



Stories From The Floor

A Knowledge Translation Casebook on Improving Pediatric Pain Practices

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INTRODUCTION

Pain in Infants and Children

Pain is common in hospitalized infants and children.¹ Children who can verbally describe their pain say that it is the worst part of their hospital stay and needs significant improvement.² Health care professionals and researchers only started to acknowledge that children had pain in the 1960's. Prior to that time, it was commonly believed that children did not experience pain, or if they did, it was short-lived, not remembered, and without consequence. Furthermore, until the late 1980's, pain in infants was ignored as it was thought they were not capable of pain due to the immaturity of their developing nervous system. More recently, researchers have provided enhanced understanding of the developing pain pathways and how pain is processed in the brain.³⁻⁵ Research indicates that infants do experience and remember pain and there are significant long-term negative outcomes of untreated pain in children of any age.^{6,7} Despite this knowledge, hospitalized infants and children continue to experience acute pain due to poor management of repeated painful procedures for diagnoses (e.g. heel lances, finger pokes) and treatments (e.g. burn dressings, surgery).¹

Prevalence of Pain

Infants. The reported prevalence of procedural pain in infants has ranged from 4-15 painful procedures per infant per day. For example, Carbajal and colleagues⁸ reported an average of 12 painful procedures (e.g. tape removal, heel lance, physiotherapy, intubation) per day in France. Approximately 80% of patients received no pain management strategies prior to these painful procedures; 2% received pharmacological interventions, while 18% of painful procedures were managed using non-pharmacological strategies. In 1997, Johnston and colleagues⁹ reported that the average number of tissue-damaging procedures (e.g. heel lance, venepuncture, lumbar puncture) for infants in Neonatal Intensive Care Units (NICUs) in Canada was 14 per week. This number was reduced to 6 tissue-damaging procedures (plus 25 non-tissue-damaging procedures) per week when the study was repeated in 2011.¹⁰ In 1997, no infants received pharmacologic interventions for heel lance, and in 2011, approximately 14% were administered opioids and 14% received sweet tasting solutions such as sucrose or glucose. Johnston concluded that, although there were less tissue-damaging painful procedures being done on infants in the more recent survey, despite significant advances in our understanding of pain management strategies, procedural pain management for infants has generally not improved significantly.¹⁰

Children and Adolescents. Surveys also have been conducted to evaluate the prevalence of acute pain in older children and adolescents. In a recent audit of procedural pain in 32 hospital units in 8 pediatric hospitals in Canada, an average of 6 painful procedures / child per day was reported by Stevens and colleagues.¹ Of those who had a painful procedure, approximately 78% had a pain management intervention recorded in the previous 24 hours; however, only 28% had one or more pain management interventions administered and documented specifically for decreasing the pain of the procedure.

Other researchers have focused specifically on the prevalence of moderate to severe pain intensity (e.g. >3 on a 10 point scale). For example, Ellis and colleagues¹¹ and Cummings and colleagues¹² in cross-sectional studies reported a prevalence of 20-21% of clinically significant pain in hospitalized children in Canada. Most recently, Groenewald and colleagues¹³ reported a prevalence of 27% moderate to severe pain in hospitalized children in the US. Adolescents and infants exhibited higher prevalence rates (38% and 32% respectively) than other children (17%). In addition, children hospitalized on surgical units had much higher rates of moderate to severe pain (44%) than those on medical units (13%).

We have learned through research that well-managed pain is associated with faster recoveries, fewer complications, and decreased use of health care resources.^{14,15} However, despite the significant growth in pediatric pain research and the use of this evidence to develop standards and guidelines, hospitalized children continue to undergo multiple painful procedures with inadequate pain management and to experience moderate to severe pain during hospitalization. Therefore, the problem is not just one of determining which strategies are most effective but also an issue of translating research evidence into practice; or knowledge translation (KT).¹⁶

Knowledge Translation

KT strategies and implementation processes seek to bring research evidence into practice. In Canada, KT is widely accepted as "a dynamic and iterative process that includes synthesis, dissemination, exchange, and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products, and strengthen the health care system."¹⁷ KT activities have several goals, including building awareness and sharing knowledge, in

addition to influencing practice, behaviour, and policy change. With growing recognition that research is slow to make its way to practice and use,¹⁸ effective methods to expedite this transition and increase research application in the real world are needed.

Evidence-based Practice for Improving Quality – A Multifaceted KT Intervention

To decrease the gap between knowledge generation through research and KT, and knowledge use and practice change, the Canadian Institute of Health Research (CIHR) Team in Children's Pain adapted and implemented a novel KT intervention called *Evidence-based Practice for Improving Quality* (EPIQ) developed by Lee and colleagues.¹⁹ EPIQ incorporates evidence-based research and implementation of KT strategies using continuous quality improvement (CQI) methods to improve pain outcomes. The EPIQ intervention was studied in 8 pediatric university-affiliated hospitals across Canada, where a total of 16 hospital units received the EPIQ intervention and 16 continued to receive standard care. On the intervention units, EPIQ involved (a) Phase 1 Preparation – where a Research Practice Council (RPC) was selected, trained and reviewed baseline data on pain assessment and management practices, prior to selecting a pain practice for change; and (b) Phase 2 Implementation - where the RPC implemented targeted practices for changing pain processes and outcomes through the use of KT strategies (e.g. reminders, educational outreach, educational material, audit and feedback) and Plan-Do-Study-Act (PDSA)²⁰ quality improvement cycles. The EPIQ intervention was implemented over 4 PDSA²⁰ cycles lasting a total of 15 months. At each site a research coordinator, funded by the research grant, was responsible for working with the unit RPC to facilitate the implementation process and to collect all data relating to the pain processes and clinical outcomes. The RPC also received a small honorarium to compensate them for their time (over the 15 months) and there was a small budget to support the costs of the KT strategies. At some sites, additional local funds were added to the budget for KT strategies. The Hospital for Sick Children, acting as the central core site, developed a Canadian Pediatric Pain Research (CPPR) database to house all of the outcome data that were electronically transmitted by the sites. The core site also provided support and co-ordination for all of the units in regards to resources, training, KT, and grant management activities. Overall, EPIQ was effective in improving pain processes (i.e., assessment and management practices) and a clinical outcome (i.e., reducing overall pain intensity) compared to standard care.²¹

We have shared our research findings and the success of EPIQ with other researchers through typical end-of-grant KT strategies like journal publications and conference presentations. However,

the intricacies and experiences of implementing EPIQ in each participating unit are lost in these methods of KT. As well, these strategies often do not reach the audience of clinicians who may benefit from learning about the first hand experiences of others to make changes in their own practice settings. To share a more descriptive narrative and highlight the wide variety of KT practices developed and used in the units where EPIQ was implemented, we have created this KT casebook.

KT Casebook Method

KT Casebooks are regarded as a KT strategy and have been used almost uniquely in Canada, with one exception.²² Designed as a means for researchers, decision makers, and/or practitioners to share and recognize their experiences in a more informal, narrative approach, the KT casebook can also be useful for sharing knowledge, building awareness, and potentially facilitating practice, behavior, and policy change, although these aims have not been substantiated by research. This unique format illustrates the ground level experience of implementing research into evidence, and the narrative allows the teller to capture the subtleties of implementing research evidence. Several KT casebooks have been published since 2006, and are available on the web:

2006: CIHR – Institute for Health Services and Policy Research Knowledge Translation Casebook – *Evidence in Action, Acting on Evidence: A Casebook of Health Services and Policy Research Knowledge Translation Stories*²³ highlights cases from across Canada that focus on lessons learned from both successful, and less than successful, KT activities.

2006: CIHR – Institute of Population and Public Health, in partnership with the Canadian Population Health Initiative, produced a KT casebook focusing on population and public health research – *Moving Population and Public Health Knowledge into Action: A Casebook of Knowledge Translation Stories*.²⁴

2008: CIHR – *Knowledge to Action: A KT Casebook*²⁵ highlights ten stories describing the journey from research to action. This casebook focuses on closing the gap between knowing and doing by accelerating the capture and practical application of knowledge uncovered by research.

2009: *CIHR Healthier Together: Partnerships Casebook*²⁶ includes 14 stories about very diverse and influential partnership endeavours. These stories cover the spectrum of collaboration, ranging from researcher-to-researcher partnerships to university-community-policy maker initiatives.

There are two types of cases in this collection: 1) profiles of past CIHR Partnership Award winners, which include the stories of their partnership efforts along with their own words of wisdom; and 2) narratives from the front lines of successful partnerships, which share the history of the collaborations, communication techniques, and lessons learned.

2010: *Knowledge Translation to Improve Quality of Cancer Control in Canada: What We Know and What is Next*²⁷ funded and supported by the Ontario Institute for Cancer Research (OICR) and the Canadian Partnership Against Cancer (CPAC). The project comprised five specific modules to provide a synthesis and overview of the effectiveness of KT strategies for cancer control.

2010: *Bridging the Gap: Knowledge Translation in Alberta*²⁸ was produced by the Research Transfer Network of Alberta (RTNA) and provides important research and practice-based accounts of KT in Alberta, the barriers faced, and keys to success. The Casebook involves a diverse set of creative research and KT initiatives, with different populations, stakeholders, and settings.

2010: *The Knowledge Translation Casebook: Sharing Stories of Evidence-Informed Practice*²⁹ produced by British Columbia Interior Health (IH) Research Capacity Enhancement Team is a culmination of many years of research capacity enhancement within IH. The stories contained within this casebook help inspire others within the organization to support their practices and decisions with evidence and collaboration with others and to communicate the benefits of KT.

2011: Saskatchewan Public Health and Evaluation Unit (SPEHRU) produced *Innovations in Knowledge Translation: the SPHERU KT Casebook*³⁰ to provide a toolkit of different KT strategies, actions, and evaluations to highlight concrete examples and best practices in KT.

2011: *Interdisciplinary Teams – Making Research Make a Difference*³¹ is RNTA's second casebook produced by Alberta Innovates – Health Solutions, which showcases KT activities of the Interdisciplinary Team Grant program.

2011: *The South Yorkshire Knowledge Translation Casebook*³² was modeled on the Canadian casebooks, with the aim of developing a local resource of contemporary examples to promote understanding of KT.

Pediatric Pain KT Casebook

The goal of our pediatric pain KT casebook is to share experiences of improving pain assessment and management practices “from the floor”. Our casebook differs from other KT casebooks in that the entire casebook relates to knowledge user experiences from one component of the same study. The typical format for KT casebooks involves compilations from several different studies that are brought together around a particular theme, and that typically are supported by a particular granting agency. Our KT casebook approach is an evolution from this model, and provides narrative accounts based on the experiences at 8 different hospital research sites (16 inpatient units) where EPIQ was implemented, as told by individuals who were integrally involved in the KT activities.

Due to the tailored nature of the intervention and variation in the context (e.g. culture) of each participating unit, there was variation in the KT strategies used and in the experiences of what worked and what did not. In the following chapters, the experience at each of the 8 sites included in the study is shared by an individual who was directly involved in implementing EPIQ. These ‘Stories from the Floor’ are written in first person by the research coordinator.

Another deviation from the KT casebook model is that chapter authors are listed as authors of the entire casebook rather than linked to their specific chapter. This was done to preserve the anonymity of the units where the research was conducted while still providing details about the unit context, KT strategies, and implementation processes. The chapters are presented in random order rather than in any organized way (e.g. according to geographic location from east to west in Canada). Throughout these chapters are examples of the KT strategies used (e.g. posters, educational sessions, etc.) and descriptions of how they were implemented. The KT casebook ends with summary of common themes and lessons learned across all sites regarding the process of implementing EPIQ to improve pediatric pain practices.

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CHAPTER 1

How Sweet It Is... Improving Pain Practices Through EPIQ

Pain assessment and management are priorities in any clinical area, and this is no different in a tertiary care pediatric hospital. Having adequate time and resources to dedicate to this priority area can be challenging and requires planning and direction. Evidence-based Practice for Improving Quality (EPIQ) is a way to design, implement, and evaluate pain practice changes specific to a care area.

Where was Evidence-based Practice for Improving Quality used?

