside of standards of practice, it is a practical approach for clerical staff to positively affect the wait times to essential services for the patients of Central Health.

Challenges and Solutions

Every new policy encounters challenges, some of the identified challenges associated with implementing these policies and their proposed solutions are discussed below.

Communication

Standardizing processes and reducing patient wait times for essential services is the primary motive for implementing these policies. Clear and effective communication is identified as one of the chief requirements for smooth and effective transition into adherence with the new policies. Multidirectional communication is pivotal in successful implementation of any program or policy and is vitally important to clearly communicate expectations from the new policy to many groups as well as receive communication from these groups.

Clerical

Communications must be effective to clerical staff in the form of a discussion regarding the aspects of the new policies and how they are to be implemented and applied. Setting clear expectations with an opportunity for discussion surrounding any questions will facilitate understanding.

Management groups

Communication to management groups are vital as persons who assist in enforcing the policies and setting the expectations of the staff and of the public regarding services. This process can be facilitated though acquiring their involvement throughout all stages of policy development.

Physician Groups

The physician group must be informed of changes to current processes as they can be an assist in communicating these policy changes to patients and stressing the importance of attending the diagnostic appointment. This can be accomplished using a multifaceted approach such as: memorandums, communication at Medical Advisory Groups and providing copies of the policies.

Government

Government groups must be aware of changes to processes in order to publically support the changes and promote the positive impacts on patient care such as shorter wait times for essential services and increased patient safety. This could be accomplished through formal briefing notes regarding program changes to positively affect wait times.

Adherence

Monitoring adherence to these policies poses another challenge. Managers must clearly understand the policies, its goal and its application. Once this is clearly understood, managers must develop a process to monitor compliance with these policies as well as assist clerical staff with difficult to handle patients and physicians. This may be facilitated through role playing exercises to increase experience and discussion around different scenarios, such as an upset patient. A checking process could be implemented that includes monitoring scheduling notes around cancelled and rebooked patients and auditing requisitions. This process may require involvement and support for the Information Technology Department.

Data Collection

In order to determine if policy objective number two has been met, baseline data for no shows and cancellations must be obtained and tracked over time to determine change. Obtaining accurate data can be difficult and relies upon human input of information. While this margin of error is difficult to control it is a consistent variable both in retrospective and concurrent data collection and therefore should not affect the outcome measurements.

Performance Indicators

In order to determine success, measurement and evaluation must occur. Evaluation may indicate to managers that they may have to return to a previous step in the policy process

and may have to plan a new approach to the problem and then re-implement that change. Using small test of change with proper planning, implementation, communication and evaluation followed by another small test of change will help ensure successful implementation.

Once policy issues have been identified, a goal is developed to provide direction to managers. Goals are overarching statements that provide a general direction for a program or policy (Miyamoto, 2002. p.3). The goal of these policies is to standardizing processes and reducing patient wait times for essential services (Corporate Improvement Department, 2012. p.3).

In order to meet a goal, a series of objectives needs to be outlined as measures of success (Alogan & Yetiş, 2006. p.670). Objectives need to be clear so managers, clerical and all members of the policy community understand precisely what needs to occur in order to achieve success. Using the concept of SMART (specific, measurable, attainable, realistic, and time-orientated), makes objectives clear and more likely to be achieved (Smarter Objectives, 2010. p.1). A stated measurable objective for these policies could be: by March 31 2014, a standardized no show and cancellation process will be implemented and adhered to 85% of the time. A second measurable objective for this policy could be: by March 2015, the implemented standardized no show and cancellation process has reduced wait times for essential services by 15%.

Actions must be used to outline each step required to accomplish the objective. Each objective may have several strategies: each of these should be specific, tangible actions that when completed result in the accomplishment of the objective. This policy could include actions such as: by March 27th the draft policy will be approved by senior leadership, by April 15th education with all managers and clerical groups will be completed. by April 15th memorandums will be sent to all physician groups, by April 5th a briefing note will be drafted and sent to the Department of Health and Community Services to alert them to program changes to positively affect wait times.

Without these specific performance measurements, success is difficult to determine. Continued concurrent monitoring of objectives will provide feedback and alert management if changes or adjustments to these policies or the process are required.

Logic Model

New public management emphasizes evaluation of impacts, processes and efficiency; this can be demonstrated through the use of a logic model. Logic models are useful tools for public servants to help develop clearly outlined program or policy expectations and intended outcomes. With established goals the outcomes are observed in degrees of effect along the course of action with short and long term outcomes that lead to achieving a desired impact (Mayne, 2001. p.9). The logic model forces public servants to assess required resources to achieve the stated goals as well as anticipate actions required to attain the goals. Identifying actions is a key tool to ensuring plans stays on track, thus enabling effective evaluation and assisting in measuring outputs (Mayne, 2001. p.7). Each action is associated with expected short and long term outcomes as a result of

implemented actions. Some effects of policy understanding and implementation are realized in the short term such as standardization of processes, while other effects of actions are attained as long term outcomes such as changing public perception of no show and cancellation processes or changing physician practices. Once all actions are completed the impact will be the realization of the stated goals to reduce wait times for essential services through standardized processes.

Table 32: Logic Model

Resources	Activities	Outputs	Short term outcomes	Long term outcomes	Impact
In order to accomplish our set activities the following will be required:	*In order to address our wait time issue we will accomplish the following activities:*	*We expect that once activities have been accomplished the following will be produced:*	*We expect that these activities will lead to the following changes:*	*We expect that these activities will lead to the following changes:*	*We expect that these activities will lead to the following impact on wait times and standards of practice:*
-Dedicated booking clerks. -Support from DoHCS - Support from Senior Leadership -Support from the radiologists - Education for Management and clerical -Data management from IT -Data communication skills	-Clear communication with clerical regarding expectations and policy practices. -Retrospective data gathering -Concurrent data gathering -Communication of data findings and analysis -Standardize canceling and no show processes -Clearly communicate policies to the public - Standardize incomplete or illegible requisitions processes	-Standard process for rebooking or returning requisitions -Clear expectations from the public regarding no show and cancellation processes. -Clear process understanding by physicians	-More organized approach to no show and cancellation requisitions -Increased knowledge of how these requisitions will be handled -Increased skill set regarding handling difficult patients and difficult physicians	- Reduction of no show patients -Reduction of cancelled appointments -Reduced wait times for essential services -Increased efficiency and flow within the department -Reduced non-value added clerical time -Reduced number of incomplete requisitions	-Better patient care -Quicker diagnostic access -Better patient health outcomes

Summary of policy analysis

While there was a significant difference in the no show rates both pre and post implementation, it is difficult to determine if these are a result of the requisitions being returned or the reminder calls be conducted during the same time frame. This effort should be continued over time to determine long standing impacts and followed with a patient survey to determine perceptions.

