

## C O N T I N U I N G

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# Change Management and Clinical Engagement

## Critical Elements for a Successful Clinical Information System Implementation

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Interior Health (IH) is one of five health authorities in British Columbia, Canada, covering 216 000 km<sup>2</sup> in the southern interior of the province. It provides publicly funded health services to approximately 742 000 residents across urban, rural, and remote communities. Services provided include acute care, health promotion and prevention, community care, residential care, mental health and substance use, and public health. It employs more than 18 500 staff, of which approximately 6650 are nurses and 2400 are health service professionals. As of May 2012, 1488 physicians had privileges in IH's acute facilities.<sup>1</sup>

In this article, we describe a 4-year initiative that moved IH from multiple, inconsistent databases to a single database that incorporates evidence-based standards, improves patient safety, is user-friendly, and supports clinical workflow. The Clinical Information System (CIS) that was in place was an integrated, single-vendor solution; however, it had been customized to support different terminology and practices in different locations. Some examples of this customization and inconsistency included the following:

- Radiology procedures and laboratory tests were named differently across the organization.
- Diet types and textures were named differently, and indications for use of a specialized diet varied from site to site.
- Referrals to programs and support services included a variety of electronic and paper processes with different questions on referrals for each site.

Moving a large healthcare organization from an old, nonstandardized clinical information system to a new user-friendly, standards-based system was much more than an upgrade to technology. This project to standardize terminology, optimize key processes, and implement a new clinical information system was a large change initiative over 4 years that affected clinicians across the organization. Effective change management and engagement of clinical stakeholders were critical to the success of the initiative. The focus of this article was to outline the strategies and methodologies used and the lessons learned.

### KEY WORDS

Change acceleration process • Change management •  
Clinical engagement • Clinical information system •  
Clinical workflow • Health system • Implementation •  
Standardization • Work processes

- Allergy information was shared across most acute care sites but not across community programs, and there was no standard for the collection of allergy information.
- There were significant variances in the use of the CIS within the same program area across the health authority. For example, in one community, the Diabetes Education program used the system to book patient appointments, track recall, and enter online documentation and workload statistics. A larger diabetes education program in a community an hour away used a word processing program for patient appointments, handwritten documentation, and manual workload statistics.
- Discrepancies were found in the process for identification and banding of newborns as sites were using different numbers to register an infant in the CIS.

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*The authors have disclosed that they have no significant relationship with, or financial interest in, any commercial companies pertaining to this article.*

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DOI: 10.1097/CIN.0000000000000055

These are only a few examples of differences in use of the information system across the organization. In moving toward a standardized CIS, it quickly became apparent that the initiative would need to address the clinical processes that intersect with the technology.

The initiative was staffed by a team of more than 100, including managers, consultants, clinicians, information and technology analysts, and business analysts who were aligned in 30 sub-project teams. A steering committee with senior leaders provided oversight. The 4-year timeline was divided into stages, with the first year focused on process optimization and standardization. Clinicians were engaged to determine how they used the current CIS and to develop standardized terminology and processes reflecting their clinical workflow. It was anticipated the standardization work would be completed during the first year of the initiative, but in reality, it continued throughout the project. The second year focused on the new system build incorporating the standards that had been developed. Implementation of the new CIS occurred during the third and fourth years. A phased approach, with six go-lives, was utilized to train and support more than 10 000 users across the large geographical area. During this time, links were maintained between the old and new systems so clinicians could access patient information without signing in to both systems.

## CHANGE MANAGEMENT

Recognizing the amount of change this initiative would introduce, the organization identified the need for a change management framework. The model of change chosen was General Electric's (GE's) Change Acceleration Process (CAP) as it provided a structure and tools to manage the impact of the technology and process change on staff. A core group, which included all project managers and project leads, were trained to be facilitators of the model.

Change Acceleration Process is GE's proprietary framework for actively preparing for, leading, managing, and participating in change. The CAP framework and tools address how to create a shared need for the change, understand, and manage resistance from key stakeholders and build effective influence strategies for change.

*Leading Change*—For a change to be successful, there must be authentic, committed leadership visible to everyone within the organization throughout the duration of an initiative. Leading change activities included having a sponsor or champion and team members who demonstrated visible, active, public commitment and were supportive of the change.<sup>2</sup> This initiative was endorsed by the IH senior executive and Board of Directors, and their support was visible through frequent communication to all levels of staff and the commitment of funds during a

time of fiscal restraint. Each of the subproject teams within the initiative was led by a clinical or business sponsor and guided by a steering committee.