EPIQ was used in two pediatric medical units (Units 1 and 2). Unit 1 is a general medical/infectious disease inpatient unit with 24 single patient rooms, equipped with sleeping accommodations for parent(s). The average nurse-patient ratio is 1:3, but can be as high as 1:5 when a Licensed Practical Nurse (LPN) supports the Registered Nurse (RN). LPNs can carry their own patient load or support the patient load of

the RN. Care is provided by an interprofessional team of more than 70 staff including: staff nurses, clinical support nurses, educators, nurse practitioners (NPs), pharmacists, child life specialists, social workers, and dietitians. Children with respiratory, gastrointestinal, and endocrine conditions receive care on this unit. Patients are often admitted through the Emergency Department or are older stable infants with complex needs, who are transferred from the Neonatal Intensive Care Unit (NICU). The average length of stay is approximately 6 days. Painful procedures commonly done on the unit include intravenous (IV) insertion, capillary and venous blood sampling, lumbar punctures, peripherally inserted central catheters, and tracheostomy care and changes.

Unit 2 is a hematology/oncology/nephrology unit with 15 single patient rooms, equipped with sleeping accommodations for parent(s). Patient length of stay is, on average, 13 days. The average nurse-patient ratio is 1:3. LPNs also work on this unit and can carry their own patient load or support the patient load

of the RN. Care is provided by an interprofessional team of more than 70 staff including: staff nurses, clinical support nurses, NPs, pharmacists, child life specialists, social workers, and dietitians. Children with medical conditions, such as blood disorders, leukemia and other types of cancers, and chronic kidney diseases receive care on the unit. Patients may be receiving a new diagnosis or they may be quite familiar with the unit from previous admissions and treatment regimes, such as biopsies, chemotherapy, and post-transplant protocols. Painful procedures commonly done on this unit include IV insertion, capillary and venous blood sampling, lumbar punctures, peripherally inserted central catheters, port-a-cath accessing, biopsies, and chemotherapy infusions.

Who was involved?

The Research Practice Council (RPC) on Unit 1 consisted of 2 staff nurses, a child life specialist, a nursing educator, a pharmacist, and a physician. The unit manager recommended most of the members for participation. These individuals were described as creative, possessing good leadership and communication skills, and would see the project through to completion. All original members of the RPC remained involved throughout the study. One member joined the project between Plan-Do-Study-Act (PDSA)¹ cycles 1 and 2 because of her evolving role and interest in the administration of sucrose for painful procedures. Another member was away for work/travel during most of cycles 2 and 3, but was back and eagerly participating in the project by the end of cycle 3.

The RPC on Unit 2 consisted of a staff nurse, an educator, a NP, a child life specialist, a pharmacist, and a physician. The unit manager recommended these staff members as individuals who would have the time to commit to the project and could meet during normal working hours. The RPC remained fairly consistent throughout the 15 months of the project. One of the original RPC members was replaced, and 2 members who were involved in the early stages of development did not regularly attend meetings, but occasionally responded to emails with comments/feedback.

The original research coordinator left the position after data collection for PDSA¹ cycle 1. I came into the role with a background in neonatal nursing and had very little previous contact with the 2 units. I also had no prior relationship with any of the RPC members on either unit, but they quickly welcomed me into the project. I took a hands-on approach to designing and implementing the knowledge translation (KT) strategies, after the RPCs suggested the strategies they would use to advance their practice change aims. I met every month or 2 with each of the RPCs to discuss ideas for KT strategies and how to implement

them. These meetings were an opportunity to discuss which strategies were working and which were not. Attendance at these meetings was moderate but I kept in regular contact with all RPC members via email, by sending out meeting minutes and welcoming input/feedback to implementation designs or plans. Some informal discussion with RPC members would occur on the units or in the hallways. All members actively took part in meetings and shared both their individual perspectives on the KT strategies and practices and their knowledge of the unit's routines. These perspectives were valuable in planning, implementing, and evaluating the EPIQ intervention. Some RPC members took a more active role in implementing and evaluating the KT strategies by hanging posters, attending blitz or lab education sessions, or asking nurses how effective a strategy was.

Many patients on the unit were transferred from the NICU, where sucrose has been routinely used for painful procedures.

What needed to change?

Members of the RPC on Unit 1 knew early on in the project that they wanted to focus on sucrose ordering and administration for infants. Many patients on the unit were transferred from the NICU, where sucrose has been routinely used for painful procedures for a number of years. Parents in the NICU were often aware of its use and its benefits, and when their infants moved to the pediatric floors, they often asked for sucrose to be administered prior to procedures. Sucrose was not used for procedural pain management on the pediatric units until the EPIQ intervention was implemented. Therefore, at the beginning of PDSA¹ cycle 1, the RPC's practice change aim statement was to "increase the ordering of PRN [as needed] sucrose so that all eligible infants (≤ 3 months old) receive sucrose at least 80% of the time for all painful procedures." In time, the RPC decided to extend the age group of targeted patients to include all infants 12 months of age or less who were receiving painful procedures. This decision was based on high-quality evidence from an extensive literature review performed for the development of a hospital-wide sucrose policy. The RPC's aim statements for PDSA¹ cycle 4 were to: "increase the ordering of sucrose so that 75% of all eligible infants (≤ 12 months old) have a PRN order within the first 48 hours of admission" and "increase the ordering and administration of sucrose so that all eligible infants (≤ 12 month old) receive sucrose at least 80% of the time for all painful procedures."



Figure 1: A reminder sticker placed on physician order sheets.

Unit 2 RPC members were undecided about a focus for their practice change. To assist with their decision, the RPC created and distributed a mini questionnaire on pain assessment practices to nursing staff. The questionnaire results indicated that nurses thought they were doing a good job with pain assessment; however baseline audit data on unit pain assessment and management practices collected by the research team indicated that only 14% of all pain assessments were done using a validated pain assessment tool, like the Faces Pain Scale Revised (FPS-R)² or the Numeric Rating Scale (NRS).³ This gap, between the baseline data and staff's perception of pain assessment practices, led the RPC to focus on pain assessment as their practice change target. Their aim statement was "to improve nurses' documentation of pain assessment, using the FPS-R² (for patients 4-12 years) or the NRS³ (for patients \geq 8 years), so that 75% of children \geq 4 years of age have a pain assessment documented within the first 2 hours of a nursing shift." Their aim statement remained consistent throughout the 4 PDSA¹ cycles.

What was done?

Several KT strategies were implemented throughout the 4 PDSA¹ cycles on Unit 1. In cycles 1 through 3, an RPC member provided *small group teaching sessions* to staff physicians and residents about the study and the practice aims. Information about the benefits of sucrose and the pharmacy's ordering guidelines were presented and *small incentives* for attendance were provided. The session was repeated every 3-4 weeks for each new rotation of the physician group (staff physicians and residents). The RPC also conducted similar small group teaching sessions during nursing staff education days and for new and returning staff orientations. We provided ongoing *updates and feedback* during staff meetings. Relevant information was provided in a concise but comprehensive way as an *educational outreach strategy* during all 4 cycles.

Sucrose ordering guidelines were placed on the unit's chart racks and summarized on *laminated tags* that could be attached to nurses' and physicians' lanyards. Pharmacy developed these evidence-based guidelines to match those used in the NICU, to ensure consistency in sucrose administration practices. Physicians and residents reported that the accessibility of the guidelines on the chart rack and lanyards during team rounds facilitated sucrose ordering for eligible patients, as it was both a reminder and a helpful reference. Eventually, staff became familiar with the guidelines and there was no need to replace the tags. Sucrose guidelines are now found on preprinted order sheets throughout the hospital.

Posters that reminded staff about sucrose were placed at the nursing desk and in the medication and treatment rooms. The posters were colorful and letter size, with a short message about ordering sucrose to reduce pain in infants during painful procedures. The poster design and message were changed in PDSA¹ cycle 3 in an attempt to catch the attention of staff.

Reminder stickers with a message to order sucrose as needed for eligible infants were placed on the physician's order sheets. These stickers were colourful, with a concise message, and were a noticeable reminder at the point of care. RPC members said the reminder stickers were very effective when they were placed in the appropriate charts. The design and message on the reminder stickers were changed in PDSA¹ cycle 3 to attract attention and reflect the change in the eligible age of infants who would benefit from sucrose for painful procedures (Figure 1). The hospital continues to use a paper chart so the daily medication administration record (MAR) is printed and includes boxes for the nurse to sign for the medications administered. We placed small neon pink reminder stickers on top of the clipboard that holds the printed MAR, with the instruction: "Please document sucrose." We also hung small neon pink posters with a message to "Please remember to document sucrose" in the medication room in front of the bin where sucrose was kept.

After PDSA¹ cycle 1, the RPC came up with additional creative KT strategies to push evidence-based practice forward. *Small incentives* (e.g., treat bags with candy) were given out to the nurses to recognize and thank them for increasing sucrose ordering and administration for infants receiving painful procedures. *Colorful notes* with the TROPIC logo were attached to the treat bags, providing feedback from the PDSA¹ cycle audits and thanking staff for a job well done.

Education sessions, using discussion, slides, posters, and handouts, were provided to core lab staff and lab managers to introduce the study and practice changes. Coffee and sweets were provided along with coffee card *incentives*. About 75%

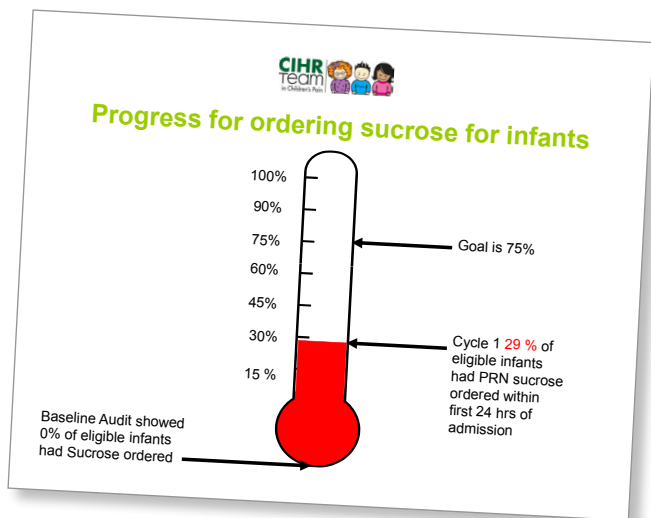


Figure 2: An example of a Feedback poster from PDSA¹ cycle 1.

of the core lab staff and the two lab managers attended 1 of the 4 sessions provided. The benefits of sucrose for infants, mechanism of action, pharmacy's ordering guidelines, and the lab's role in administration of sucrose were discussed with the 4 to 12 lab technicians who attended each session. The lab staff had many questions and verbalized that they were happy to be included in this education and wanted to help reduce pain in infants whenever possible. However, some verbally expressed concern about how efficient the provision of sucrose would be and how much time it would add to the lab technician's day to find the nurse and have sucrose administered. The sessions were an effective way to collaborate with the lab; addressing these concerns and finding ways to advance the practice change and make it work well for both parties.

One-hour *blitz sessions* were held on 5 consecutive days for all staff on Unit 1 after the first PDSA¹ cycle. A table was set up in the hallway of the unit, where RPC members and I presented the audit results of the first PDSA¹ cycle. Staff stopped by to review the large *feedback poster* (Figure 2) and to talk informally about the study's direction. Refreshments and snacks were offered as *incentives* to those who attended. Blitz sessions were held again after the third PDSA¹ cycle. The purpose of these sessions was to remind people about the study, provide positive feedback from cycle 3, and introduce the use of sucrose with a wider age group (infants ≤12 months). These two blitz days were held mid-morning for all staff who were working those days. Feedback from the first 3 cycles was presented in table format on large bristol board *posters*. *Journal articles* on sucrose use with infants ≤12 months were made available. Examples of the *reminder stickers*, *posters*, *treat bag notes*, and *lanyard tags with sucrose ordering guidelines* were on display. Coffee/tea and healthy snacks were

provided. Attendance was multi-disciplinary and a sign-in sheet was used to keep track of the individuals that attended. Over the 2 days the blitz sessions were held, about 40% of the nursing staff, a few physicians and residents, and a few allied health professionals attended.