The average number of cancellations decreased over the time these policies were implemented, though, overall cancellation rates did not decrease. This should be evaluated over time to determine if there is a long term effect on wait times.

Pre and post observational data analysis revealed that the amount of time spent addressing incomplete/illegible requisitions decreased by 86.5%, while the acceptance of incomplete or illegible requisitions decreased to zero. This acceptance rate has increased patient safety in ensuring that the right patient receives the intended exam.

Policy issues will not be addressed or resolved without considerable thought applied to the policy planning process. This process must address the issue and include all members of the community group in its development. Policy planning must identify directions through well stated goals, measurable and attainable objectives, followed by detailed strategies to determine success. Using tools such as logic models are useful methods to keep goals, actions, outcomes and impacts on the path to success.

6.5 Wait Times

The combined effect of the above discussed interventions is depicted in the prospective wait time data, which showed a sharp decrease for abdominal and pelvic exams and a slight increase for breast exams, this data is used as a comparator across the province and is a good predictor of where Central Health could be with US services. However, retrospective data shows the actual amount of time patients waited for services; these times are much higher than are predicted in the prospective data. This is representative of the inefficiency in the system such as: no shows, cancellations, duplicate booking appointments, and multiple location referrals. With continued effort in maintaining a standard approach to services, as outlined in this project, retrospective wait times should begin to mirror prospective data.

7.0 RECOMMENDATIONS

Recommendations are divided into three categories: immediate actions, future actions and actions for consideration.

7.1 Immediate Actions

1. Pended list validation and usage should be immediately spread throughout all modalities to catch potential lost requisitions and ensure patients receive the proper service.
2. Implement a duplicate requisitions checking process to minimize double booking of exams.
3. Identify a computer assisted method for identifying multiple location requests for exams.
4. Implement a permanent reminder call process that not only reminds patients of their appointment but notifies them when the requisition has been received with an estimated wait time. This should be developed using patient preferences identified in the survey.

7.2 Future Actions

1. Clinical validations of requisitions 6 months old or older may reduce the wait list form removal of patients who have died, moved, had the exam completed or no longer require it.
2. Accommodated workers should be reassessed to determine if there are increased capabilities.
3. The data analysis identified an unexplainable discrepancy between booking data and completed data. This discrepancy identifies the need for further investigation and clearer documentation processes.

7.3 Actions for Consideration

1. Consideration should be given to double booking patients who could not be reached by phone to remind them of their appointment, this would have a substantial impact on wait time reduction.
2. As supported by Otreo et al, using appropriateness criteria to reduce inappropriate utilization of diagnostic services can positively impact service efficiency (p.353).
3. Deferring exams from the major referral centres to the rural multi-function sites that perform US.
4. Continue with policy changes regarding cancellations, and follow up with a patient survey to determine if attitudes or perceptions have changed as a result of the policy.
5. Observational studies suggested that time spent traveling impacts time better used booking appointments or performing exams; this should be further evaluated and addressed.
6. Cancellation impacts should be evaluated over time to determine if there is a long term effect on wait times.
7. Implement successful changes at CNRHC and evaluate their effectiveness.

8.0 CONCLUSION

Central Health has struggled with high wait times for US services for the past several years, with wait times reaching highs of 600 days for particular exams. Diagnostic services that are delayed for 600 days may result in poor patient outcomes. Central Health is committed to patient safety and is supportive of research and interventions that occurred in this project. Additional data gathered from staff focus groups were able to support components of this project as well as supply additional recommendations for further follow up. Information gathered from observational studies reviled that large numbers of daily interruptions used valuable time better spent performing essential, value added activities, such as booking, performing or reading exams.

Booking practices were changed to book appointments using a validated pended list based upon urgency classification and date. This intervention resulted in an overall decrease in wait times from highs of 600 days to an average of 83 days. This intervention consisted of another significant change where each technologist was booked for 12, thirty-minute exams a day. This increased overall productivity by 34.4%.

Central Health had identified the need for an appointment reminder call process and the data presented in this project strongly supports the premise that an effective appointment reminder call process would have a significant impact on no show reduction. Based on the reduction in the no-show rate experienced during the 5 week project, hypothetically this could translate into an additional 230 appointments for US services per year at Central Health.

Standardized policy approaches stood to strengthen processes and establish expectations. These policies will need to be tested over a prolonged period of time to determine the full scope of the impact on patient outcomes and no shows and cancellation rates. Immediate improvement was seen in increasing patient safety by ensuring requisitions were complete and therefore ensuring the right person receives the right exam.

All three initiatives were a valuable learning experience for Central Health not only in process but in the data collected. The information will be instrumental in moving forward with the development of a regional wait time management strategy and improving access to selected DI procedures at Central Health. This project posed the question: will changing booking practices to reflect best available evidence would reduce wait times within US services at one facility? It is clear that the combined interventions resulted in a positive reduction in overall retrospective and prospective wait time data, and therefore the project concludes that adhering to standardized booking practices based upon best available evidence can reduce wait times for US services.

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APPENDIX A
Staff Invitation to Participate

Date
Dear_____,
You are invited to participate in a research study focused on reduction of wait times experienced by patients accessing ultrasound services at James Paton Memorial Regional Health Centre (JPMRHC). This research is being conducted by Amanda Thompson on behalf of Central Health. Amanda Thompson is a graduate student in the Public Administration Department at the University of Victoria and you may contact her if you have any further questions by calling 709 572 0790 or e-mailing her at Amanda.thompson@centralhealth.nl.ca.

As a graduate student, I am required to conduct research as part of the requirements for a Master's degree in Public Administration. It is being conducted under the supervision of Herman Bakvis. You may contact my supervisor at 205 721 8065

Purpose and objective:
The purpose of this project is to reduce wait times in ultrasound services at JPMRHC within Central Health. This will be accomplished through three objectives: 1) standards of practice, 2) implementing reminder calls and 3) booking by best available evidence.

Importance of Research:
Research of this type is important because wait times for essential services must be reduced in order to improve patient care. Patients who wait excessively for services may go undiagnosed and have unfavorable medical outcomes.

Participant Selection:
You are being asked to participate in a focus group because you have been identified as having specialized knowledge in this area. Please decline this request to participate in this research project if you do not feel this selection criteria applies to you. If you consent voluntarily to participate in this research, your participation will include participating in a focus group to assist in identifying causes for service wait times and potential solutions to reduce wait times. This will take place at your place of work and will be incorporated into your daily work.

