



**2nd National Nursing Informatics Conference 2007 Proceedings**

Informatics Everywhere: Celebrating the Diversity of Informatics Practice  
October 1 -3, 2007 – Holiday Inn on King, Toronto, Ontario

**THEME: The IT – EHR Challenge**

**Swinging to the Rhythm: The Ups and Downs of Initiating  
Computerized Documentation in the Perioperative Area**

(1-hour panel presentation)

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**Abstract**

Since its initiation in July 2004, the implementation of a computerized documentation system in the perioperative areas at Capital District Health Authority (CDHA/Capital Health) has had growing pains and shared successes. Along with the many challenges, the project has provided the team with invaluable experiences including strategies and methods to cope with the unmistakable change that computerized documentation brings.

Organizational readiness is a fundamental factor to consider in any major initiative. The primary focus of implementing a system of this magnitude is to develop a project management approach and ensure the assessment of appropriate resources. Also, it is recognized that an essential component of a successful implementation is having clinical and IT leaders. This change in practice at Capital Health has had many challenges, successes and lessons learned. Issues encountered and solutions created, as they related to infection control, ergonomics, physical space, equipment, infrastructure, communication, reports, and staff morale, will be discussed.

**Background**

Capital District Health Authority (CDHA/Capital Health) provides core adult health services to approximately 395,000 Nova Scotians. As well, it provides specialized health services to the residents of Nova Scotia and tertiary and quaternary acute care services to the residents of Atlantic Canada.

There is a team of 10,000 located in 10 sites. Operating Room (OR) services are found in the Halifax Infirmary and Victoria General sites of the QEII Health Sciences Centre campus, Dartmouth General Hospital, and Hants Community Hospital. Approximately 500 perioperative staff works in the 38 ORs with case loads of around 150 surgical procedures per day.

Since our Perioperative Information Management System (PIMS) was now at its end of life, this provided the perioperative areas with the opportunity to advance in the electronic world. A new system would provide information beyond management reports and OR statistics. The new information system

was chosen based on the following reasons and needs. First of all, the OR scheduling/reporting application was at its end of life. The reports and OR statistics required by management were provided by this application. Secondly, we wanted to ensure that the OR materials usage was as streamlined as possible. The new system has the potential to provide case supply management and inventory control. Thirdly, the information system provides the ability to cost cases and that can be very useful from a management and planning perspective. Finally, electronic clinical documentation was required to support the management and materials function.

At Capital Health, we used a "best of cluster" approach to choose our replacement information system. This approach considered the compatibility of systems, the availability of various systems and the ability for one vendor to supply the complete solution. The systems include registration (admission/discharge/transfer application), booking/scheduling application, clinical documentation, and electronic record folder. Data is communicated through each application either through an interface, integration or cold feed. Registration interfaces with booking, booking is integrated with clinical documentation, and the information from clinical documentation is cold fed to the electronic record health folder.

The new Perioperative Information Management System (PIMS) is a web-based application accessed through our secure intranet site at Capital Health. It is a multi-site, multi-departmental, and multi-phase application used by perioperative services only. Our primary end-users are perioperative nurses. Electronic clinical documentation is not yet available to the other nursing units

After the initiation of this project in July 2004, we began the first live phase in September 2006. The areas, services and people impacted by PIMS include perioperative: Pre-Admission Clinic, Day Surgery, Intra-Op, and Post-Op (Phases I & II), along with the inpatient nursing units that provide post surgical care. Since these nursing units are not live with computerized documentation, they are provided with printed copies of the perioperative chart. There are many other groups/areas impacted by PIMS including: Nursing, IT, Professional Practice, patients/families, Sterile Processing Department/Materials Management, Booking Clerks, Physicians/Surgeons, OR Data Entry Clerks, Engineering Services, Risk Management, etc.

## **Considerations**

As we moved toward implementation, there were considerations that had to be taken into account when dealing with hardware and equipment. These included infection control, ergonomics, physical space and infrastructure. Keyboards are harbingers of bacteria such as MRSA and VRE; ergonomics is very important from an occupational and health and safety perspective for staff; space is at a premium in most work areas and the addition of computer equipment competed with the presence of existing clinical technologies and patient care supplies; and aging buildings pose challenges when retrofitting for network jacks, data lines, etc. In addition, we had to contend with asbestos in some of our older buildings.