*Creating A Shared Need*—Organizations have a tendency to maintain status quo. There must be compelling reasons to change that resonate not just with the leadership team but with all stakeholders. Activities related to creating a shared need occurred at various stages through the initiative and were targeted toward senior leaders and then to frontline managers and staff. Interior Health communications in the form of e-mails, posters, and meeting agenda items introduced the initiative and addressed why change was needed. Key messages were developed from a matrix that looked at the threat of remaining with the current state and opportunities in moving to a new CIS, both from a short- and long-term perspective. Many staff saw the current system as outdated, not user-friendly or intuitive, and inconsistent across the health authority. Moving to a new system was viewed as an opportunity to align the system with clinical practice to better support patient care, as well as to set a foundation to implement advanced technologies in the future.

*Shaping a Vision*—The vision must be widely understood and shared; the end state must be described in observable, measurable terms and appeal to the head and heart.<sup>2</sup> There must be a strong commitment from individuals to invest in the change and to make it work. To achieve this, stakeholders needed to clearly understand what we were trying to achieve and to believe that it would be valuable. This step might be the single most critical factor in a successful change initiative.

A significant amount of effort was expended to ensure the vision was widely understood through ongoing communication in various newsletters, participation in manager meetings and forums, and site visits with clinicians and physicians. Senior leadership repeatedly endorsed the initiative in public forums and meetings. Key messages addressed the question “what does this mean for me?” and were communicated through presentations, site visits, and communiques. The messages were themed from clinician input and mirrored the objectives of the project. Tools were provided to site administrators and managers that made it easy for them to explain to their staff what the project was about and why it was important to do.

*Mobilizing Commitment*—In this stage, activities were geared to execute an influence strategy to build momentum. A critical mass of personnel must be won over, so activities targeted engagement of stakeholders to invest in the change and to make it work. A literature review on factors influencing nurses' attitudes toward healthcare information technology found that nurses may be more likely to have positive attitudes about the change if they are involved in the selection and design of the system to ensure it integrates into their daily workflow.<sup>3</sup> Their involvement

will assist in having the change perceived as an enhancement as opposed to a requirement.

A clinical consulting team for the project was tasked with initiating clinical engagement across the organization. The team consisted of a clinical leader, two clinical consultants, and six staff development educators. The role of the clinical leader was to provide leadership in moving to common standards and nomenclature for clinical processes integrally supported by the clinical information system. The clinical leader and the clinical consultants had nursing backgrounds and provided leadership in planning, coordinating and supporting process optimization, and standardization with all clinical disciplines. The competencies required for the clinical consultant role were similar to what Roggow et al<sup>4</sup> suggest: facilitation skills, consensus building, and systems thinking approach; an understanding of change theory; and the ability to clearly understand the needs of the clinical end users.

The six staff development educator positions were created to support nursing. The literature suggests that, when implementing change, champions can act as change agents to positively influence the practice of their peers.<sup>5,6</sup> For our initiative, the staff development educators were responsible to review changes to ensure the impacts on clinical practices were understood, supported, and communicated to the appropriate stakeholders at each site.

The involvement of clinical staff was instrumental in creating new standards. To accomplish this, we set up a framework of clinical working groups and focus groups representing all disciplines, programs, and service areas. Each group included clinician representation from across the health authority and across the continuum of care. We had 35 clinical working groups and focus groups with more than 500 clinicians directly participating, and for many, this was their first opportunity to tell others how they used the CIS in their practice. Group members attended an orientation where they could meet their colleagues and project team members face to face. This provided the opportunity to ensure there was a clear understanding of the vision and to review tools and processes that would be utilized to develop standards. Each participant was responsible to share information with, and solicit feedback from, their site peers. Subsequent meetings via Live Meeting and teleconferencing were co-facilitated by a clinical consultant and a project team member. A clinical advisory group, with representation from each clinical working group, was formed to review issues that crossed multiple disciplines and care areas.