Your involvement is completely voluntary and there are no consequences for not participating. If you do not wish to participate simply do not respond to this correspondence. Should you choose to participate you will be asked to attend a 2 hour focus group, where questions will be asked by a neutral third party to guide the conversation to identify wait time contributors and potential solutions. Written notes will be taken during the focus group to assist in compiling the information.

Please note that you may leave the focus group discussion at any time without any consequences.

Following the focus group several (approximately 5) live observations regarding daily routines will be conducted: each observation should take approximately 1 to 2 hours. Prior to observe you will be notified and will be privy to the list of items being observed. If at any time you do not choose to participate in the live observations you may make this known at any time.

Inconvenience:

Participation in this study may cause come inconvenience to you such as: usage of your time, and changes in work routines to be determined based upon information from the focus group and observations.

Risks:
There are some potential risks to you by participating in this research and they include feeling embarrassed, stressed or psychological discomfort by having an observer observe your daily work routines. In addition observations may make you feel that there is a loss of privacy. To minimize or deal with these risks the following steps will be taken: focus group discussions will be held with only members of your same peer group and conducted by a neutral third party; this facilitator will keep discussions focused on the topic and avoid pointed blame type discussion. Observations will be conducted by a neutral third party and participants will be aware of all observation times prior to commencing. Expressed concerns will be addressed at any level of your choosing (third party, manager, director). Prior to observations participants will be reminded of the parameters of the observations and your right to refuse participation at any time.

Benefits:
To participants: The potential benefits of your participation in this research include an opportunity to share your knowledge and expertise regarding ultrasound services to assist in the development of operational policy, standardization of work practices and reduction of wait times for essential diagnostic services as well as increases in patient safety. Improvements made will increase work efficiencies and may result in increased job satisfaction.

To society: Reduction in wait times will result in patients receiving diagnostic exams and procedures sooner. This will result in an earlier clinical diagnosis and therefore earlier treatment where applicable.

To the state of knowledge: Information on wait times in ultrasound services is difficult to ascertain as most healthcare wait times focus around the emergency department, operating rooms or endoscopy services. This information can be used to address wait times specific to ultrasound and other diagnostic imaging modalities.

Voluntary participation:
As previously stated your participation in this research is completely voluntary. If you do decide to participate you may withdraw at any time without any consequences or any explanation. If you do withdraw from the study your data will be removed from the aggraded information by a neutral third party using a coded sheet to identify your comments or observations, this information will then be destroyed.

Researchers: relationships with participants:
The researcher does have a relationship with you as your director. To help prevent this relationship from influencing your decision to participate, the following steps to prevent coercion have been taken: use of a neutral third party to conduct focus groups, observations and aggrades the data prior to presenting the information to the principle investigator. This person will also be responsible for removing any information that you request from the data.

Ongoing consent:
To ensure that you continue to consent to participate in this research, the neutral third party will obtain a verbal consent from each participant prior to each observation.

Anonymity:

In terms of protecting anonymity: this will be protected from the principal investigator and all others but not from the neutral third party conducting the focus group or your peers attending the focus group.

Confidentiality:
Your confidentiality and the confidentiality of the data will be protected by aggrading all information obtained from the focus group and the observations, no personal identifying information will be collected to determine who participated. Results from the focus group will be aggraded and presented as general findings. Individual comments or participants will not be identified. Confidentiality is limited due to a lack of control for researchers to restrict what other participants will do with information discussed or discovered during the focus group. In addition the neutral third party will be an employee of Central Health, this may be seen as a limit to confidentiality, however, this employee has signed a confidentiality agreement as a condition of employment of Central Health. This agreement is binding to all information discovered during this research project.

Dissemination of results:
It is anticipated that the results of this study will be shared with others in the following ways results for this research will be available to all participants in the form of a written report upon completion of the research as well as an executive summary available on the Central Health website.

Disposal of data:
Data from this study will be disposed of by shredding all paper copies post transcription. Electronic data will be deleted two years after completion of the research project.

Contacts:
Individuals that may be contacted regarding this study include:
Amanda Thompson, Principal investigator 709 572 0790 amanda.thompson@centralhealth.nl.ca
Vanessa Mercer-Oldford, third party 709 292 2030
Herman Bakvis, supervisor 205 721 8065 hbakvisuvic.ca
In addition, you may verify the ethical approval of this study, or rise any concerns that you might have by contacting the human research ethics office at the university of Victoria at 250 472 44 or ethics@uvic.ca

Your signature below indicates that you understand the above conditions of participation in this study that you have had the opportunity to have your questions answered by the researchers and that you consent to participate in this research. Please return the signed consent form when you attend the focus group scheduled for_____ on _____ in education room A.

_____	_____	_____
(name of participant)	(signature)	(date)

A copy of this consent will be left with you and a copy will be taken by the researcher

APPENDIX B
Aggraded Staff Focus Group Questions and Results

Introduction: This focus group is intended to discuss wait time contributors and identify potential solutions, particularly regarding wait times for ultrasound services at James Paton Memorial Regional Health Centre. You have been invited because you are considered to be key informants in conducting this research. Before this discussion commences it must be understood that participation is voluntary and no personal benefits will be obtained through participation. You may leave at any time without consequences and without explanation. All information obtained in this focus group will be anonymous in the report to Central Health, however it should be noted that there are limits to confidentiality due to the small number of participants

Question1: How do you think wait times impact patients?

- All groups provided similar information and ideas
- Everyone was able to share a story of a patient who was diagnosed with a cancer, or other pathology after waiting to long for services
- One radiologist stated that she now reports cancers found in patients who waited over a year for an US as an occurrences in CSRS. They are unintended outcomes related to our wait times.
- Everything is marked as urgent it is "clogging the system" and "true urgent patients" have to wait even longer

Question 2: What factors do you think negatively impact wait times?

- Duplicate requisitions are seen frequently
- Physicians send a requisition to more than one facility trying to get the patient in sooner and patients get appointments at both sites.
- Aging it was felt that duplicate requisitions may be directly correlated to high wait times. technologists identified that vacant positions for extended periods of time and accommodated workers due to injuries has negatively impacted wait times, often times accommodated workers may be granted additional time to perform exams or be limited to the number of exams they can perform per day. A discussion was held regarding no shows and on this topic groups varied in their opinions, the clerical and radiologist group felt that the no show rate was significant and negatively impacted patients, however the technologists felt it "probably wasn't an issue".