Keeping in mind that each site was unique with regards to ages of buildings, space, and layouts, considerations for hardware, technology, and equipment had to be individualized for each area. Some examples included: laptops, single/dual monitors, mobile units, washable equipment (keyboards, mice, CPU covers, chairs, etc.), mounting arms and wireless access.

## **Challenges**

This implementation of an electronic record was a complete change in the way that we do business. As a result, it presented many challenges. The workload associated with this project was in addition to our usual duties and our mandate was that there was to be no adverse impact on patient care or case volumes. People selected for the Documentation Team had an interest in being part of the change however; many had no formal background in clinical information systems. In healthcare, we are accustomed to purchasing equipment that has already been developed and tested. We had no experience with product development and our learning curve was steep when it came to screen- building, terminology, testing, etc. Complicating the project was our limited access to the vendor in relation to education, training, communication and ongoing support. Unfortunately, we had no Canadian comparator site. We did complete one site visit to the United States with limited results.

Our lack of experience contributed to the underestimation of the amount of time this project would take. Geographic distances between facilities presented an additional time challenge for staff involved in the project. Moreover, across these sites, diverse patient populations and practices, as well as non- standardized documentation tools presented many challenges during the electronic screen development.

There was no coordinator or senior clinical management champion dedicated solely to this project, however, the team rose to the challenge and moved forward with the project. The two different worlds of clinical and IT worked closely together and began to understand each other's language and perspectives.

There is an abundance of literature on the effects of change. During this project we experienced: fear of not being in control of the work environment; concerns about the potential impact on patient care; resistance to the change related to lack of basic computer literacy; grief due to loss of familiar processes and tools; and mistrust when the Go Live timelines changed several times. These shifting timelines were good news for those who wanted to avoid the change to computerized documentation and disappointing to those staff that were looking forward to the challenge of something new. In addition, the usual expected staff turnover inevitably occurred and re-training was required.

## **Dealing with the challenges**

To help manage project priorities, a Documentation Team was formed to develop the screens, policies, plan staff education and write the documentation guidelines for the new documentation format. The team had representation from all sites and phases and met weekly at a central location. The Core Team was the project lead group that dealt with central, high-level decision-making. After implementation of documentation at all sites, we initiated a nursing Action Group to work through lingering process issues such as waitlist bookings, picking cases, testing and initiating upgrades to our systems, and education. Other team members were invited ad hoc to garner their input.

Education is a key component of a successful implementation. Our first step was a basic computer skills assessment of all staff. Once completed, e-learning modules were developed and launched, along with email games and exercise practice flow sheets to improve basic skills. Capital Health's Nurse Educators tracked use of the educational tools, evaluated staff progress and reported back to the managers. One-on-one education was provided, as needed.

Anecdotal evidence indicated this project was stressful for the perioperative nurses. For the most part, they are senior, experienced 'clinical experts' who found themselves questioning their ability to function at their usual level and being able to provide safe and competent patient care during as we moved to the new system. To address these fears, coaching occurred in the form of formal and informal staff meetings, one-on-one conversations, encouragement, listening and praise for their efforts and learning.

"Superusers" were utilized as champions of this project. These were front-line staff chosen by their managers for their qualities of positive attitude, patience, effective communication and knowledge of basic computer skills. Their role was to assist staff with education and change readiness.

Management supported the implementation of PIMS as a priority. Based on identified need and staffing requirements, unit managers scheduled staff away from clinical responsibilities in order to complete project work. Also, the perioperative resource team of educators prioritized their workload to stay committed to this large scale project. We lobbied for appropriate resources and were successful in obtaining a PIMS Documentation Coordinator to take the lead for development, planning, and implementation of the education plan. The Coordinator also dealt with most other issues arising from the documentation team meetings. Additionally, an informatics nurse was assigned to the project, working closely with us to complete audits, create all perioperative field detail, develop a newsletter and webpage and generally support the work of the team. The IT project manager supported managers and the team to assess all perioperative sites' computer hardware needs. Two of our perioperative managers were selected to co-chair the Documentation Committee with support of our IT project Manager. Other initiatives included development of a PIMS homepage, documentation guidelines and policies. We remained flexible and found a balance between advancing with the project and shifting timelines.

### **Successes We Experienced**

Several positive outcomes included a more cohesive team, professional development, standardized perioperative documentation and timely access to patient information. The project brought us closer together as a district through our regular committee meetings, site visits and classroom training. As the project evolved, we gained a better understanding and respect for the different roles of team members in each phase of perioperative care.