On Unit 2 the RPC members wanted to introduce one KT strategy at a time, so they could determine whether that sole strategy had an effect on increasing the use of a validated pain assessment tool with children aged 4-18 years. During PDSA¹ cycle 1, an RPC member and I facilitated *small group education sessions*. These sessions lasted for about 45 minutes and included 10-15 minutes for discussion/comments. We used power point slides to share information about the results of the baseline data collected on the unit, the benefits of using self-report pain assessment tools, and the FPS-R² and NRS.³ These sessions were very well attended and nurses covered for each other so that they could attend. There was much discussion about how pain was actually assessed on the unit and why self-report pain assessment tools did not always work in practice. Some of the nurses attending the sessions and I shared personal experiences and made suggestions about how the pain assessment tools may work in their setting. Several different dates and times were offered for these sessions and sometimes the session was held for only 1 nurse attendee. Coffee/tea and sweets were provided as an incentive for attendees. Handouts and tags with both the FPS-R² and NRS³ were given to all nurses on the unit. An e-mail with the power point presentation was provided to all nurses who were unable to attend the session. The *tags* bearing the FPS-R² and NRS³ were laminated and punched to hang on lanyards. RPC members said this was an effective strategy as the tags were accessible and an easy reference/reminder to use the pain scales. The laminated tags were replaced multiple times due to wear and tear or loss. Eventually, the laminated tags were replaced with a plastic tag, similar to a credit card or driver's license. These tags were more expensive but were better quality, with lower replacement costs. Tags were easily implemented through simple distribution to the nurses. Some nurses commented that the size of the faces on the tag was too small for a child to use reliably, but it was a good reminder to use one of the tools for pain assessment.

At the beginning of PDSA¹ cycle 2, I encouraged the RPC members to use multiple KT strategies simultaneously to facilitate practice change rather than focusing on only one strategy at a time. Following this discussion, the group decided to create several KT strategies that could be used at the same time, or at least with some overlap, during cycle 2. The RPC developed ideas for *chart reminders*, *educational posters*, and *feedback treat bags and posters*, which I implemented. By the end of cycle 4, the RPC expressed satisfaction with the audit results and the fact that their practice change successfully exceeded their aim statement goal.

Rectangular *chart reminders* were mainly green and white in color and read “Is your patient in pain? Assess, Manage, and Document. Use FPS-R for children aged 4 or older. Use NRS for children aged 8 or older.” The unit clerks placed these chart reminders just inside the front cover of the chart binder with double-sided tape. One benefit of these reminders was that you could see them no matter what page of the chart was open, so they were noticeable and effective for a while. New chart reminders were created in PDSA¹ cycle 4 with the same message but a different font printed on a rainbow of very bright colors: neon yellow, green, pink, blue, orange, and red (Figure 3). These chart reminders were placed on the front of the chart with thicker, stronger, double-sided tape and seemed to be more durable. In fact, some of those reminder stickers can still be seen on the chart binders. Many staff commented on the visibility of the reminders and the appealing design. However, the reminders would not be noticed when charts were open and lying on the desk. Charts on this unit are more often on a desk or table in the nursing station than in the chart rack.

An *educational poster* was created to show nurses how and where to properly document a pain assessment. The background of the poster was a bright orange Bristol board, and large

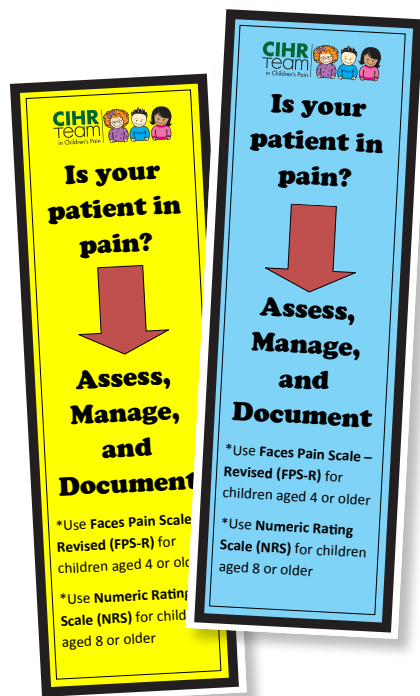


Figure 3: Chart reminders.

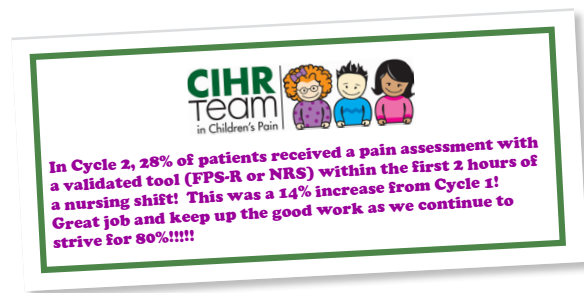


Figure 4: Thank you note with feedback attached to candy bags.

bright arrows directed nurses where to document pain scores/ pain assessment on blank chart pages. Completed examples or correctly charted pain assessment scores were also provided. This poster in a high traffic area, inside the nursing desk and near the staff room, was up for a few months during cycle 3. We placed *magnetic, laminated pain scales* on a magnet board centrally located in the patients’ rooms, on the wall between a patient’s hospital bed and the bed for a support person. The magnet board is 24” X 36” and is used for communication between the patient, family, and/or nurse (e.g., “Gone to the playground”, “Call home when you get a chance”, “Urine output at 1100-150 ml”, etc.). The pain scales were about 3” x 11”, printed on pale green paper (so they would show up on the white magnet boards). Nurses in the RPC group said these scales were very accessible and that sometimes patients/families asked about them and that would remind nurses to use them. Several sets of pain scales were laminated/hole punched and clipped on each of the 4 vital signs carts, which also housed a thermometer, stethoscope, and blood pressure machine. Nurses stated that these pain scales were readily accessible and reminded them to do pain assessments while assessing routine vital signs.

The original research coordinator and I did *mini-chart audits* (4-5 patients/unit) on both units on random days, during PDSA¹ cycles 1 and 3, to provide a snapshot of how the unit was doing with their practice changes. We then emailed audit results to RPC members so they could feed back the results to the rest of the unit staff. RPC members reported that the audits were helpful to get an idea of how they were doing and when results were positive it gave the staff some motivation. *Candy bags with notes* to thank staff and provide feedback on how the staff was doing in achieving their pain practice goals were handed out after the cycle reports were sent out (Figure 4). Staff really appreciated the feedback and the tokens of appreciation. Bags were placed in the staff lounge, but some nurses did not receive theirs, because none were left by the time they worked their scheduled shift. The next time candy bags were handed out, each bag/note

carried an individual name and the clinical leader gave them to each nurse. There were a few comments during the study that we shouldn't be providing unhealthy, sugary foods to staff, so we made some sugar free treat bags available for those that wanted them. At the end of cycle 4, candy bags with notes and *calculators* were handed out. A *feedback poster* was created to share the feedback with staff (Figure 5). Feedback tables were posted on Bristol board with an explanation of the results and a positive feedback message. This poster was placed in a high traffic area on the unit, near the nursing desk and outside the staff lounge. The poster was brightly coloured with text that was short and concise. There are many competing notices and messages in this area, so RPC members said it would be difficult to say if all staff in the area noticed it.

One of the most effective strategies to increase pain assessments, using a validated tool on Unit 2 was to have the NP ask about pain scores on *daily rounds*. The NP was also an RPC member, and she would ask nurses to report their patients' pain scores when providing a verbal report to the team on rounds. This was effective for some nurses, because it became a routine to gather information on pain as part of their morning assessment and then report it on rounds. Other nurses, however, did not see the value of obtaining a self-report of the patient's pain score and preferred to report pain by their own observations. Eventually asking for pain scores during rounds fell out of practice.

What worked and why?

The RPC members completed Process Evaluation Checklists (PECs),⁴ based on feedback from unit staff, to evaluate the effectiveness of various KT strategies implemented on each of the 2 units during the 4 PDSA¹ cycles. Based on this feedback, key features of a number of KT strategies that facilitated practice change were identified. These included:

Reminders

- Reminders should contain colorful, concise messages, and be located at the point of care.
- Reminders should be regularly refreshed by changing the colour or appearance of the background, picture, or shape, and message so that they continue to be noticed by staff.

Educational Materials

- Educational materials should be eye-catching, concise, and relevant.
- Educational materials and outreach activities should target all unit staff and other groups (e.g., lab staff, families) who may be affected by or have a role to play in the practice change.

Educational Outreach

- Educational outreach should accommodate various learning styles (visual, auditory, and kinesthetic). Verbal and written feedback from the attendees is helpful to determine the effectiveness of the format, content, and materials. Participants appreciate treats/rewards in recognition of their time and effort.

Audit and Feedback

- Audit and feedback can be helpful to understand how the practice change is being integrated. Audits need to be specific to the practice change, easy to do, and feedback needs to be communicated to staff in a timely and constructive way. Positive feedback is a great motivator for staff.

The original research coordinator and I were responsible for creating/designing strategies, such as *reminder stickers*, *lanyard tags*, *posters*, *educational materials*, and so on. We were also responsible for printing and replacing materials as needed (e.g., wear and tear, losses, supply for new/returning staff). One of the RPC members and I monitored the supply of materials. This worked well for the study, but RPC members often mentioned they would not have time in their schedules to prepare and monitor these types of strategies without my support.

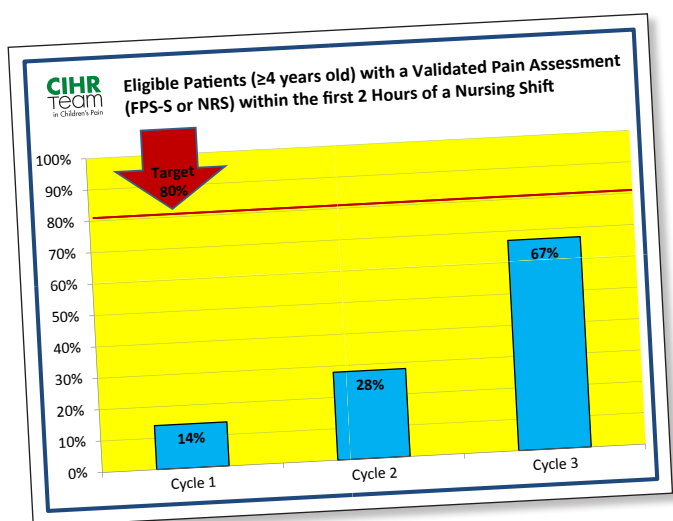


Figure 5: Feedback poster from PDSA¹ cycle 3.

What didn't work and why?

Some challenging aspects of implementing the KT strategies were also identified through the PEC⁴ tool. These challenges included:

Reminders

- Materials and adhesives were not always washable or sufficiently durable. After a few weeks, reminders fell off after catching in the pages of the chart. Nurses and physicians complained about them sticking to the pages and wanted them removed. Some unit clerks were re-taping them but others did not want the responsibility and said that the tape was leaving sticky residue behind. Eventually most of the reminders fell off and were not replaced.
- I designed, printed, ordered, and regularly supplied reminder stickers and pre-printed orders. The use of these strategies depended on the unit clerks remembering to place them on the charts of eligible infants. It was sometimes a challenge to ensure that all eligible patients' charts had the stickers and reminders.

Educational Materials

- Some KT strategies that required formatting, printing, and laminating, etc. were costly, labor intensive, and led to frustration. The first set of lanyard tags was not sufficiently durable beyond a month of use and needed to be replaced. The second set of tags were more durable but also more costly.
- Signage is abundant in a hospital and there are competing messages everywhere. Reminders and posters were often initially effective, but when posted for a longer period of time, became a part of the surroundings and were not noticed.

Educational Outreach

- Developing educational materials and organizing times/locations for educational sessions that worked for everyone was a challenge due to staff working different schedules and shifts.
- Education sessions were effective but dependent on the educator's time and the availability of the staff, especially when physician groups rotate every 3-4 weeks.

Audit and Feedback

- Treat bags with feedback notes were fairly easy to implement, but it was time-consuming to fill bags and design and attach notes. There were additional costs with buying treats and bags.

- Mini chart audits were also time consuming to do, because of the difficulty in obtaining charts and abstracting information from them.

What was the impact?

From the start of the project, the nursing staff and RPC members on Unit 1 were interested in sucrose administration and documentation for reducing pain from painful procedures for their infant patients. They saw a need for pain management in this population and initiated this practice change. Staff on Unit 2 felt they were already doing a good job with pain assessment (as demonstrated in their responses to the mini-questionnaire and in early discussions with the RPC) despite evidence from the baseline data indicating their use of validated pain assessment tools was less than optimal. The need to improve pain assessment practices was not self-initiated but rather was suggested to the group. At the end of PDSA¹ cycle 4, the chart audits for Unit 1 revealed an increase in ordering of sucrose for infants ≤ 12 months from 0% at baseline to 74%. Administration of sucrose for eligible infants ≤ 12 months for painful procedures was at 73%. While pleased with the results, the RPC still sought to further increase the administration of sucrose for eligible infants who were having painful procedures.