Question 3: Of the factors listed, how do you think they can be corrected?
Solution focused conversation highlighted in order to catch duplicate requisitions in the system, clerical staff could check requisitions against exams already pended and exams completed after hours and on weekends prior to pending the exam. For example if a patient was sent in from a rural facility after hours for an ultrasound, often times the rural physician will fax the requisitions and send the original with the patient. The exam is completed that evening using the original requisition, the next day the faxed requisition is processed by the file clerk and pended for a future appointment.
It felt that injured workers could be reassessed to determine if capabilities have improved.
Radiologists felt that more exams could be booked per day and this would balance no shows.
Radiologists continued to express that technologists are not working to their full capacity and could do more exams per technologists per day.
Some things that were suggested are outside the scope of this research project but should be kept in view for future wait time reduction strategies such as: development of a physician ordering guideline and to decrease occurrences where patients are ordered an hour long exam but the

history indicates that a thirty-minute exam is required to capture information requested. For example, ordering an abdominal exam (sixty minutes) versus ordering a gallbladder or other organ specific exam (thirty minutes).

Question 4: How do you think lack of standardized processes around booking and canceling appointments affect wait times?
All groups felt that DI has been overly accommodating in regard to allowing patients to cancel their exam or no show multiple times and are still rebooked. Clerical staff voiced concerns that "half the day is consumed with rebooking appointments and filling these new vacancies". Filling vacancies is a very time consuming process. All groups felt that a lot of time is wasted on rebooking and last minute attempts to fill empty slots.

Question 5: Do you believe that "no shows" have a big impact on wait times?
Actual no show data was discussed. All groups were surprised by the accumulated number of no shows. Technologists identified that because each US room is experiencing no shows the global picture was not understood. All groups felt that decreasing no shows can drastically decrease wait times as each no show is rebooked and may be more likely to fail to attend a second appointment.

Question 6: Are there any current practices that positively impacts wait times?
Discussion was held regarding current practices that have a positive impact on wait times. clerical staff expressed that last minute cancellations are attempted to be filled with patients from geographically closely located to the hospital or are filled with in patients who are awaiting services or emergency patients.

Thank you for participating in this focus group. As we move through this process and begin to implement some of your suggestions and ideas please feel free to come forward with any additional thoughts and or ideas.

APPENDIX C
Pre and Post Intervention Observation Data Collection Sheets

Pre Intervention Observations

Date: **Time Started:** **Time concluded:** **Duration:**	Jan 17/14 0800 0900 1 hr	Jan 17/14 1300 1500 2 hrs	Jan 18/14 0900 1100 2 hrs	Jan 18/14 1200 1300 1 hr
Clerical				
Total # of interruptions observed (a,b,c)	14	25	1	8
a. # of phone calls regarding appointment time	10	16	1	7
b. # of interactions with technologist regarding scheduling appointments	4	3	0	1
c. # of interactions with radiologist	0	0	0	0
Minutes of travel	0	22	34	17
# of appointments booked	27	6	38	9
Time to fill an appointment slot by phone	14	12	2	15
# of calls to fill an appointment slot	15	7	1	12
Time spent addressing requisitions with incomplete information	33	27	26	25
Process for patients who fail to attend appointments	Rebook patient into the next available appointment			
Process for incomplete requisitions	Attempt to identify the information in Meditech or call the clinic to obtain the missing information			

Date: **Time Started:** **Time concluded:** **Duration:**	Jan 17/14 0900 1100 2 hrs	Jan 17/14 1200 1300 1hr	Jan 18/14 0800 0900 1 hr	Jan 18/14 1300 1500 2 hrs
Technologists				
Total # of interruptions observed (a,b,c)	4	2	4	3
a. # of phone calls regarding appointments	2	1	0	0
b. # of interactions with clerical regarding scheduling appointments	1	1	2	3
c. # of interactions with radiologist	1	0	2	0
Minutes of travel	10	7	5	16
# of exams performed in 30 minute increments	3	1	1	2
# of patients who attend but have had exam already completed.	3	2	0	0
# of patients who attend but have not followed preparation instructions.	0	0	0	1

Date: **Time Started:** **Time concluded:** **Duration:**	Jan 17/14 1100 1200 1 hr	Jan 17/14 1500 1700 2 hrs	Jan 18/14 1100 1200 1 hr	Jan 18/14 1500 1700 2 hrs

Radiologists				
Total # of interruptions observed(a,b,c)	0	2	4	0
a. # of phone calls regarding appointments	0	1	2	0
b. # of interactions with technologist regarding scheduling appointments	0	0	0	0
c. # of interactions with clerical	0	1	2	0
Minutes of travel	0	0	0	2

Post Interventional Observations

Date: **Time Started:** **Time concluded:** **Duration:**	Feb27/14 0800 0900 1 hr	Feb 27/14 1300 1500 2 hrs	Feb 28/14 0900 1100 2 hrs	Feb 28/14 1200 1300 1 hr
Clerical				
Total # of interruptions observed (a,b,c)	2	4	2	2
a. # of phone calls regarding appointment time	2	3	0	0
b. # of interactions with technologist regarding scheduling appointments	0	1	0	2
c. # of interactions with radiologist	0	0	2	0
Minutes of travel	12	15	8	16
# of appointments booked	39	25	26	42
Time to fill an appointment slot by phone	1	16	0	10
# of calls to fill an appointment slot	1	11	0	8
Time spent addressing requisitions with incomplete information	8	5	0	2
Process for patients who fail to attend appointments	Return requisition to referring physician			
Process for incomplete requisitions	Return requisition to referring physician			

Date: **Time Started:** **Time concluded:** **Duration:**	Jan 17/14 0900 1100 2 hrs	Jan 17/14 1200 1300 1hr	Jan 18/14 0800 0900 1 hr	Jan 18/14 1300 1500 2 hrs
Technologists				
Total # of interruptions observed (a,b,c)	1	0	1	2
a. # of phone calls regarding appointments	0	0	0	0
b. # of interactions with clerical regarding scheduling appointments	0	0	0	1
c. # of interactions with radiologist	1	0	1	1
Minutes of travel	6	12	5	11
# of exams performed in 30 minute increments	4	2	2	3
# of patients who attend but have had exam already completed.	0	0	0	2
# of patients who attend but have not followed preparation instructions.	0	0	0	0

Date:	Jan 17/14	Jan 17/14	Jan 18/14	Jan 18/14

Time Started: **Time concluded:** **Duration:**	1100 1200 1 hr	1500 1700 2 hrs	1100 1200 1 hr	1500 1700 2 hrs
Radiologists				
Total # of interruptions observed(a,b,c)	0	0	5	0
a. # of phone calls regarding appointments	0	0	3	0
b. # of interactions with technologist regarding scheduling appointments	0	0	0	0
c. # of interactions with clerical	0	0	2	0
Minutes of travel	0	0	0	0

APPENDIX D
Appointment Reminder

Appointment Reminder

Date1/Date 2:	/
Last Name:	
First Name:	
Unit Number:	
Age:	
Exam:	

Good Morning/Afternoon

My name is _____ and I am calling on behalf of the Diagnostic Imagining Department of Central Health.
Can I speak with _____?