On a professional level, members of the project have gained new skills including leadership, creative thinking and improved problem solving skills. Increased computer literacy enables staff to access patient information (i.e. diagnostic imaging, lab work, and patient health records), medical and professional websites, and policies and procedures on line. Communication between Perioperative Managers, Educators and staff is facilitated through regular use of email.

Prior to the project launch, our multi-site facility did not have standardized perioperative nursing documentation. We blended these diverse documents to help design a standard set of computer screens for the perioperative phases. As a backup to our computer system, we developed standard downtime documentation records used when the system is not available. Policies and procedures have been developed specifically to support the computer documentation system and are used throughout our perioperative settings.

One year into our implementation, we have noticed an improved ability to access patient information. All perioperative charts are cold fed to the electronic health record as soon as

the chart is 'closed.' Nurses and physicians can access the patient record in the electronic health record almost immediately after the health record has been closed.

Historically, health care providers have experienced the difficulties of interpreting handwriting from all members of the team. Online documentation allows all information to be legible. Standardized documentation and the ability to track entries in the electronic chart through an audit history are all positive steps for safety.

### **Successes to be realized**

With computer documentation live in all perioperative sites, we are anticipating our next positive milestones to include the ability to complete case costing, enhanced OR reporting and improved patient flow through the perioperative setting with a patient tracking system.

Our system is based on a material tracking platform and the goal is to achieve accurate case costs and have automatic replenishment of supplies based on what is documented in the chart. Currently, we are exploring ways to enter the information required to support these functions without taking nurses away from patient care. The use of bar code scanners for supplies and how we document changes to booked cases are part of this initiative. To date, we have not replaced our regular OR reports with information from our new system. Ensuring our clinical documentation supports the building of these reports is the focus of current work.

An exciting feature of our system is the ability to have a patient tracking board. We anticipate this will improve OR efficiencies through better communication of the location of the patient at all times during the perioperative experience.

### **Strategies for success**

It has been just over one year since we first went live with computer documentation in our perioperative areas. We continue to learn from our experiences and have modified many of our processes to ensure delivery of safe patient care. Hindsight is twenty-twenty in project work. Some key recommendations:

A solid plan and adequate resources at the outset of the project are the keys to a successful outcome. Next is the need to actively adopt a change management process, assess organizational and unit readiness and involve frontline staff who will be using the application. Choosing appropriate staff to act as champions for change and computer 'superusers' will help foster a spirit of co-operation and positive attitude among staff.

Early assessment of staff diversity regarding their computer experience, education needs, and comfort level are necessary to design an education plan. Consideration must be given to adult learning principles and employing a variety of opportunities for staff to achieve a basic level of computer knowledge before training.

Be as proactive as possible regarding computer literacy and ensure that the technology is available prior to training. Introduce a variety of ways to increase computer skills and

comfort level with the new technology and have a plan B for staff that do not learn as quickly as others. Encourage staff to think of creative ways to incorporate the electronic world into their everyday work.

Consider completing an impact analysis to determine how the change may impact patient care for the medical team and department process flows. Ergonomic assessments are necessary to determine physical environment needs. Also, it is important to look at a variety of computer models to determine the best fit for the physical environment.

After these initial assessments, identify clinical staff that are interested in the new system and have them fully trained up front. Complete a comparator site visit, if available, in order to utilize other's experiences. Listen to the vendor's recommendations for resource requirements and avoid excessive customization or trying to make the old system fit the new.

Spend time at the beginning to build the team and to learn each other's roles. Defined expectations around roles and responsibilities, well-established communication structures, and decision making processes will assist in reaching difficult decisions. Ensure necessary duplication of roles - avoid the "one of" roles - that is to say that no one person can be solely responsible for critical functions.

With large scale projects, shifting timelines are inevitable. Provide timely communication to all members of the team through regular staff meeting updates, communication boards, newsletters and e- mail. Realize that sometimes the best option is the most simple or obvious one.

And, most importantly, take time to celebrate the small successes along the way and maintain a sense of humor.

We wish to acknowledge the hard work and sheer determination of the entire project team at Capital Health and we salute our Perioperative colleagues their courage with this endeavor.