The cycle 4 chart audit results for Unit 2 were also very positive. Nurses' documentation of pain assessment using the FPS-R² (patients 4-12 years) or the NRS³ (patients ≥ 8 years) for children ≥ 4 years of age within the first 2 hours of a nursing shift increased from 14% at baseline to 81%. This RPC was also very pleased with their performance; however, they believed it reflected the nurses' use of pain assessment tools at the beginning of a shift/before rounds, rather than when a patient had pain throughout the shift. Pain practice changes significantly advanced through the implementation of KT strategies on both units. The PDSA¹ cycle audit data showed a gradual progression of practice change on both units. Unit 2 exceeded their aim statement goal, and although Unit 1 was 1% away from their aim statement goal, the study investigators agreed that both units had reached their goals.

At the end of the project, I asked RPC members to respond anonymously to a couple of questions about their experience with the study and their participation on the RPC. Some of their responses are below.

- "It was really interesting to be involved in the research practice council and I am really glad I was able to be a part of the committee. Working on the floor and watching staff go from not knowing anything about 24% sucrose to automatically

reminding doctors to write an order for it or remembering to administer during painful procedures was very interesting. It also gave me a sense of fulfillment that we were doing our job well as a committee...especially when we saw the statistics and the difference throughout all the cycles. This was a great opportunity and I really do hope it continues (on the unit)."

- "Positive! Interesting to see just how challenging it is to implement change, even when people are theoretically in support of the change."
- "Positives included working with people from different disciplines toward a common goal, the learning experience (research, pain, etc.), and the outcome of increased awareness and better patient care."
- "It was very rewarding working with this interprofessional group. I enjoyed brainstorming for creative ideas to increase the ordering and administration of 24% sucrose in our babies. It was discouraging though to see how hard we had to work in order to achieve our goals. For other practice changes we would not have the luxury of having so much time and resources to devote to making a change. It was rewarding though to see changes in practice actually happening. Thank you for the opportunity to be part of this research project. I look forward to reading the results and learning from the interventions the other site performed."
- "Very positive. I learned a lot about evidence-based pain management. It also gave me a chance to promote positive change in practice as part of a great team."

Throughout the project, the RPC group reiterated that practice change would move forward and become part of everyday practice across the health centre if there was a policy and preprinted orders for sucrose. An unanticipated outcome from the project, stimulated by the work and motivation of Unit 1 RPC members, was the development and implementation of a hospital-wide sucrose policy and pre-printed orders for sucrose administration for infants ≤ 12 months. The RPC group and I participated in multiple meetings, emails, and discussions about the policy and approval process.

What was learned?

Formation of a basic interdisciplinary group would be a starting point for the development of an RPC with the responsibility of identifying practice change aims, developing and implementing

strategies, and monitoring change outcomes. The RPC could include a nurse, physician, and another staff member to review baseline data and identify pain practices that may become a target for change. Other RPC members who are interested and can provide valuable perspectives specific to the change could be added to complete the group. Along the way, temporary expert RPC members or guest members who could contribute knowledge and experience relevant to the practice change and KT strategies could participate in meetings, discussion forums, emails, etc. These members could be available for one or two meetings, without making a long-term commitment to the project.

Throughout the process it is important to involve RPC members who are interested, believe in the practice change, and believe that it can be implemented with good outcomes. Having members who were passionate about the practice change and willing to put the time and effort in was huge. The RPC members always took part in the KT strategies, whether it was putting up posters, providing feedback on the design of the stickers, presenting at blitz sessions and education sessions, or handing out treat bags to thank a co-worker for a job well done. Having an interdisciplinary RPC was beneficial to see many different sides to the issue and creative strategies to move the practice change forward from many angles. The most memorable experience for me was working with others who were truly dedicated to using evidence to improve their practice and provide high quality care to their patients.

Online and interactive materials may have been helpful to reach those who were working night/weekend shifts and those who were unable to attend sessions because of workload/other commitments. However, the cost and resources needed to develop such tools would be a challenge, unless they could be adopted from elsewhere. The other experience that comes to mind was during the lab education sessions, which demonstrated how collaboration could facilitate practice changes. When one discipline understands how another works and the challenges they face, they can work together to problem solve and realize their goal. Both groups in this situation (the lab technicians and the staff nurses) reiterated that they needed to work together to reduce the pain inflicted on infants through procedures.

In future it would be helpful to develop a formal way to measure the effectiveness of the KT strategies from the perspective of the front line staff. Feedback about KT strategies often came from the RPC members who were not always familiar with the facilitators/barriers of the strategy. Process changes and checkpoints that are integrated into the practice and culture of the unit (e.g., asking about pain on rounds, having pre-printed orders for sucrose)

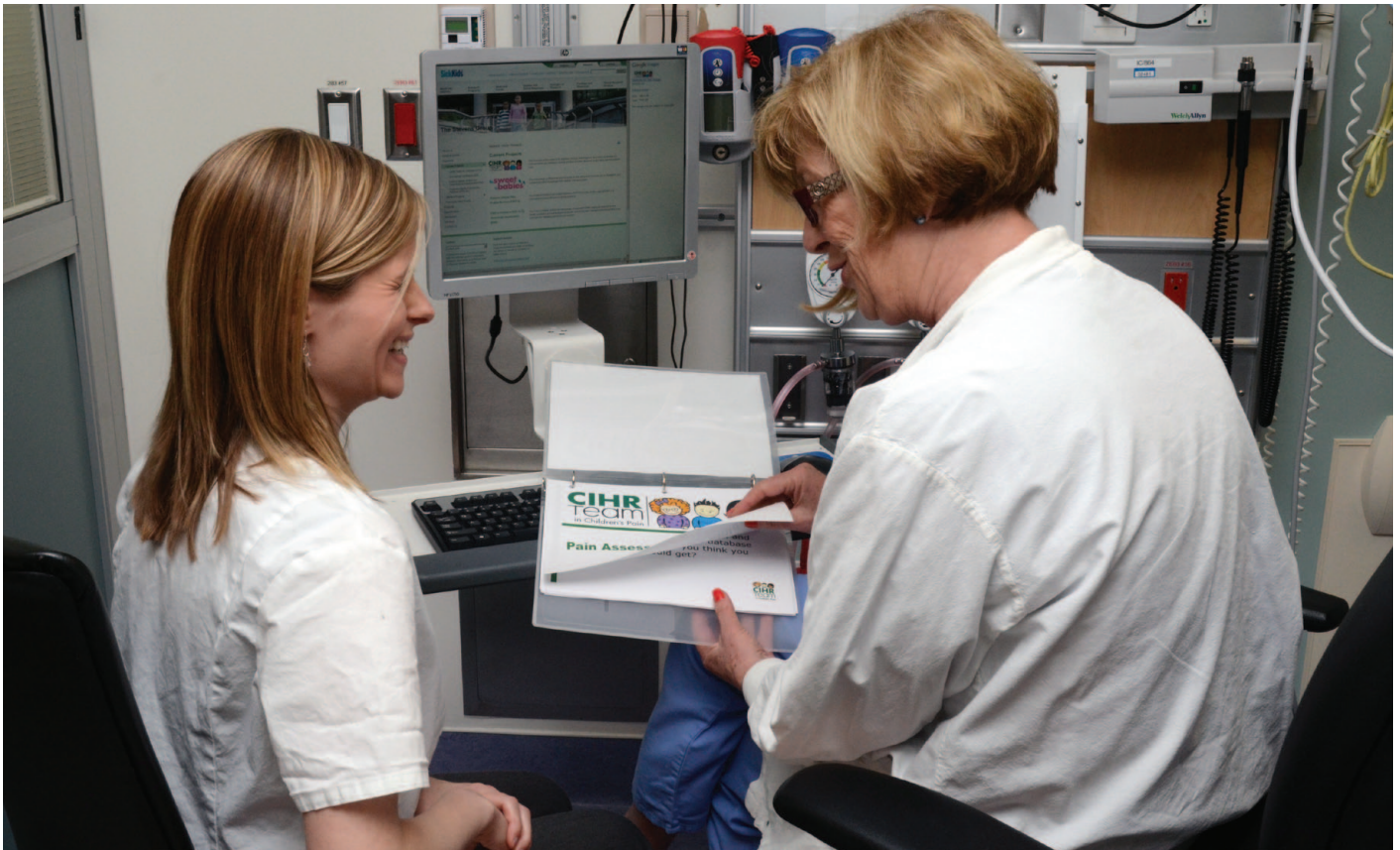
seem to be very effective strategies. Working on pain practice changes that are relevant and specific to the unit requires careful consideration of the unit data, a relevant body of evidence, an identified area of desired change, an interdisciplinary working group that are supported by management, and routine evaluation of tailored knowledge translation strategies. In this case, the EPIQ process proved to be effective in advancing pain practice changes on these two units.

“Pearls of Wisdom”

- 1. Choose RPC members who are passionate about the practice change.**
- 2. Promote interdisciplinary collaboration to facilitate practice changes.**
- 3. Integrate KT strategies into the practice and culture of the unit.**

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CHAPTER 2

A Tale of Two Units: Contextual Differences and Their Impact on Change

Where was Evidence-based Practice for Improving Quality (EPIQ) used?

EPIQ was implemented in 2 units: a Pediatric Intensive Care Unit (PICU) and a Surgical Unit. The PICU has 19 beds and is a medical-surgical unit with an average length of stay of 6 days. About 50% of PICU admissions are for post-operative congenital heart surgeries, 20% are post-surgical or trauma, and the remaining 30% are medical. More than 180 staff members provide care in the PICU including: staff nurses, managers, educators, respiratory therapists (RTs), social workers, pharmacists, child-life specialists, dietitians, and pediatric intensivists. Painful procedures commonly performed in the PICU include peripheral intravenous (IV) insertion, chest tube removal, and endotracheal tube (ETT) suctioning.

The Surgical Unit has 23 beds and provides care for patients undergoing all types of surgery (e.g., gastrointestinal, neurology, orthopedic, etc.) except cardiac. The unit has an average length of stay of 5 days, with care provided by over 90 staff members

including, registered nurses (RNs), licensed practical nurses (LPNs), educators, managers, clinical nurse specialists, dietitians, child-life specialists, social workers, and surgeons. Painful procedures commonly performed on the Surgical Unit include phlebotomy/venepuncture, IV insertion, and adjustment/cleaning of pins and external fixators.

Who was involved?

Research Practice Council (RPC) members for the PICU were selected by unit management rather than asking for volunteers. The composition of the RPC changed over the course of the project. The RPC started with a unit manager, a nurse educator, 2 RNs, and an RT; but by the end of the project, was comprised entirely of staff nurses.

Attendance at RPC meetings was consistently low and often sporadic, despite repeated attempts to accommodate various

scheduling requests. While the nurses verbalized commitment to the aims of the RPC, a heavy, highly acute, and volatile patient load; chronic understaffing; and high staff turnover on the unit left little time to implement any of the knowledge translation (KT) strategies the group had chosen. The RPC heavily relied on ideas and “manpower” provided by the research coordinator to implement the practice changes in the unit. It wasn’t that they thought that the practice change wasn’t worth their effort; they just felt that they could not spare the time.

I came to the study as a relative “outsider” to the hospital, from the Faculty of Nursing at the adjoining university.

Membership on the Surgical Unit’s RPC was stable and consistent throughout the study. Members were “handpicked” by the unit manager and represented a variety of professions, including a unit manager, 2 RNs, an LPN, a physical therapist (PT), a child-life specialist, and a physician. Several RPC member shifts occurred over the project lifespan. The physician went from active team member to consultant due to time constraints. The unit manager took a leave, and a new unit manager stepped into the role for the remainder of the project. The RPC also decided that another staff nurse was needed to do some of the one-on-one teaching; so another RN joined the RPC during the second Plan-Do-Study-Act (PDSA)¹ cycle, to replace the position lost by converting the physician’s role to that of a consultant. Meetings were held in the same room at the same time every two weeks during the “active” part of the cycle, that is, during the first 12 weeks of each PDSA¹ cycle period when the majority of the planning and strategy implementation took place. Usually, the same 3 members attended the meetings, and provided the majority of the ideas and manpower.