If patient is unavailable
Do not confirm appointment times with family members.

□ Left message on voice mail	□ No answer 1
□ Left message with family member 1	□ No answer 2
□ Left message with family member 2	

Could you please return my call at 292-8520?
We are unable to discuss information with family members.

If patient is available
1. I am calling to confirm your appointment for a US for (time) on (date).

The next few questions are used for data collection purposes that assist Central Health in improving their services. Please note that you do not have to answer the following questions..

2. Was the patient aware of appointment?
□ Patient aware if aware – proceed to **question 3**.
□ Patient not aware – proceed to **question 9.**

3. Do you plan to attend your appointment?

□ Yes	□ No (skip to question 7)	□ Unsure

4. If you hadn't received a call today, would you have remembered your appointment?

□ Yes	□ No	□ Unsure

5. We send out appointment letters in the mail, did you receive a letter stating that you had an appointment?

□ Yes	□ No	□ Unsure

If patient will be attending

6. Do you fully understand what you need to do to prepare for your test?

□ Yes	□ No	□ Not Applicable

If no, refer to patient preparation guidelines folder and explain exam preparation.

Proceed to Survey

If patient will not be attending

7. Can I ask why you won't be attending? (Click all that apply)

□ Work/family commitments	□ Financial
□ Transportation	□ Not enough notice
□ Unaware of exam	

I will call the Diagnostic Imagining Department and will let them you that you will not be attending your exam. You will receive a letter in the mail notifying you of your new appointment. There are long wait times in some areas and I am unsure of when your next appointment will be.

□ Seen somewhere else	□ Don't need exam

I will call the Diagnostic Imagining Department and will let them you that you will not be attending your exam. Your referral with then be returned to your family doctor. If you need this exam in the future, you will need to go to your family doctor and get a new referral.
□ Other. Please Specify _____

8. Have you called to cancel your appointment?

□ No	□ Yes – phone was busy
□ Yes – spoke with someone	□ Yes – couldn't reach anyone
□ Yes – left message	

Patient Unaware

9. Would you be able to make that appointment time?

□ Yes	□ No	□ Unsure

If yes

There are instructions for your exam, would you like me to fax them to you or would you like to write them down?

If you do not have a fax number we can fax the instructions to your local pharmacy.
Fax _____

If no

I will call the Diagnostic Imaging department and let them know that you didn't receive notification and cannot make your appointment time. I am not sure of when you will be booked for another appointment.

Thank you for your time and you will receive a letter in the mail when your appointment is booked.

End call.

APPENDIX E
Patient Survey

While I have you on the phone, can I ask you a few additional questions that would help Central Health research and manage their appointments better?

If no: Thank you for your time.

If Yes:
You are invited to participate in a research study focused on reduction of wait times experienced by patients accessing ultrasound services at James Paton Memorial Regional Health Centre (JPMRHC). This research is being conducted by Amanda Thompson on behalf of Central Health. Amanda Thompson is a graduate student in the Public Administration Department at the University of Victoria and you may contact her if you have any further questions by calling 709 572 0790 or e-mailing her at Amanda.thompson@centralhealth.nl.ca.

This research is being conducted under the supervision of Herman Bakvis. You may contact my supervisor at 205 721 8065

Purpose and objective:
The purpose of this project is to reduce wait times in ultrasound services at JPMRHC within Central Health. This will be accomplished through three objectives: 1) standards of practice, 2) implementing reminder calls and 3) booking by best available evidence.

Importance of Research:
Research of this type is important because wait times for essential services must be reduced in order to improve patient care. Patients who wait excessively for services may go undiagnosed and have unfavorable medical outcomes.

Participant Selection:
You are being asked to participate in telephone survey because you have been identified as being on a wait list for ultrasound services. If you consent voluntarily to participate in this research, your participation will include answering 13 questions to assist in identifying information about appointment notification processes. This will take approximately 10 minutes of your time.

Your involvement is completely voluntary and there are no consequences for not participating. If you do not wish to participate simply end this call at any time.

Inconvenience:
Participation in this study may cause come inconvenience to you such as: usage of your time.

Risks:
There are no known or anticipated risks to you by participating in this research.

Benefits:
To participants: The potential benefits of your participation in this research include an opportunity to share your opinion regarding ultrasound appointment notification services to assist in the development of operational policy, standardization of work practices and reduction of wait times for essential diagnostic services as well as increases in patient safety.

To society: Reduction in wait times will result in patients receiving diagnostic exams and procedures sooner. This will result in an earlier clinical diagnosis and therefore earlier treatment where applicable.

To the state of knowledge: Information on wait times in ultrasound services is difficult to ascertain as most healthcare wait times focus around the emergency department, operating rooms or endoscopy services. This information can be used to address wait times specific to ultrasound and other Diagnostic Imaging modalities.

Voluntary participation:
As previously stated your participation in this research is completely voluntary. If you do decide to participate you may withdraw at any time without any consequences or any explanation. If you do withdraw from the study your data will be removed using a coded sheet to identify your comments or observations, this information will then be destroyed.

Anonymity:
In terms of protecting anonymity: this will be protected from the principal investigator and all others.

Confidentiality:
Your confidentiality and the confidentiality of the data will be protected by aggrading all information obtained from the telephone survey, no personal identifying information will be collected on the survey sheet to determine who participated. Results will be aggraded and presented as general findings. Individual comments or participants will not be identified.

Dissemination of results:
It is anticipated that the results of this study will be shared with others in the following ways: a written report back to Central Health as well, results for this research will be available to all participants in the form of an executive summary available on the Central Health website.

Disposal of data:
Data from this study will be disposed of by shredding all paper copies post transcription. Electronic data will be deleted two years after completion of the research project.