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## **ABOUT THE AUTHORS**

### **Sandy Crosby RN BN**

**Sandy Crosby** is a Clinical Educator- SDSU VG/HI, Minor Procedures and TPU. Sandy specializes in Same Day Surgery. She has over 23 years combined experience in surgical nursing: (Burns and Plastic Surgery), Clinical Nurse Educator (Orthopedics and Plastic Surgery) and Perioperative Nursing (Same Day Surgery). Sandy has served as co-chair of the CDHA IMCU Committee and lecturer for this program. As the former HSM Education Coordinator, Sandy collaborated with the Perioperative Educators to develop and

implement a detailed education plan for HSM Computer Documentation in the Perioperative settings at CDHA.

### **Cindy Fulmore RN BN CPN(c)**

**Cindy Fulmore** is a Clinical Educator 10A 11A VGH operating rooms. Cindy graduated from the Dalhousie University School of Nursing. Since then roles have included staff nurse on a surgical unit, operating room staff, charge nurse, instructor for the NS Provincial Perioperative Program and currently Clinical Educator for the Operating Rooms at the Victoria General Hospital in Halifax. Accomplishments include presenting with colleagues at the ORNAC conference in 2005 and publishing an article in the ORNAC Journal which has been reproduced in the Australian College of Operating Room Nurses (ACORN) Journal. For the past two years Cindy has been an integral part of the development of the electronic chart, management of the education role out in the Intraoperative area, development of policies related to electronic charting and testing of the system.

### **Deborah Garnier RN MN CPN (c)**

**Deborah Garnier** is a Health Services Manager 10A 11A VGH operating rooms. Deborah graduated from Salvation Army Grace General Hospital School of Nursing 1982, St Francis Xavier University 1999(BScN) and Athabasca University 2006 (MN). She has a Post Graduate certificate in Perioperative Nursing and Canadian Certification in Perioperative Nursing. In 2004 she was the recipient of an Excellence in Nursing Practice award from the College of Registered Nurses of Nova Scotia. Deborah has worked in the Perioperative Nursing field since 1988 and has had the opportunity to work as a Staff Nurse, Nurse Educator, Supervisor and Health Services Manager. Deborah has been involved with the HSM project at Capital Health since the beginning of the project, initially as part of the documentation team and later as a member of the Core and Action groups.

### **Marion Power RN**

**Marion Power** is a Health Services Manager HI & VG Post Anesthetic Care Units, Pain Management Unit & Block Room. A native of Nova Scotia, Marion graduated from the Victoria General Hospital School of Nursing, Halifax, NS in 1972 with her Diploma in Nursing. Her nursing background has included roles as staff nurse, educator, unit resource nurse, and acting nurse manager at the Victoria General Hospital and Queen Elizabeth II Health Sciences Centre, Halifax, NS. The majority of her career (24 years) has been spent in perianesthesia nursing. Presently, she is the Health Services Manager of the Halifax Infirmary and Victoria General Post Anesthetic Care Units, Pain Management Unit, and Block Room at the QEII Health Sciences Centre, Halifax, NS. She is in the process of completing her Baccalaureate in Nursing. Professional activities include being an active member of the College of Registered Nurses of Nova Scotia, President of the Association of Nova Scotia PeriAnesthesia Nurses, Secretary for the National Association of PeriAnesthesia Nurses, and a standing member of the National PeriAnesthesia Nurses Standards Committee. She has been involved with the Horizon Surgical Manager perioperative project since it began in July 2004.

Life is not all work! Marion is married with a grown son and daughter and lives in Halifax, NS. She enjoys traveling, golfing, reading, a glass of wine, the beach, and time spent with family and friends.

## **Lois West, RN BSN**

Lois West graduated from Queen's University with a Bachelor of Nursing Science in 1978. She began her career at Victoria General Hospital (VGH), Halifax in 1978 as a staff nurse – orthopedics. Completed the VGH Critical Care Program in 1981 and moved to Medical Intensive Care Unit as a staff nurse from 1981-1983. 1983-1985 - staff nurse at the Toronto General Hospital, MICU. 1985-1991 – Saskatoon, SK. Took a few years off when 2 children very young, then worked casual as a medicine float nurses at Royal University Hospital. 1991 – 1999 - Capital Health, Halifax, NS Variety of roles at Capital Health in medical and surgical subspecialties in ambulatory and acute settings as a staff nurse, clinical nurse educator and interim health services manager. March 1999- present – Capital Health, Halifax, NS Health Services Manager for the Ophthalmology program at Capital Health which includes the clinical areas of the day surgery, operating rooms and Eye Care Centre clinic.