The research coordinator role was filled by 3 different individuals over the 15 month span of the project. The first and second coordinators had somewhat established relationships with at least one of the units when they started in the position. Both had been based in the hospital, were familiar with the hospital routine, and had personal work experience at the hospital from which to draw. I came to the study as a relative “outsider” to the hospital, from the Faculty of Nursing at the adjoining university. I was unknown to the other team members, and I made great effort to establish rapport with each of the 4 units (2 EPIQ units and 2 Standard Care units). Engaging the Surgical Unit was easier because they had established a regular schedule for RPC meetings and we were interacting on a frequent basis. However, engaging the RPC on

the PICU was far more difficult because it was in a constant state of flux and characterized by a general wariness of “outsiders.”

What needed to change?

The practice change target that the PICU RPC chose involved the assessment of pain in non-intubated children between 4 and 17 years of age. Initial baseline data indicated that virtually no pain assessment was being documented in the PICU, and understandably, this was of concern. The RPC thought that doing a “step-wise” progression in pain assessment practices may be wise, instead of trying to attain too great a change at one time. To this end, they decided to select a specific population, non-intubated patients, a relatively small proportion of patients in the PICU, and to implement 2 fairly user-friendly pain assessment tools: the self-report Faces Pain Scale-Revised (FPS-R),² and the behavioral, Face, Legs, Activity, Cry & Consolability Scale (FLACC).³ Initially, they thought that once staff had mastered the use of these pain scales and were documenting pain assessment scores on a regular basis, they could “graduate” to a larger patient population (intubated patients), using a more complex pain assessment tool (i.e., the COMFORT Scale⁴). At the outset though, the goal was to get staff in the habit of doing pain assessments.

The practice change target selected by the Surgical Unit RPC related to the treatment of pain in surgical patients who had to get up out of bed as soon as possible after surgery. The focus for change in this unit was not generated from baseline pain information gathered at the start of the study, but stemmed rather from the RPC members’ experiences on the unit. RPC members had observed that in the mornings, there was a problem with patients not having received adequate pain management because pain medication was ordered on an “as needed” (PRN) basis and was generally not given in the overnight period. As a result, when patients woke up in the morning they tended not to want to get out of bed due to pain. Since patients were not able to be discharged in a timely manner, length of stay on the unit was affected. To address this problem, the RPC created a *change campaign* around the catchphrase, “Pain grows while you sleep...” (Figure 1). All



Figure 1: Surgical Unit practice change logo

educational initiatives the RPC took on centered on the importance of waking patients at night to administer pain medication in order to avoid pain in the morning.

The practice change targets for the Surgical Unit RPC changed over time, from focusing on pain treatment to pain assessment. When the RPC felt that they had achieved reasonable success in pain treatment and documentation as evidenced in results of data audits the research coordinator conducted, they moved on to target pain assessment. The practice change goal statements for each PDSA¹ cycle were as follows:

Cycle 1: “We will increase the use of night-time PRN pain medications on post-surgical patients, routinely during the first 24-48 hours to 35%, as evidenced by documentation on the Medication Administration Record (MAR).”

Cycle 2: “We will increase to 65% of post-surgical patients receiving night-time PRN pain medication routinely, as ordered during the first 48 hours post-surgery, as evidenced by documentation of the medications in the MAR.”

Cycle 3: “We will increase to 80% of post-surgical patients receiving night-time PRN pain medication, during the first 48 hours when indicated as appropriate according to q4h assessment, which will be recorded on the vital sign flow sheet or nursing notes along with documentation of the medications effectiveness.”

Cycle 4: “We will increase to 80% of all patients receiving a documented pre-assessment to determine need and post-assessment to determine effectiveness for PRN pain medication administration.”

What was done?

In the PICU, in PDSA¹ cycle 1, it was difficult to identify KT strategies that were acceptable to everyone and that could be implemented given the existing workload PICU RPC members experienced. The only KT strategy implemented in this cycle was *t-shirts* printed with a unique logo the RPC developed: “Give us FLACC... We’re the new FACES of pain” (Figure 2). This logo would become the “brand” the RPC used in the subsequent EPIQ rapid cycles. The shirts were either black with neon green printing or neon green with black (for high visibility).

PDSA¹ cycle 2 began with several new RPC members and a new research coordinator. The RPC identified *education* of



Figure 2: PICU practice change logo

PICU staff on the two pain scales as a priority. They developed an *information sheet* and a *quiz* that they distributed to staff members during their shifts. In addition, they provided staff with an incentive “goodie bag” containing a *notepad* (with the new study logo), a *pen*, *candy*, and *lanyard cards* with small versions of the two pain scales that they could use for reference during their shift. Additional incentives were given to those staff who completed the quiz.

During this PDSA¹ cycle the RPC discovered that when electronic patient charts were being set up on admission, a nurse could choose not to include pain assessment scales as part of the patient chart. In fact, when I did an audit I found that, in many cases, pain scales had not been included as an option on patient charts. The RPC agreed that one RPC member would take this concern to the Information Technology Department at the hospital to see if the problem could be rectified. Pain assessment became mandatory on **all** electronic patient charts.

During PDSA¹ cycle 3, we developed a *bedside poster* (Figure 3) that was laminated and taped to the moveable computer stations, Computers on Wheels or “COWs,” assigned to each bed within the PICU. The PICU had recently switched to electronic charting and the RPC felt that by having the *posters* located at the point of use, they could serve a dual purpose both as an *educational tool* and as a *reminder*. In addition, we *laminated a version of the FPS-R²* large enough to be easily read by patients, to be kept on the patient clipboard. During this PDSA¹ cycle, we also reminded staff of our initiatives in the unit by having a day where we delivered coffee and muffins to both shifts as *incentives* for change.

In an attempt to promote a unit culture where pain assessment and control is essential, we decided on a campaign to dispel pain myths. Every week, we sent out an *email* and created one *poster* for the staff room, focusing on a specific pain myth that we took directly from a current textbook on children’s pain. A complete list of pain myths is presented in Figure 4.

In the Surgical Unit, members of the RPC conceived the majority of the KT strategies used, with little input from the research coordinator. This ensured that the KT strategies would have maximum success, as those who knew the environment and the staff best had chosen them. This group had very definite ideas on what would work and what would not work for their unit. The first KT strategy they felt was necessary was *staff education* in some form. In order to change behavior, staff had to understand why it was important to wake patients up to give them analgesics. To make this happen, RPC members conducted *one-on-one teaching* sessions with staff, and at the end of the session, the staff member received a neon yellow *lanyard card* with the logo and catchphrase “Pain grows while you sleep...” on one side, and the key learning points on the other. This created a lot of buzz on the unit, and staff wanted to know how they too could get a *lanyard card*. Unfortunately, it was difficult for RPC members to find time for this teaching in addition to their regular workload, so only about half of the staff actually received this educational opportunity. In subsequent cycles, most of the KT strategies could be categorized as *reminders*. One exception was the development of a *parent information poster*. The RPC saw parent education as important because staff had encountered some resistance from parents to waking children at night for pain medication administration. This *poster* highlighted the reason for this practice and invited parents to discuss their child’s pain control with their nurse.

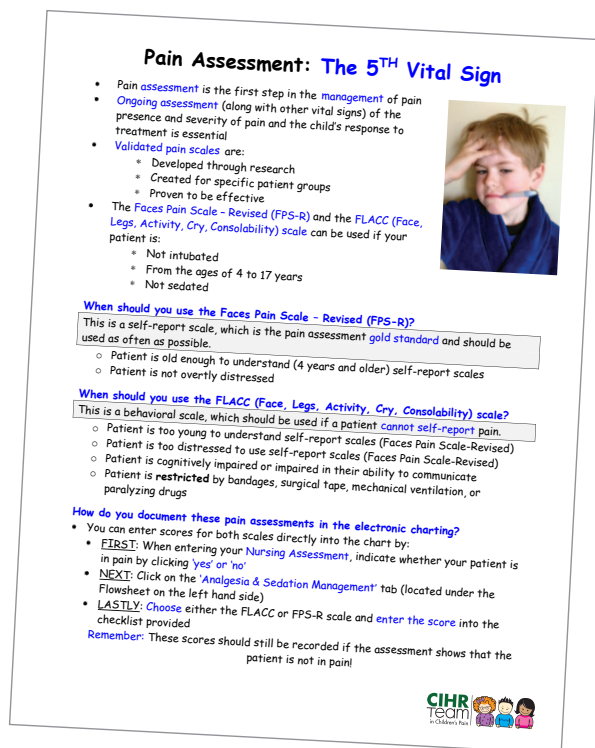


Figure 3: Bedside poster that was laminated and taped to the moveable computer stations

Week 1

MYTH: Pain cannot be accurately assessed.

FACT: While it is true that an absolute measure of pain is impossible because pain is personal, in the majority of cases an accurate pain assessment is possible, even in children. Depending on the situation and the age and health condition of the child, a pain assessment is possible using a number of valid and reliable self-report, behavioural, and composite measurement tools.

Week 2

MYTH: Children will tell you when they are experiencing pain.

FACT: Children may not report pain due to fear of administration of a painful analgesic or fear of returning to/staying in the hospital. Children who have experienced chronic pain may not be aware that they are experiencing pain. Young children may not have adequate communication skills or others may not think it is necessary to tell health professionals about pain.

Week 3

MYTH: Children’s behaviour reflects their pain intensity.

FACT: Children are unique in their ways of coping. Children’s behaviour is not a specific indication of their pain level. A child who is experiencing pain may be active and playing “normally”. For example, a school age child may spend hours with a puzzle rather than lying in bed as a way to distract attention from pain and attempt to enjoy a favourite activity.

Week 4

MYTH: Children become accustomed to pain or painful procedures.

FACT: Children exposed to repeated painful procedures often experience increasing anxiety and perception of pain with repeated procedures.

Week 5

MYTH: Children easily become addicted to opioids.

FACT: Less than 1% of children treated with opioids develop addiction. Opioids are no more dangerous for children than they are for adults when appropriately administered.

Figure 4: Weekly pain myths

When the focus of the Surgical Unit’s practice change shifted to the documentation of pain assessment prior to and following pain medication administration, the RPC believed that *reminders* would be the most useful tools for their staff. They were sure that staff knew why they should be assessing and documenting pain, but felt that they often forgot to do it in the midst of busy days.

KT strategies included putting *reminders* on patient chart privacy front covers (Figure 5), *information about pain scales* on patient chart privacy back covers, placing *medication administration reminders* in the MAR as dividers between the “around the clock” and “PRN” medication sections, and perhaps the most inventive of the KT strategies, the acrylic table covers for the nurse charting tables. The table covers were made of two thick, clear acrylic sheets, cut to fit exactly over the tables on which the nurses did their charting. *Letter-sized posters* with messages about the assessment and documentation of children’s pain and administration of PRN pain medication were placed under the sheets, in full view of nurses as they charted. This strategy had a more long-term use because other messages could be shared in this fashion. For the purposes of the study, we produced *posters* focusing on “The Golden Hour,” referring to the hour within which the nurse should check for and document the effectiveness of the administration of pain medications (Figure 6). The approximate cost of the table covers was \$200.00, but when I checked the unit 10 months later, I found that they were still being used to communicate other initiatives.

What did and did not work and why?