Contacts:
Individuals that may be contacted regarding this study include:
Amanda Thompson, Principal investigator 709 572 0790 amanda.thompson@centralhealth.nl.ca
Herman Bakvis, supervisor 205 721 8065 hbakvisuvic.ca
In addition, you may verify the ethical approval of this study, or rise any concerns that you might have by contacting the human research ethics office at the university of Victoria at 250 472 44 or ethics@uvic.ca

Do you understand the above conditions and choose to participate in this study?

☐ **Y**	☐ **N**

_____ _____ _____
Name of Participant *Participant code number*

_____ _____ _____
Name of person obtaining consent *Signature of person obtaining consent* *Date*

#

Participant code number

1. Did you know that you were referred for this test?

□ **Y**	□ **N**	□ **Unsure**

2. Other than our call today, how were you notified of your appointment?

□ **Mail**	□ **Phone**	□ **Unsure**	□ **Not notified**

3. When did you receive this notice?

□ **0-6 days**	□ **7-13 days**	□ **14-30 days**
□ **Greater than 31 days**	□ **Not notified/unsure (skip to question 6)**	

4. Was this enough notification

□ **Y**	□ **N**	□ **Unsure**

5. How would you like to be notified?

□ **Mail**	□ **Phone**
□ **E-mail**	□ **Text message**

6. How much notice would you want?

□ **1 week**	□ **2-3 weeks**
□ **3-4 weeks**	□ **Greater than 1 month**
□ **Greater than 2 months**	

7. Would you benefit from a reminder call?

□ **Y**	□ **N**	□ **Unsure**

8. Since you saw your doctor, have you called the Diagnostic Imaging department to ask about your appointment?

□ **Y**	□ **N (skip to question 12)**	□ **Unsure (skip to question 12)**

9. If, Yes, how many times did you call?

□ **1 time**	□ **2 times**
□ **3-5 times**	□ **Greater than 5 times**

10. What was the purpose of your call(s)?

□ **To see if my referral was received**	□ **To change my appointment**
□ **To cancel my appointment**	□ **To ask about my appointment time**
□ **To clarify my exam preparation**	□ **Other, please specify**

#

Participant code number

11. In the future, would you like to be notified when we receive your referral/

□ **Y**	□ **N**	□ **Unsure**

12. Have you ever missed an appointment at Central Health?

□ **Y**	□ **N**	□ **Unsure**

13. Can you remember why you missed your appointment?

□ **Work/family commitments**	□ **Financial**
□ **Transportation**	□ **Not enough notice**
□ **Unaware of exam**	□ **Forgot**
□ **Wasn't notified**	□ **Can't remember**
□ **Didn't need the test**	□ **Seen somewhere else**
□ **Other, please specify**	

Thank you for your time in completing this survey. Your opinions are valuable in managing appointments.

APPENDIX F
Data Tables for Patient Survey

Question 1 – Did you know that you were referred for this test?

Response	*Number of Responses*	*Percentage (%) of Total*
Yes	188	96.9
No	6	3.1
Unsure	0	0
TOTAL	194	100.0

Question 2 – Other than our call today, how were you notified of your appointment?

Response	*Number of Responses*	*Percentage (%) of Total*
Mail	176	90.7
Phone	14	7.2
Unsure	0	0
Not Notified	0	0
No Data*	4	2.1
TOTAL	194	100.0

Question 3 – When did you receive the notice?

Response	*Number of Responses*	*Percentage (%) of Total*
0 – 6 Days	29	14.9
7 – 13 Days	39	20.1
14 – 30 Days	67	34.5
Greater than 31 Days	57	29.4
Not notified/unsure	0	0
No Data*	2	1.0
TOTAL	194	100.0

Question 4 – Was this enough notification?

Response	*Number of Responses*	*Percentage (%) of Total*
Yes	191	98.5

No	2	1.0
Unsure	1	0.5
TOTAL	194	100.0

Question 5 – How would you like to be notified?

Response	*Number of Responses*	*Percentage (%) of Total*
Mail	152	78.4
Phone	31	16.0
Email	11	5.7
Text Message	0	0
TOTAL	194	100.0

Question 6 – How much notice would you want?

Response	*Number of Responses*	*Percentage (%) of Total*
1 Week	89	45.9
2 – 3 Weeks	85	43.8
3 – 4 Weeks	12	6.2
Greater than 1 month	6	3.1
Greater than 2 months	2	1.0
TOTAL	194	100.0

Question 7 – Would you benefit from a reminder call?

Response	*Number of Responses*	*Percentage (%) of Total*
Yes	163	84.0
No	24	12.4
Unsure	7	3.6
TOTAL	194	100.0

Question 8 – Since you saw your doctor, have you called the Diagnostic Imaging department to ask about your appointment?

Response	*Number of Responses*	*Percentage (%) of Total*
Yes	44	22.7
No	150	77.3

TOTAL	194	100.0

Question 9 – If yes to Question 8, how many times did you call?

Response	*Number of Responses*	*Percentage (%) of Total*
1 time	25	12.9
2 times	9	4.6
3 – 5 times	6	3.1
Greater than 5 times	4	2.1
No Data*	150	77.3
TOTAL (number of exams)	194	100.0

**NOTE: In the case of Question 9, "No Data" refers to respondents who did not call the DI department. Therefore the numbers are based on 44 respondents who indicated they called the DI department.*

Question 10 – If yes to Question 8, what was the purpose of your call?

Response	*Number of Responses*	*Percentage (%) of Total*
To see if my referral was received	7	3.6
To change my appointment	11	5.7
To cancel my appointment	0	0
To ask about my appointment time	21	10.8
Clarification of my prep	3	1.5
Other	2	1.0
No Data*	150	77.3
TOTAL	194	100.0

NOTE: In the case of Question 10, "No Data" refers to respondents who did not call the DI department. Therefore the numbers are based on 44 respondents who indicated they called the DI department

Question 11 – In the future would you like to be notified when we receive your referral?

Response	*Number of Responses*	*Percentage (%) of Total*
Yes	174	89.7
No	17	8.8
Unsure	3	1.5
TOTAL	194	100.0

Question 12 – Have you ever missed an appointment at Central Health?

Response	*Number of Responses*	*Percentage (%) of Total*
Yes	28	14.4
No	162	83.5
Unsure	3	1.5
No Data*	1	0.5
TOTAL	194	100.0

Question 13 – If yes to Question 12, Can you remember why you missed your appointment?