In each group, clinicians analyzed the current state by reviewing their documents and workflow processes. The development of process maps during the initial face-to-face session assisted with the identification of inconsistent processes, gaps, and failure points in the current system. In subsequent meetings, clinicians identified ways to address those gaps and create efficiencies in the new system

and worked to develop standards. The members had rich discussions about their work, professional practice standards, evidence-based practice, and recommendations on how to develop the system to best support their practice. They often commented on how challenging yet rewarding this work was for them and the organization as a whole.

The nursing clinical working group represented the largest group of clinicians in IH and had 35 members from 15 facilities who provided valuable feedback on nursing processes and standards. However, it was difficult, if not impossible, for nurses to represent their entire facility and all specialties. In order to solicit broader nursing input, site visits were made to facilities across the organization during the second year of the project. The clinical lead and clinical consultants gave presentations to nursing leadership teams providing information on the impacts of the new system for nursing staff. Focus groups and staff interviews were used to collect input from frontline nursing staff as to how they used the clinical information system. The data from these activities were analyzed and collated, and results shared with a nursing manager clinical working group to inform decision making. The priorities agreed to by the nursing manager clinical working group helped to guide the development of standards.

Numerous clinical groups moved to electronic clinical documentation as part of the initiative. Each Clinical Working Group completed a readiness assessment. This included an analysis of the degree of change required to move from the current state to the desired state; the level of support to adopt the new standards and processes, both at the frontline and management levels; barriers to implementing the changes; and impacts if the future state was not implemented. Management groups were responsible to review the assessments, address the barriers identified, and give approval for moving forward. While barriers, such as access to devices were identified in numerous settings, all management groups committed to moving forward with electronic clinical documentation.

Change management sessions were provided for all managers and leaders. A focus group with manager and leader representatives helped to identify their needs and determine the content that would provide value in these sessions. Based on feedback, an integrated software demo was developed that showed how the new system would be used throughout a patient journey that began in the emergency department, through the inpatient stay, and then back home to the community for follow-up care. The managers and leaders were informed of the extent of the change and provided with a toolkit of resources they could share with staff.

*Making Change Last*—With the initial roll-out of the new CIS, we needed to make the change last. One way to accomplish this was to build excitement by leveraging early wins. Unfortunately, the initial implementation was not viewed as a win as some fundamental software issues made use of the system difficult. To address this, project

timelines were adjusted so software issues could be resolved before rolling the system out to other areas. This modification reduced the level of resistance and encouraged better success with further rollouts.

The initiative also integrated with other events happening in the organization, both at the macro and the micro level. At the macro level, communication with senior leadership ensured other significant changes in the organization did not overlap with this project. When scheduling conflicts occurred, timelines were adjusted accordingly. An example was adjusting the go-live schedule to avoid implementing the new CIS at two acute sites at the same time as they opened new buildings. At a micro level, understanding what was happening on a unit was important. For example, it was important to know if the unit had a new manager and if a site or unit was struggling with heavy workload or staff absences. When this occurred, timelines could not be changed, but strategies were developed to mitigate risks.

The support of site managers and leadership was critical in gaining acceptance. A senior nursing leader was requested to be a local sponsor through the implementation for each site. This person acted as an advisor, supported staff through the change, and helped to escalate issues that negatively affected workflow or patient safety. Appropriate resources and on-site clinical support was required to make change last. Some staff were released from their existing duties, given extra training, and utilized as super users to assist with end user training and support. The staff development educators worked with these site super users to provide education on both process and system changes. They acted as coaches and champions of the system, reinforcing positive habits and overcoming negative workarounds.

After each go-live implementation, the project team used a retrospective approach to review what worked well, what did not work well, and what could be improved. Meetings were held with management groups to get their feedback. Where possible, suggestions were incorporated into the next go-live phase.

**Monitoring Progress**—It was important to plan for measuring the progress of the change initiative. Benchmarks should be set, and then when achieved, they should be celebrated. Similarly there should be accountability for lack of progress. Strong project management methodology provided a structure for monitoring and reporting progress.

An interdisciplinary meeting with site administrators, physicians, managers, and clinical leaders was held at each acute care site several months before their go-live. The objective was to gain a clear understanding of the process changes and impacts that would occur for all departments with the implementation. A second meeting was held just prior to go live to ensure items identified during the initial session and through parallel run testing sessions were

addressed. This same group participated in daily meetings through the go-live period and then weekly through the transition phase to communicate high-priority issues that crossed multiple disciplines or departments.