Within the PICU, it was interesting to note, that the KT strategy with the greatest impact in getting staff to document pain

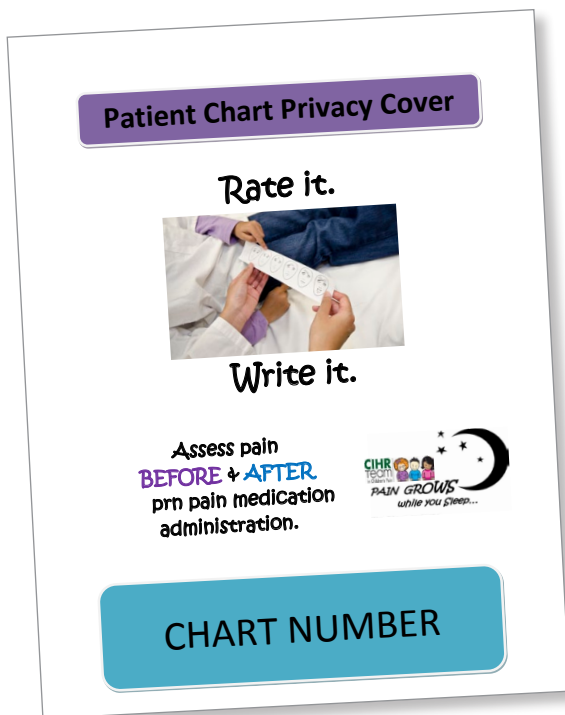


Figure 5: Reminders on patient chart privacy front covers

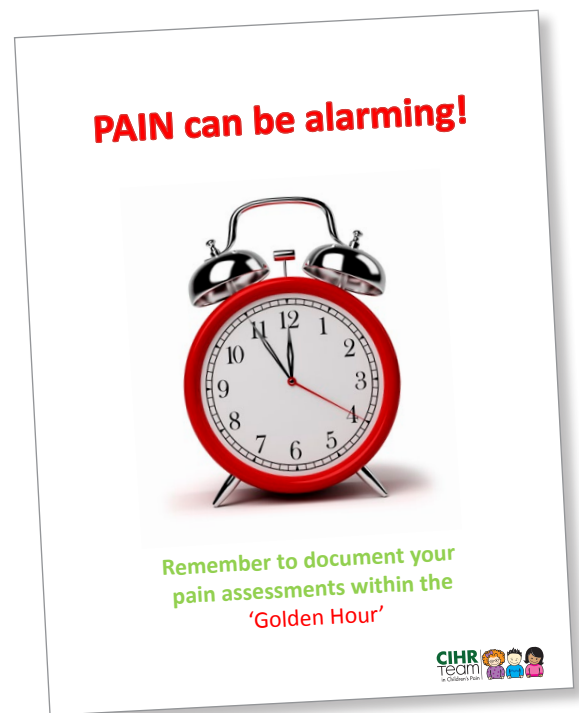


Figure 6: A poster focusing on “The Golden Hour,” referring to the hour within which the nurse should check for and document the effectiveness of pain medications

assessment was inadvertent, and not an intentional strategy. Making the 2 pain assessment scales, FLACC³ and FPS-R,² a mandatory part of the electronic patient chart in the PICU was the most important driver that increased staff nurses’ documentation of pain assessment. All of the other KT strategies contributed to reminding staff to use the tools but, over time, these seemed less helpful; there were low numbers for completing the *quiz*, low distribution of the *information sheets*, evidence of *posters* being taken down prematurely, and the disappearance of the majority of bedside *information sheets*. Without the addition of the scales within the electronic chart, evidence of change for the PICU would have been far less impressive. The high acuity of patients, lack of nurse time, and the high pressure environment of the PICU contributed to low engagement of staff nurses in the RPC. Having protected time for RPC members to be actively involved in the practice change activities, as was originally intended in the research grant, may have resulted in a higher level of engagement and ownership of the practice change activities.

Members of the Surgical Unit RPC found that while the *one-on-one teaching* was the most effective for getting the message across to individuals, it was a challenge to do regularly because it was too time consuming. Work commitments of RPC members

simply didn't allow them time to complete the kind of teaching schedule that was required to reach all staff members. The human resources available did not support *one-on-one teaching*. The use of *MAR dividers* as reminders was useful, but only for a short period of time. Once staff became used to seeing them, their usefulness diminished. Clerical staff also complained about having extra sheets to deal with, so this initiative did not turn out to be very popular with staff. The *patient privacy covers* were a creative use of an existing space that put information close at hand at the right time and in the right format, making it easy to

...there was a dramatic increase in the use of the FLACC³ pain scale.

find and apply the knowledge. This strategy was well received by staff. The acrylic table covers were also well received, but as was the case with the *MAR dividers*, the messages had to be changed often because the staff got used to seeing the same thing, and began to ignore the messages after a time. An effort had to be made to be creative, humorous, colorful, and the *poster* had to have messages with "impact."

Within the Surgical Unit RPC, successful practice change involved their active direction of messages and methods, to the full extent possible. Humor worked well with this group, as did creative *posters* that were well placed. Peer pressure and motivation were also utilized as effective KT strategies in this unit, where the RPC highlighted *results from data audits* on pain assessment and management practices to motivate staff to move toward practice change.

What was the impact?

Despite the challenges we encountered, we saw audit evidence of a significant change in pain assessment of non-intubated patients aged 4-17 years within the PICU. Specifically, there was a dramatic increase in the use of the FLACC³ pain scale.

On the Surgical Unit, we saw audit evidence of an increase in the administration of PRN pain medication in the overnight period and in documentation of pain assessment, both before and after pain medication administration. Impact was also evident in the request of another pediatric unit within the hospital to use the

parent education poster the RPC had developed for their unit. The Acute Pain Team that operates throughout the hospital co-operated with the RPC to have the nursing documentation forms changed (throughout the entire hospital) so that the original Faces Pain Scale could be replaced with the FPS-R.² While this initiative was separate from what occurred within the unit, it dovetailed nicely with what the RPC was trying to accomplish at the time. The teaching that occurred because of the change in nursing assessment documentation forms reinforced the teaching that already occurred because of the RPC's initiative.

What was learned?

Context, which includes leadership, time, and unit resources, is a very important factor in determining whether or not research knowledge is translated to individuals. What works in one context, will not necessarily work in another. It is important to take the time to find out as much information as possible about your audience, what kind of environment it is that they work in, and what their preferences are in terms of learning styles. A little bit of work up front prevents a lot of wasted time and resources later on. KT strategies that are part of established routines or tasks are a good choice, when time is a barrier to KT. For example, adding pain scale education into an existing e-learning module, or adding a pop-up box explaining the proper use of the FLACC³ scale (in terms of patient population etc.) into the electronic charting system may be more effective in encouraging staff to change their practices. Physical proximity of the message to the staff was important when designing reminders. Information that was not handy was not used. When RPC members knew their staff well, they were able to tailor messages so they were most appropriate and effective for their environment and staff needs.

Securing "buy-in" from RPC members for developing practice change goals and active engagement in the process is essential in order for EPIQ to work. Change is more likely to happen if the need for change comes from within as opposed to being imposed from outside the group. Staff members also need protected time and resources to successfully champion changes, as tasks cannot simply be tacked on to increasingly heavy workloads. The extra help of the research coordinator in terms of time and resources was important to the change process, as much of what occurred during the study would not have been possible under normal circumstances.

“Pearls of Wisdom”

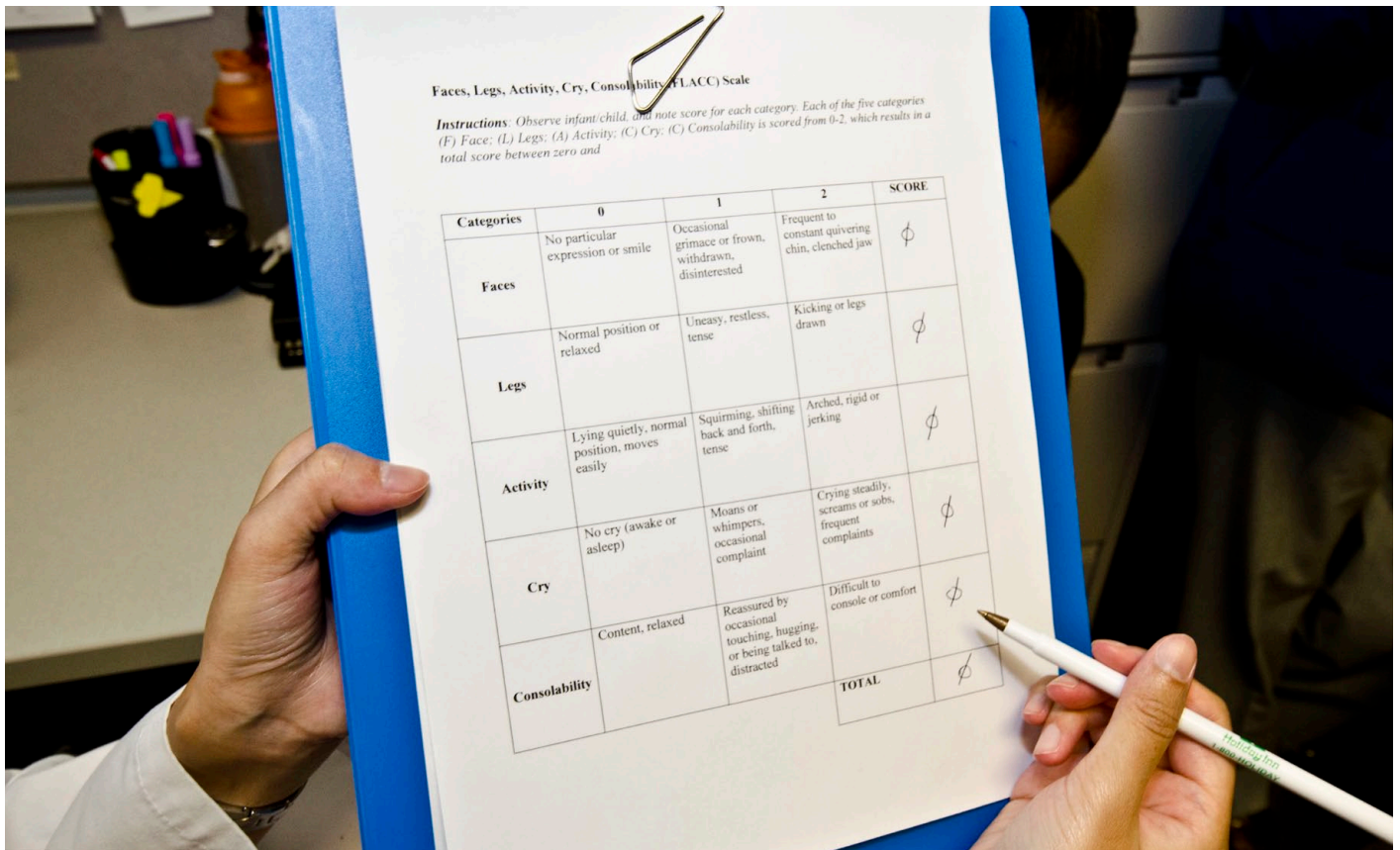
1. Incorporate KT strategies into established tasks or routines.

2. Ensure adequate time for staff to develop and implement KT strategies.

3. Pay attention to staff needs and preferences. Don't impose—empower!

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Faces, Legs, Activity, Cry, Consolability (FLACC) Scale

Instructions: Observe infant/child and state score for each category. Each of the five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0-2, which results in a total score between zero and

Categories	0	1	2	SCORE
Faces	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw	0
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn	0
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking	0
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints	0
Consolability	Content, relaxed	Reassured by occasional touching, hugging, or being talked to, distracted	Difficult to console or comfort	0
			TOTAL	0

CHAPTER 3 **Becoming “The Pain Person”:
Facilitating Practice Change**

Where was Evidence-based Practice for Improving Quality (EPIQ) used?

The first unit where EPIQ was implemented was a busy 36-bed Surgical Unit. Children are admitted to the unit following a wide variety of surgical procedures, including shunt insertions, tracheostomies, appendectomies, and correction of scoliosis. The average length of patient stay is 5 days. During most of the study period, 7 technology dependent patients stayed on the unit, but there was a high turnover of patients in the rest of the unit. Care is provided in the unit by more than 60 staff including: staff nurses; managers; clinical support nurses; nurse practitioners (NPs); rehabilitation therapists; child-life specialists; and dietitians. Common painful procedures performed on this unit included intravenous (IV) insertion and removal, simple blood tests, and lumbar punctures.

The second unit where EPIQ was implemented was a 28-bed Neonatal Intensive Care Unit (NICU). There was much less

turnover of patients in this unit with an average length of stay of 19 days. Patients have a wide variety of illnesses and conditions, such as pneumothorax, necrotizing enterocolitis (NEC), and hyperbilirubinemia. The more than 80 staff in the NICU include: staff nurses; managers; clinical support nurses; educators; NPs; pharmacists; respiratory therapists (RTs); social workers; and dietitians. Heel sticks for blood work were the most commonly performed painful procedure on the unit.

Who was involved?