Response	*Number of Responses*	*Percentage (%) of Total*
Work/family commitments	3	1.5
Financial	0	0
Transportation	0	0
Not enough notice	0	0
Unaware of exam	5	2.6
Forgot	9	4.6
Wasn't notified	1	0.5
Can't remember	0	0
Didn't need test	0	0
Seen somewhere else	0	0
Other	11	5.7
No Data*	165	85.1
TOTAL	194	100.0

**NOTE: In the case of Question 13, "No Data" refers to respondents who did not miss an appointment at Central Health. Therefore the numbers are based on 28 respondents who indicated they have missed an appointment in the past.*

NOTE: **No Data is an indication that some responses to the survey are missing or were not recorded.**

[All data in this document was generated by SPSS/PASW 2010, January 17– January 29, 2014]

APPENDIX G
Patient No Show Data Post Reminder Call

Table: No Show for US Appointments JPMRHC

Date Called	Date of Appointment	Days prior	Total Exams	No-Shows	Contacted	Not Contacted
17-Jan-14	21 Jan14	4	24	3	21	1
17-Jan-14	22-Jan-14	5	23	1	22	1
20- Jan-14	23- Jan-14	3	25	0	25	
21- Jan-14	24- Jan-14	3	22	1	21	1
22- Jan-14	27- Jan-14	5	22	2	20	2
23- Jan-14	28- Jan-14	5	25	0	25	
24- Jan-14	29- Jan-14	5	24	0	24	
27- Jan-14	30- Jan-14	3	23	2	21	2
28- Jan-14	31- Jan-14	3	25	3	22	3
29- Jan-14	3-Feb-14	5	26	3	23	3
30- Jan-14	4- Feb-14	5	26	1	25	1
31- Jan-14	5- Feb-14	5	26	1	25	1
3- Feb-14	6- Feb-14	3	26	1	25	1
4- Feb-14	7- Feb-14	3	25	1	24	1
5- Feb-14	10- Feb-14	5	24	0	24	
6- Feb-14	11- Feb-14	5	26	0	26	
7- Feb-14	12- Feb-14	5	26	0	26	
10- Feb-14	13- Feb-14	3	26	0	26	
11- Feb-14	14- Feb-14	3	24	0	24	
12- Feb-14	17- Feb-14	5	24	1	23	1
13- Feb-14	18- Feb-14	5	26	0	26	
14- Feb-14	19- Feb-14	5	24	1	23	1
17- Feb-14	20- Feb-14	3	23	1	22	1
18- Feb-14	21-Feb-14	3	24	0	24	
19- Feb-14	24- Feb-14	5	24	0	24	
20- Feb-14	25- Feb-14	5	23	1	22	1
Total	**26**		**636**	**23**	**613**	**21**

ation and No Show Policy

Central Health	**Name of Manual:** **DIAGNOSTIC IMAGING** **Section:** **ADMINISTRATION**	**Policy Number:** **1-90**
	Policy Name: **CLIENT CANCELLATION AND NO-SHOW**	**Page:** **74 of 80**

OVERVIEW

The Diagnostic Imaging Department is committed to maximizing utilization and the optimal use of clinical resources. Clients who do not show or cancel appointments have a significant impact on the wait time for Diagnostic Imaging Services.

A brief description of the Client No-Show and Cancellation Policy will be located on the client appointment letters.

This policy applies to all imaging modalities, appointments, and booking clerks that work in the Diagnostic Imaging Department within Central Health.

POLICY

No Show Appointments

If a client fails to show for an appointment, this is considered a no show. If the requisition indicates that the procedure is of an urgent nature, an attempt will be made to contact the client by telephone to confirm the client received notification of the appointment. Otherwise, a letter will be sent (see attached) to the referring physician's office along with the original requisition advising that the client failed to show for the scheduled appointment. A **new** requisition will be required should a future appointment be requested. Clerks shall document the reason for rescheduling the appointment in the Community Wide Scheduling Module in Meditech.

Cancelled Appointments

A client is permitted to cancel and reschedule an appointment once. If a client calls a second time to reschedule the same appointment/examination, he shall be advised that a new referral will be required from his physician prior to rescheduling the appointment a second time.

PROCEDURE

<u>No Show Procedure for Urgent Requisitions</u>

Designated clerical staff at each site:

1. Reviews the list of clients from the previous day that failed to show for their appointment.
2. Verifies that the client was contacted by either phone or mail in sufficient time for the client to be aware of the scheduled appointment.
    a. One attempt to contact the client by telephone is made and the date/time is documented in the scheduling notes in Meditech.
    b. If the client was aware of the appointment but chose not to attend, the clerk:
        i. Prints a physician no show letter from Meditech. (Appendix A)
        ii. Attaches the requisition to the physician letter and forwards both to the ordering physician within two days of the missed appointment.
        iii. Prints a client no show letter, forwards to the client and documents same in Meditech.

c. If the client was not aware of the appointment:
    i. Client is booked into the next available appointment.
    ii. Date/time is documented in Meditech.

No Show Procedure for Priorities Other Than Urgent

Designated clerical staff at each site:

1. Reviews the list of clients from the previous day that failed to show for their appointment.
2. Verifies that the client was contacted by either phone or mail in sufficient time to notify client of the scheduled appointment. The clerk:
    a. Prints a physician no show letter from Meditech. (Appendix A)
    b. Attaches the requisition to the physician letter and forwards both to the ordering physician.
    c. Prints a client no show letter and forwards to the client. (Appendix B)
    d. Documents same in Meditech

Cancellations Procedure

Designated clerical staff at each site:

1. Receives the call to cancel an appointment where the client does not want to reschedule.
2. Enters client MCP number in the Community Wide Scheduling (CWS) module of Meditech.
3. Verifies the correct client appointment is retrieved on CWS by checking the client's name, date of birth, address and/or telephone number with the client.
4. Cancels appointment in Meditech and documents reason in Meditech.
5. Returns requisition to ordering clinician with a cancelation letter. (Appendix C)

Cancellations and Rescheduling Procedure

Designated clerical staff at each site:

1. Receives the call to cancel and reschedule an appointment.
2. Enters client MCP number in the Community Wide Scheduling (CWS) module of Meditech.
3. Verifies the correct client appointment is retrieved on CWS by checking the client's name, date of birth, address and/or telephone number with the client.
4. Reschedules the appointment as requested if the appointment has not previously been rescheduled and documents reason in Meditech.
5. Informs the client of the cancellation policy, i.e. that a new referral from his physician will be required if the client calls to cancel the same appointment a second time.
6. If the appointment has already been cancelled and rescheduled, the booking clerk informs the client that a new referral is required before the appointment can be scheduled.
7. Informs the client that the requisition will be returned to the physician to inform him that the appointment was cancelled a second time.
8. Returns requisition to ordering clinician with cancelation letter. (Appendix D)