**Changing Systems and Structures**—There is a natural tendency to try and go back to the previous state. In order to make change permanent, you must consider the organizational systems and structures that are needed to sustain and reinforce the change.<sup>2</sup>

Action plans for each phase of the project addressed communication, change management, training and education, transition, and support. The effectiveness of these plans was reviewed after every implementation and adapted for each go-live site. One example of a change that occurred as a result of the review was with on-site support. Site staff reported feeling very supported during the first week of go-live when there was extensive on-site support from the project team. However, they reported feeling abandoned when most team members left after the first week. In subsequent go-lives, the support model was changed to a phased transition and incorporated more consultation with site leads.

A number of measures were identified as critical to the success of the initiative, and those measures were tracked and reported on throughout the initiative. Detailed criteria were developed and monitored to ensure readiness for each go-live. A project review was completed to identify lessons learned and potential enhancements for future projects.

## CLINICAL ENGAGEMENT

Clinicians were engaged and responsible for developing clinical standards for the new CIS that were evidence-based and supported their workflow and practice. Some examples include the following:

**Parenteral Therapy Referrals and Documentation.** Prior to this initiative, referral processes for parenteral therapy varied across the organization and included the use of paper forms, phone calls, faxes, and electronic orders. Documentation was done electronically at two sites and manually at all other sites using different paper tools. Statistical data collection was done manually with spreadsheet or word processing software, and one site had previously used some electronic data capture.

Several key principles of the initiative influenced the work taken on by this group. One principle was that system and process changes had to be implemented equally across the health authority. Because two of the sites were already documenting electronically, this meant that all parenteral therapy programs should have this ability. Another principle was that system changes would support clinical workflow processes. A challenge with this principle was that some parenteral therapy programs reported up



through acute care, and some reported through community care programs, so workflow processes differed. The parenteral therapy group and their managers were able to see the benefits of standardizing and knew that consistent referral and documentation processes would provide better information in the electronic health record for communication of client care. It would also provide capacity for consistent, electronic data collection for statistical purposes in the future. Parenteral therapy nurses, oncology nurses, nurse educators, and a nurse manager formed the membership of the first group, which had five meetings to review the current state of referral processes and standardize an electronic referral process. The live meeting format supported demos of the software so that participants could visualize and test the content. The meetings were facilitated by a nursing informatics specialist who correlated the clinical knowledge and processes shared by the group to the software functionality.

The group then worked with a regional practice leader, a clinical consultant and a technical analyst over a span of 12 meetings to develop the content for electronic documentation. Evidence-based best practice standards, professional college standards, and organizational and site processes were reviewed in order to reach consensus on assessment and documentation standards. Work on an IH Adult Parenteral Therapy Manual had already been completed and was used as a reference. The group was also involved in testing and parallel run activities to ensure the format supported their practice. All parenteral therapy staff received 10 hours of training on the new system. Clinical process impacts and a clinical process flowchart were reviewed with staff prior to go-live so they were clear on changes.

Standardized electronic referral and documentation processes have been implemented for parenteral therapy programs in four out of six geographical areas. The work required had not been completed for the initial two go-lives and will be retrofit in these areas. Documentation for initial assessment and insertion of vascular access devices, reassessments, and consults for problems and troubleshooting are now documented electronically and are viewable by all clinicians providing care to the patient.

*Allergy/Adverse Drug Reaction Documentation.* Changes to the software functionality for managing allergies prompted a review of current processes for collection and documentation of allergy and adverse drug reactions (ADRs). While many areas entered this information electronically, a survey of staff at the beginning of the initiative indicated there was no consistent process for collecting and viewing this information on a patient's chart. Duplicating allergy/ADR information was common practice; in one facility, allergies were written on more than 10 different forms for one acute care visit. Recognizing the need to reduce duplication and enhance patient safety, a key objective was to develop a standard process for the collection and

documentation of allergies and ADRs across the continuum of care.