When I started working on the project, the Research Practice Council (RPC) members had already been appointed in both units. As I was new to the hospital, it took time for me to get to know both the RPC members and staff on the units. I invited them to lunch meetings or dropped in to observe the working atmosphere and relationships among staff members and with

parents on the unit. I felt building relationships with the staff and learning how the units functioned on a day-to-day basis was important to the success of the project.

Most RPC members from both units were appointed by the unit managers. There was also a physician on each RPC, who volunteered to take part in the EPIQ project. All members of the RPC were health care professionals who wanted to achieve positive results, believed in their professional staff, and loved their profession. It was difficult at times to arrange RPC meetings as some members worked on opposite shifts. However, some members came in on their own time to attend meetings or separately met with me to provide feedback on the work of the RPC. Membership in both RPCs was consistent for the majority of the project, apart from a few changes on the surgical unit. There was strong support from both unit managers, who were not RPC members but attended many of the meetings.

The age of the child assessed using one of the scales was not always consistent with the age of the child for whom the scale was valid.

What needed to change?

RPC members on both units agreed that correct use of validated pain assessment tools and documentation of pain scores was a cornerstone of improving pain practices. One of the units had previously participated in a pilot project to implement best practice guidelines for pain assessment; but one year later, documentation of pain assessment was still not optimal. Participation in the study was a great opportunity to try new strategies to improve assessment and documentation.

Based on current pain practices on each unit, identified through the baseline audit data collected for the study, the RPC members chose the specific pain practices that they wanted to improve on their unit. In the Surgical Unit, they decided to reinforce the assessment and documentation of pain during all painful procedures using one of three validated pain scales: Numeric Rating Scale (NRS);¹ Face, Legs, Activity, Cry & Consolability Scale (FLACC);² and Faces Pain Scale Revised (FPS-R).³ After two Plan-Do-Study-Act (PDSA)⁴ cycles, the use of these scales had increased, but the age of the child assessed using one of the scales was not always consistent with the age of the child for

whom the scale was valid. During the final two PDSA⁴ cycles, we changed the aim statements to focus on use of the validated scales with the appropriate age groups of children.

In the NICU, the RPC's goal was to increase the use and documentation of sucrose for skin-breaking procedures. During the first two PDSA⁴ cycles, we focused on the use of sucrose for heel sticks performed during the night shift. In the final two PDSA⁴ cycles, we expanded the focus to include any skin breaking procedure (IV insertion, lumbar puncture, arterial or central line insertion, subcutaneous injections, etc.) done at any time of the day or night.

What was done?

The hospital's Research Ethics Board (REB) required consent from all staff on both units who may have any type of involvement in the study (e.g., nurses, doctors, physiotherapists, dieticians, nutritionists). I approached each individual for consent before the study began. This process was incredibly time consuming but did offer a way for me to connect with staff and ensure they knew about the study.

Generally the ideas for the knowledge translation (KT) strategies came from the RPC members but I made arrangements to get supplies and implement the strategies. Inexpensive computer programs facilitated the creation of *stickers* (Figure 1), *posters*, and *handouts*. Funds to cover the cost of KT strategies were provided through the study and supplemented with additional local funds. We used approximately \$4000 on each unit to support the KT strategies, including light refreshments during meetings and pizza parties as tokens of appreciation for participation.



Figure 1: Example of a reminder sticker.

A number of methods were used to remind staff about the study and the pain practice changes. *Screen savers* on the units' computers displayed pain messages composed by the staff nurses as well as images of the targeted painful procedures. Messages were rotated on a bi-weekly basis to keep them interesting. Staff nurses in both units were given brightly colored pen-holders with the study logo. These *pen-holders* were both a useful item for the staff and served as a reminder about the study. As well, I placed a laminated pink *poster* in the patients' charts, just before the doctor's order sheet to remind staff to "Please Assess It Now" (Figure 2).

In both units, *posters* were created with comical images of the RPC members. These posters reminded staff who their pain champions were and provided information about the study. The posters were in a central location at the nursing station. Another poster had a large image of candy to remind staff about the effectiveness of the "sweetness" of sucrose interventions during painful procedures. This poster was located on the door of the refrigerator where prepared sucrose oral syringes were kept.

I also developed *posters for parents* to provide information about the benefits of sucrose and how it is used to reduce pain during procedures. These posters were located in the hallways of the

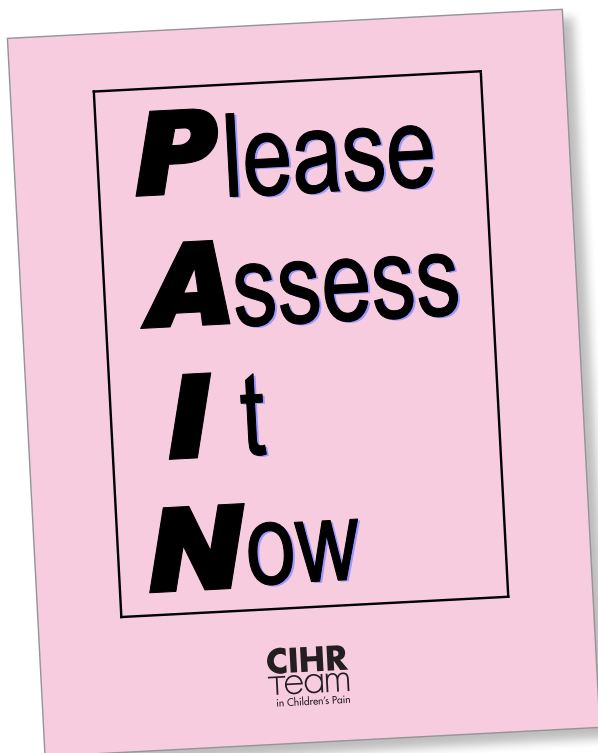


Figure 2: A reminder poster in the patients' charts, just before the doctor's order sheet.



Figure 3: Reminder sticker placed on vital signs sheet.

units and on the doors to the patient's room. I also placed a poster with some "sweet facts" about sucrose in patients' rooms.

In both units, I created *educational binders* with information about all aspects of the study and the pain practice change that was targeted on the unit. These binders were kept at the nursing station. Unfortunately, the binders did not seem to be used.

On the Surgical Unit, laminated and enlarged versions of the *pain scales* hung at the bedside of each patient and the unit coordinator placed a *pain sticker* (Figure 3) on the vital signs sheet to remind staff nurses to assess and document pain. During the morning or evening rounds, doctors could review the pain scale being used and any fluctuations in pain scores throughout the day on the vital sign sheet at each bedside.

In the NICU, *bedside cards* were used to let the staff know if a baby was eligible to receive sucrose. The resource nurse on the unit was responsible for assessing whether the baby could receive sucrose for painful procedures and then placing the card at the bedside. Due to a heavy workload and competing priorities it became a challenge for the resource nurse to continue this practice. The *bedside cards* were discontinued after the third PDSA⁴ cycle.

The unit coordinator in the NICU prepared special sucrose packages each afternoon to facilitate the use of sucrose during blood work. Once blood work was ordered, the unit coordinator placed a pre-filled sucrose syringe (with expiry date), a pre-stamped requisition for blood work, and a candy and sticker for the staff nurse in a *sucrose package*. The staff nurse who gave the sucrose filled out the sticker and received a small *incentive* (e.g. coffee gift cards, small cosmetic bag, coffee mug) with the study symbol as a thank you for using sucrose.

I had numerous *meetings* with the lab staff to orient and update them about the study and their role in facilitating implementation of the pain practice change in the NICU. The lab technicians collaborated with staff nurses to coordinate the use of sucrose during all blood work. I aimed to coordinate their actions with the staff nurses' availability at the bedside during each heel stick.

The involvement of pharmacy staff was also important for facilitating the use of sucrose in the NICU. The sudden increase in demand and use of sucrose initially created some difficulty in ensuring there was an adequate supply of sucrose available from the pharmacy. After a few meetings with pharmacy management and staff we resolved this issue and ensured that supply met the demand. There was no pharmacist on the NICU RPC, but one pharmacist attended several of the meetings.

Communication via frequent *formal* and *informal meetings* with all involved staff was important in sharing information about the study and the pain practice changes as well as identifying learning needs and getting feedback about how the strategies were received. I attended many staff meetings with the night staff nurses in the NICU to address any concerns about the use of sucrose. The staff nurses were very helpful in sharing practical advice on how to best implement any changes. I also met with the surgical residents and staff doctors once a month during their radiology rounds to explain the study and their role. Similarly, I met with pediatric residents individually during their time on the unit to share study information.

On both units, *incentives*, such as pizza, bagels, or candy, were offered during meetings or as a token of appreciation for participation in the study.

I gave the results from chart audits after each PDSA⁴ cycle to the RPC members first at *audit and feedback meetings*. I then placed a *poster* with a graph showing these results at the nursing station in the "pain corner." I also organized a *pizza party* for all teams and shifts where I explained the results of the cycle and the next steps in continuing to improve pain practices. The staff (including doctors and allied health professionals) were pleased to be updated this way. For those who could not attend the pizza parties, I had more *informal meetings and conversations* to provide the audit and feedback results.

What worked and why?

Although it is difficult to know which KT strategies were most effective in assisting staff on the 2 units to achieve their pain

practice aims, we received positive feedback on a number of strategies used. *Screen savers* on computers were seen easily by all staff. Frequent changes of the messages kept staff interested in reading the message. The comical images of RPC members on *posters* and the *posters* that contained *audit and feedback* results generated a number of questions and interest from staff about the study. Staff expressed appreciation for the *pen-holders*, *incentives*, and various *events* that helped to increase awareness about the study. Staff also gave positive feedback about the helpfulness of the *pain posters* in the charts, *stickers* on the Vital Signs sheet, and the *laminated pain tools* at the bedside. Staff nurses appreciated having the ready-made *sucrose packages*, although sometimes found it confusing when there was a sucrose package ready for an infant who had a contraindication for sucrose use.

What didn't work and why?

Assessment of the infants in NICU for their eligibility to receive sucrose was a challenge. The resource nurse did not always have time to assess every infant and create the bedside cards. I tried involving the staff nurses in assessing infants' eligibility using an *information list with eligibility criteria*. Some nurses were not comfortable with this responsibility and wanted the doctors to make the decision. As well, despite my efforts to reach all staff to tell them about the study and the *sucrose packages*, not all staff were aware. Particularly after night shifts, I found *sucrose packages* with an empty syringe but there was no documentation that sucrose had been administered. Some staff did not believe that sucrose was effective despite significant research evidence to support its use and many efforts to share this information with them. For all of these reasons, there were infants who could have received sucrose but did not.

The *educational binders* on each unit took me a great deal of time to prepare but staff very rarely used them. Staff indicated that they just did not have time to sit and read during their shifts.

What was the impact?

A hospital-wide policy related to the use of sucrose had been pending for 4 years prior to the study. This project provided the impetus to move this policy forward and it is now implemented hospital-wide.

Since charts accompany patients when they are transferred to another unit or department for a test or surgery, staff from other

units noticed the posters and study logos in the charts and began asking questions about what they meant, which generated interest in the study across the hospital.

What was learned?

Communication was critical to the success of the project. I was able to develop good personal relationships with staff on both units, which promoted effective communication at the unit level. I became known as “The Pain Person,” which served as a reminder for staff to assess pain or give sucrose whenever they saw me. Keeping the unit leader informed and involved, whether or not he or she was on the RPC, helped with the success of the project. As well, staff nurses needed to be members of the RPC as they were most affected by the practice changes and could be wonderful pain champions and spread the word throughout the unit when they understood and believed in what they were doing.

It was also important to communicate with staff in other departments who were impacted by the practice changes, such as in pharmacy and the laboratory. As well, parents required clear communication that sucrose would not cause their child to become diabetic and about the meaning and purpose of some of the posters and screen saver images we used on the unit.

Another key factor in the success of the project was having both human and financial resources available to facilitate change. RPC members were committed to making the changes in practice but appreciated the financial resources available to make the reminders and to offer small incentives that kept staff motivated and show appreciation for the hard work they were doing.

Overall, the project was a success!

“Pearls of Wisdom”

1. Communicate with everyone affected by the practice change.
2. Keep unit leaders informed and involved in the process.
3. Include staff nurses as RPC members.

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CHAPTER 4

Engaging Staff to Become Champions for Change

Where was Evidence-based Practice for Improving Quality (EPIQ) used?