REFERENCES

ENDOSCOPY PROGRAM MANUAL; Policy 1-10 Client No Shows Page 2 of 4
Eastern Health CANCELLED/NO SHOWAPPOINTMENTS 415(CLE)-ADM- 020

APPROVED BY: Sean Tulk **APPROVAL DATE:**
COO – Grand Falls & Area

APPENDIX I
Incomplete or Illegible policy

Central Health	**Name of Manual:** **ADMINISTRATION** **Section:**	**Policy Number:**
	Policy Name: **REQUISITIONS – INCOMPLETE / ILLEGIBLE**	**Page:** **76 of 80**

PURPOSE

- To ensure proper client identification is adhered to in accordance with Central Health's policy;
- To increase client safety by minimizing risk of exposure to radiation and/or any unnecessary testing/procedures by ensuring the correct examination is performed in accordance with clinical history.
- To ensure adequate, accurate, legible information is provided prior to scheduling examinations/procedure.
- To provide direction to staff, referring physicians, nurse practitioners and medical staff prior to accepting/completing requests for services.

POLICY

Examinations/procedures shall be done only on the written request of a physician/nurse practitioner/chiropractor or when ordered through Meditech by means of Order Entry. All examinations requested shall be within the health professional's scope of practice.

Requisitions must contain adequate, legible information about the client, the physician, and the examination(s)/treatment(s) requested to ensure that the appropriate examination(s)/ treatment(s) are scheduled, performed, interpreted, and reported in a timely manner.

PROCEDURE

Requests for services must:

- be received on an approved requisition specific to the examination/procedure requested or ordered electronically through Meditech Order Entry
- be legible and have all required fields of the requisition completed
- include client's name and one of the following: date of birth, health care number (MCP), clinical history, legible ordering clinician's name (stamp preferred), signature of referring clinician, and current address and phone number of the referring clinician.

Incomplete Requisitions will follow the process outlined below **except for emergent requests where every effort will be made to obtain the required information.**

IF	Then
No client identifier	Requisition returned to clinician
No second identifier	1.Verify client's second identifier in Meditech 2.Document on requisition that second identifier was confirmed by Meditech 3. If unable to confirm the second identifier the requisition is returned to clinician

No clinician information	Requisition returned to clinician
No history (where applicable)	Requisition returned to clinician
No exam specified	Requisition returned to clinician
Illegible	1.Confirm information with clinician 2.Clinic to fax completed requisition 3.If unable to get complete requisition; return to clinician

Delay of Services
If requisitions are not legible or if all required fields, including client/physician information, are incomplete, requisitions will be returned, which will delay appointment scheduling, or walk-in examinations will not be performed, except in cases where refusal will have a potential negative medical outcome for the client.

REFERENCES

Newfoundland and Labrador Centre for Health Information (NLCHI) Protocols for Registration
Eastern Health Policy DI-400
Lab Grenfell Policy Admin-ii-1
Central Health Positive Client Identification policy

DEFINITIONS

Client	Refers to all patients/residents/clients in receipt of care along the continuum of services provided by Central Health.
Positive Client Identification (PCId)	The process used to ensure the correct client is in receipt of the correct service.
Registration	The process of capturing and recording accurate client information to be used in the treatment and care of the individual.

APPROVED BY: Sean Tulk, COO – Grand Falls & Area **APPROVAL DATE:**

APPENDIX J
Incomplete Requisitions Memorandums

DATE: Feb 1st, 2014

TO: All Physicians

FROM: Amanda Thompson-Jennings, Regional Director of Diagnostic Imaging

SUBJECT: Incomplete Requisitions

c: Richard Lush, Interim VP Medical Affairs
Sean Tulk, COO

All requisitions for Diagnostic Imaging require the following information in order to be processed:

- **minimum of 2 patient identifiers one of which MUST be the Health Care Number (MCP)**
- **clearly written exam type**
- **date for follow up exams**
- **patient history**
- **physician signature**

Requisitions without this information cannot be processed and will be returned to the referring physicians' office for completion and redistribution.

Central Health recognizes the following identifiers for PPI:

- Health care number (e.g. MCP#, other provincial health care number, service number for RCMP or Military)
- Unit number (chart number) or CRMS #
- Name
- Date of birth

If you have any questions, please do not hesitate to contact me at 709-572-0790 or amanda.thompson@centralhealth.nl.ca

APPENDIX K
Referral Pattern for 2013

JPMRHC Total Number of ULTRASOUND New Referrals by Month and Urgency Classification

MONTH	JAN 2011	FEB 2011	MAR 2011	APR 2011	MAY 2011	JUN 2011	JUL 2011	AUG 2011	SEP 2011	OCT 2011	NOV 2011	DEC 2011	TOTAL 2011
FOLLOW UP	116	101	119	103	84	124	133	93	113	124	162	119	1391
NON-URGENT	208	141	163	159	198	203	171	165	155	151	149	136	1999
SCREENING	24	19	11	6	8	16	9	10	9	9	12	16	149
URGENT	332	261	359	300	291	324	317	272	286	257	306	237	3542
TOTAL	680	522	652	568	581	667	630	540	563	541	629	508	7081
MONTH	JAN 2012	FEB 2012	MAR 2012	APR 2012	MAY 2012	JUN 2012	JUL 2012	AUG 2012	SEP 2012	OCT 2012	NOV 2012	DEC 2012	TOTAL 2012
FOLLOW UP	124	124	124	105	136	153	159	120	128	129	134	123	1559
NON-URGENT	111	142	137	83	124	110	123	101	117	125	164	105	1442
SCREENING	19	9	16	13	7	11	12	21	9	7	15	15	154

URGENT	334	304	388	289	329	342	352	336	343	438	444	307	4206
TOTAL	588	579	665	490	596	616	646	578	597	699	757	550	7361
MONTH	**JAN 2013**	**FEB 2013**	**MAR 2013**	**APR 2013**	**MAY 2013**	**JUN 2013**	**JUL 2013**	**AUG 2013**	**SEP 2013**	**OCT 2013**	**NOV 2013**	**DEC 2013**	**TOTAL 2013**
FOLLOW UP	126	123	107	119	140	131	121	104	129	123	88	130	1441
NON-URGENT	132	125	109	133	117	124	113	97	124	122	114	95	1405
SCREENING	10	15	19	20	28	17	12	5	0	0	0	0	126
URGENT	416	401	427	400	409	353	368	323	333	337	262	272	4301
TOTAL	684	664	662	672	694	625	614	529	586	582	464	497	7273

The data presented above and in the following graphs was taken from Meditech January 20, 2014