Allergy/ADR information is important to all healthcare providers so all appropriate stakeholder groups were invited to be involved with this project. A steering committee with representation from the project team, physicians and pharmacy was created to provide overall project direction and guidance. An advisory committee, with representation from a number of professional practice groups, pharmacy and therapeutics, and quality and risk provided expert advice to the project. A working group had representation from across the continuum of care, as well as the departments that were keenly interested in allergies, such as nursing, nutrition services, pharmacy, laboratory, and diagnostic imaging. A significant amount of work was done to incorporate information learned from related sources:

- a review of information from other health authorities;
- a review of critical patient events in IH involving allergies;
- a review of professional standards of practice;
- an IH wide current state analysis; and
- a review of information from two IH facilities who piloted the use of a standard allergy/ADR paper form.

A clinical practice standard was developed to address the documentation of patient, client, and resident allergies and ADRs by all healthcare providers. A standardized allergy/ADR record in paper and electronic formats was developed and rolled out with the implementation. Presentations were made to physicians and clinical leaders across the continuum, and new processes were discussed at interdepartmental meetings and during training sessions. Additional tools, such as computer-based learning modules, slide presentations, process documents, and quick reference guides, were made available to help staff understand best practice for an allergy/ADR history and to outline the new process for documentation.

Following the initial two implementations, surveys were distributed to acute care and residential care staff to evaluate the new process. The review found that the new standard was not always being met, and the new allergy/ADR record was not used consistently. The greatest challenge appeared to exist in acute emergency/outpatient areas, where high volumes and quick turnovers result in increased difficulties following through with the new process. Learning from the initial two sites, additional education, and support was provided when the new allergy process was implemented in subsequent go-lives. Now that all areas are using the new software and new process, additional education and follow-up are required to solidify the practice and make this change last.

**Child Welfare Alert Process.** A Child Welfare Alert (CWA) is a special indicator that notifies staff of a potential child welfare and/or protection concern for a patient. Similar to most other clinical processes, documentation of these alerts was not standardized across the health authority prior to this initiative. Two hospitals had electronic processes that differed from each other; all other hospitals used manual paper processes to track these alerts. The social work clinical working group requested the development of a consistent process for identifying patients that have a CWA in place. Clinicians believed that electronic access to this information in a timely manner would support staff to provide safe, quality care. When the alert is a paper process only, some staff may not have access to this critical information at the point of care.

A focus group, with representation from social work and management, was formed to take on this request. Meetings were held with both internal stakeholders and external agencies to review processes involved with CWAs. Similar to other clinical working groups, the focus group's initial meeting was face to face, and the subsequent meetings utilized live meeting and teleconference. A detailed clinical process for an electronic CWA special indicator was developed and included the following:

- criteria for who can apply the indicator;
- criteria for when the indicator should be applied;
- expected action(s) of staff when the indicator has been applied;
- criteria for when the indicator is to be removed;
- expected action(s) of staff when the indicator has been removed;
- the review process of all alerts for renewal and/or removal; and
- requirements for training and education for staff who can apply the indicator.

The new process required rigorous review and approval from the IH Maternal Child Health Network, medical directors, the Quality Improvement Patient Safety Committee, and the IH Clinical Ethics Committee. The executive sponsor of this work had responsibility for perinatal and child services across the organization and played an important role in engaging physicians and senior executives. All staff designated to apply the CWA special indicator received an hour training session, training manual, and super user support. Communication memos went out to all staff and physicians informing them of the new electronic CWA at go-live. This new standardized process has been implemented at the two sites that previously used an electronic process, and planning is underway to roll it out to the other sites. Early indicators from the initial two sites are that the adoption went well, and the new process is working as intended.

## REFLECTIONS ON LESSONS LEARNED

Prior to embarking on the initiative to implement a new CIS, the organization recognized the importance of engaging clinicians to develop standardized terminology and processes that intersected with the technology. The frameworks used were valuable to support the change and to engage clinicians. Several lessons that were not covered within the initiative frameworks emerged through our experiences and are shared here.

*Ensure the Vision for the Initiative Is Attainable.* As indicated previously, energy was expended to ensure the vision of the initiative was broadly communicated and supported. Although there was high awareness of the initiative, it did not deliver on some promises, especially during the initial phased go-lives. It is important to set a realistic vision that can be delivered.

*It Takes Time and Collaboration to Develop Standards Across a Large Health Authority.* The clinical working group format worked well to provide a forum for clinicians to network and discuss work processes. Clinicians were willing to develop standards, especially where evidence existed to support those standards, but this took a lot of time. Clinicians needed to explore options, ask questions, and see the software to understand how the standard would be incorporated into the CIS. The CWA Focus Group worked for 2 years and through 20 meetings to complete the work and rigorous review and approval process. The amount of time required varied among groups, but for all groups, it was worth the effort. When clinicians are involved in guiding a system that improves safety and patient care, they take ownership of the change.

*It Can Be Difficult to Free Up Clinical Staff Time to Participate.* In some cases, this contributed to the length of time it took to develop and approve new standards. While the initiative included a budget for the backfill of staff to participate in clinical working groups, replacement staff was often not available. Most areas did not have extra parenteral therapy nurses or social workers so this meant they had to take time from their regular workday to participate in meetings, and as a result, participation at meetings was variable. Physician engagement was a challenge for the allergy/ADR project. Different approaches were used to mitigate these challenges. Agendas and minutes were always circulated to all working group members to keep them informed. When physicians couldn't attend the allergy/ADR meetings, the information was shared through other physician meeting agendas or by scheduling meeting times early or late in the day.

*Identify the Right People to Be Involved in the Development of the Standards.* To do this, there must be an initial understanding of the impact on various stakeholders. It is important to ask at the initial meeting who else should be involved and at what point they should be involved. Physician engagement should have happened earlier with

the CWA Focus Group as the physicians involved had valuable input and advice to the sensitive nature of this issue. Revisiting group membership should occur at times of transition or as necessary, especially if the project duration is lengthy. While it is important to have site-specific representation, it is important to balance this with a systems perspective, as the standards need to fit across all sites. The parenteral therapy group benefited from the regional practice leader cochairing the group as she brought experience from work done on the IH Adult Parenteral Therapy Manual and on Health Professions Act competencies.

*Strong Facilitation and Coordination Skills Are Needed.* An individual who understands the clinical processes and impacts, who has excellent facilitation and communication skills, and who has the time to commit to the work is needed to coordinate clinical working group and focus group activities and ensure the work progresses to the end goal. Clinical staff was pleased to be involved if their time was well utilized (ie, if meetings were scheduled, on time, and effective and any document requirements were completed by project staff).

*It Is Difficult to Standardize a Clinical Information System if Clinical Practice Is Different.* This was a challenge throughout the initiative, and numerous examples have been provided. Similar to our findings, Anderson and Stafford<sup>7</sup> stress the importance of recognizing the impact of process changes when implementing a new system. They also found that implementation of new systems force other issues to the forefront. Although there is now one allergy/ADR clinical practice standard for IH, areas such as emergency departments are challenged to comply with the new process due to patient volume and staff resources. It was important to allow for some variance in process across acute, community, and residential settings so that clinical workflow is supported to meet the practice standard.

*It Is Important to Understand How Technical Functionality Affects the Standards.* While clinicians are instrumental in developing the standards required for a new CIS, so too are staff that have expert knowledge of the software functionality. System analysts participated in clinical working groups to understand the clinical requests and then translated those into the software functionality. In some cases, the software could not support the clinical request. For example, the CWA Focus Group requested that the system “automatically” expire an alert on the expiry date. When the system could not accommodate this, the standardized process needed to include how this would be accomplished.

*Leadership/Management Support Is Essential.* Authentic, committed leadership has to be visible at every level of the organization and project team to drive the initiative to success. Critical information such as allergy/ADRs applies to all care provided across the health authority so high-level sponsorship and leadership were required to support the new process throughout the organization. For the CWA, it was very valuable to have a senior leader as the project sponsor. He was able to provide an organization-wide perspective and negotiate linkages with network directors and physicians. He provided ongoing support and guidance for the focus group members.

In summary, this 4-year initiative to standardize terminology, optimize key processes, and implement a new clinical information system was a significant undertaking. In addition to the 100 project staff deployed across 30 teams, more than 500 clinicians participated in 35 clinical working groups. Six phased go-lives were utilized to provide training and support to more than 10 000 users. Although there were many issues along the way and a considerable number of lessons learned, the initiative was viewed as a success. Engagement of clinical stakeholders and the use of sound change management strategies ensured that clinicians were involved and responsible for ensuring the new system reflected evidence-based best practice standards. Leadership support was essential in keeping staff focused on a patient-centered vision, and a system that supports the delivery of safe, quality care. Interior Health now has a solid foundation to build on with plans to expand electronic clinical documentation and provider order management across the organization.



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