EPIQ was implemented in 2 surgical units. Unit 1 is a cardiac surgery unit consisting of 30 patient beds. Patients range in age from newborn to 18 years and typically stay on the unit between 48 and 72 hours. Care is provided by more than 110 health professionals including: staff nurses, educators, nurse practitioners (NPs), pharmacists, child-life specialists, social workers, rehabilitation therapists, dieticians, charge nurses, medical fellows and residents, and cardiac surgeons. Painful procedures commonly performed on the unit include: chest tube insertion/removal, pacing wire removal, dressing changes, oral/nasal suctioning, peripheral blood work, and intravenous (IV) catheter insertion.

Unit 2 is a neurosurgical/trauma unit consisting of 20 to 25 beds. Patients range in age from newborn to 18 years and typically stay on the unit from 2 to 5 days. Care is provided by more than 90 health professionals including: staff nurses,

educators, NPs, pharmacists, child-life specialists, social workers, rehabilitation therapists, dieticians, charge nurses, medical fellows and residents, neurosurgeons, and neurologists. Patients are commonly admitted to the unit following shunt revisions, brain tumor resections, or motor vehicle trauma. Painful procedures most commonly performed on the unit include: insertion of IV catheters, lumbar punctures, and dressing changes.

Who was involved?

On Unit 1, the Research Practice Council (RPC) consisted of a nurse educator, a clinical nurse specialist, a clinical support nurse, a quality assurance nurse, and a staff cardiologist. Some of the members volunteered to participate in the RPC, while others were specifically chosen by the unit manager for their clinical expertise. I had previously worked with staff on this unit as a nurse clinician and as a research nurse on another project; therefore, I already had good rapport with the RPC members and

was able to continue to cultivate strong professional relationships with all of them.

On Unit 2, the RPC consisted of a staff neurosurgeon, a staff neurologist, a clinical nurse specialist, a quality assurance nurse, and a trauma team leader. All members volunteered to be part of the RPC, and each brought expertise in different areas. I was less familiar with the staff and the RPC members on this unit; therefore, I took extra time to develop rapport with this group.

What needed to change?

The RPC members on Unit 1 started by reviewing the baseline audit data results, which indicated that nearly 2/3 of the patients on the unit were younger than 12 months of age. While many painful procedures were routinely done on these patients, there were no documented pain management strategies. The RPC members examined literature reviews on pediatric pain management that the core study team provided and found that sucrose was well established as an effective procedural pain management strategy for this young age group. Therefore, the RPC chose to focus on improving the use and documentation of sucrose for patients 18 months of age or younger having a painful procedure (e.g., dressing changes, suctioning, or IV insertions).

Pain management strategies were all likely to be used... but they were unlikely to document the physical and psychological strategies

The RPC on Unit 2 started by distributing a survey to nursing staff asking which painful procedures were most commonly performed on the unit, how painful they thought the procedures were, the methods they used to manage pain during procedures, and where they documented any pain management strategies that they used. IV insertions were identified as the most commonly performed painful procedure, both through the survey and through the baseline chart audit. Staff nurses indicated that pharmacological, physical, and psychological pain management strategies were all likely to be used to manage pain during IV insertions, but that they were unlikely to document the physical and psychological strategies. To add to this information, a review of relevant research indicated that children find IV related procedures painful and, when unmanaged, needle pain can



Figure 1: Reminder stickers applied to the front of patients' charts.

lead to needle phobia, or higher anxiety levels with subsequent procedures.¹ Based on this evidence and the data collected from staff nurses, the RPC decided to focus on improving pain management during all routine IV insertion, using a topical anesthetic, liposomal lidocaine 4% cream (Maxilene®). They chose to use Maxilene® based on research evidence that the use of Maxilene® increases procedure success rate and decreases procedure time.²

What was done?

A variety of knowledge translation (KT) strategies were implemented on Unit 1 to increase the use and documentation of sucrose during painful procedures. The RPC applied *stickers* that said "I Can Have Sucrose" (Figure 1) to the front of patients' charts as a constant *reminder* to staff to consider using sucrose. They made bright pink *T-shirts* with the logo "Sweet Pain Relief" for staff to wear, as another reminder to use sucrose. The t-shirts were particularly visible on the night shift and were popular with both staff and parents. In addition to reminding staff, the t-shirts also reminded parents to ask about sucrose, which helped increase its use on the unit. *Screensavers* and *computer desktop wallpaper* were also popular KT strategies. All computers in the nursing stations and in specific patient's rooms, such as the close observation/step-down rooms, had screensavers to remind staff to use sucrose for painful procedures. The computers are in constant use with different staff logging in and out to enter orders and complete charting. Each time a staff member logged out of a computer, the screensaver with the sucrose reminder would be visible. Constant visibility was key to the success of screensavers and computer wallpaper in assisting staff to remember to order/administer and document sucrose.

Another creative KT strategy involved using bright, easy to read *posters*. One such poster read "Sweet Pain Relief" (Figure 2) with recommendations on when, how, and who should administer sucrose. The RPC put up the posters in the patient rooms, close to observation rooms, and in treatment rooms where painful procedures frequently took place. The posters served as both a

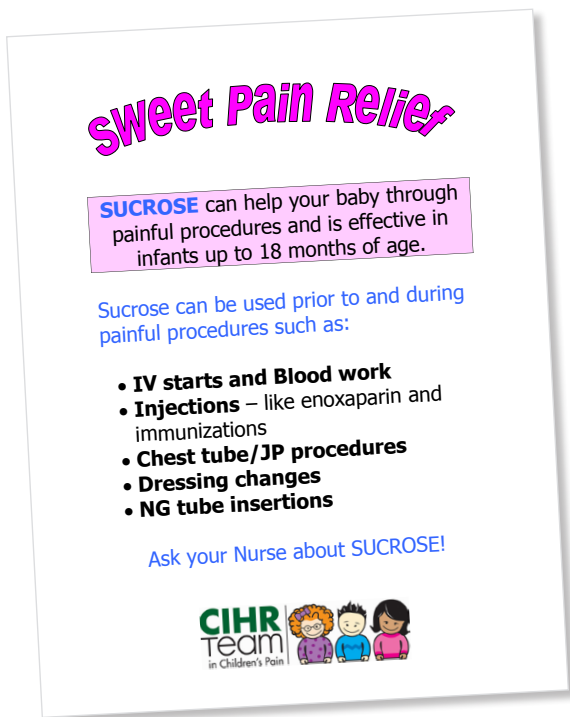


Figure 2: Poster with recommendations on when, how, and who should administer sucrose.

reminder and source of educational information for families and all staff, including the vascular access team and phlebotomy staff.

The RPC members on both units regularly created a *newsletter* that they posted on the walls in the nursing stations to keep the staff apprised of practice change goals, any ongoing or new information about the study, and to provide *feedback* on how well they were reaching their practice change goals, based on data I collected through chart audits at the end of each Plan-Do-Study-Act (PDSA)³ cycle (Figure 3).

Following the first PDSA³ cycle on Unit 2, the use of Maxilene[®] increased from 0% to 30%. To identify any barriers to the use of Maxilene[®] and solicit suggestions on how to further increase its use, the RPC members developed a survey and distributed it to all staff nurses. Some of the identified barriers included lack of a physician's order to use Maxilene[®], patient or family refusal, difficulty coordinating the drug application with the IV Team, and personal comfort with its use. The RPC then developed and implemented KT strategies to address the barriers.

The RPC placed *laminated cards* with a reminder to order Maxilene[®] near computers screens where order entry was done (Figure 4). Some of the staff also put these cards on their lanyards as a consistent reminder to order and use Maxilene[®]. At first, an order from a physician or NP was needed to use Maxilene[®], but

later staff nurses were also able to enter a PRN (i.e., as needed) order for Maxilene[®]. RPC members developed a standardized *script* for staff to use when providing education to families about the use of Maxilene[®] for IV insertions. They sent the script by email to all staff and reinforced the information at the staff meetings. The script was also included in the meeting minutes. The script ensured some consistency in communication with families about Maxilene[®] and also provided education to staff about its use.

RPC members on Unit 2 also chose to use *stickers* on the front of the patient charts as a quick and easy reminder to implement pain management strategies for IV insertions. The unit clerks applied the stickers when preparing the charts for new admissions. The RPC developed vivid pink and blue laminated *posters* with key messages about pain management during IV insertion (Figure 5). They hung the posters in patient rooms and treatment rooms as a reminder to families and staff to use Maxilene[®] when IVs were inserted.

The RPC also worked with the IV Team to develop a process to ensure Maxilene[®] was applied in the proper location, in a timely manner prior to IV starts, and that it was documented in the health record. The RPC presented information about this

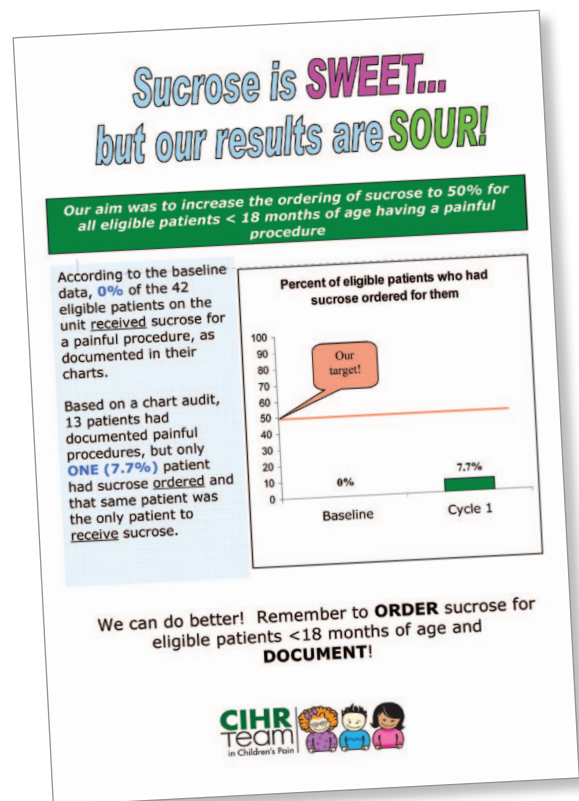


Figure 3: Audit and feedback poster.



Figure 4: A reminder card placed near computers screens where order entry was done.

new process to all staff on the IV Team as well as to staff nurses through *education sessions, posters, and emails.*

What worked and what did not?

Stickers were cost effective, bright, and well located on chart fronts to serve as a frequent reminders about the practice change to staff, who used the charts several times each day. The stickers were easy to apply and remove as needed. The only drawback to the stickers was that a staff member needed to be designated to reorder and distribute stickers before they ran out. The *t-shirts*, which were particularly visible at night, were very well received as they provided a gentle reminder to use sucrose for painful procedures, both for staff wearing the t-shirts and the ones who saw the t-shirts their colleagues wore. Unfortunately, the t-shirts shrank significantly when washed and many staff members could no longer wear them. It would have been helpful to purchase higher quality, although more expensive, t-shirts to prevent shrinkage. The posters were purposefully placed in key areas where many painful procedures took place, such as the treatment room, patient rooms, and observation rooms. Parents noted the visibility of the posters and commented that they provided a great reminder to staff. Even though the posters the RPC used were bright, colorful, and initially eye-catching, they eventually would fall off the wall, get covered up with other unit information, or become “invisible” because nurses viewed them over and over again.

The *screensavers* and *computer wallpaper* at the nursing station and in the observation and treatment rooms were a consistent reminder to staff involved with painful procedures to think about pain management strategies. Similar to the posters, the messages became “invisible” over time and needed to be changed regularly to keep staff interested. The *newsletters* used on both units provided updates to both staff and parents and represented a strong link between the research staff and the unit staff. The newsletter helped staff feel more included and knowledgeable about the study and the practice changes; it also provided a *forum* for sharing questions and answers in a timely manner.

The newsletter was regularly updated, laminated, and placed on the wall in the nursing station where it was easily accessible. The use of a *script* for teaching parents about the use of Maxilene® for IV starts was very advantageous in ensuring key points were consistently highlighted. This consistency of information played a significant role in building trust with the patients’ families.

Reminders to order Maxilene® placed on cards were readily available to the staff and distributed by the nursing station computer. This placement of the card served as a reminder particularly to physicians and NPs who were responsible for writing orders, both for sucrose and Maxilene® on the respective units. These reminders could only be effective when staff understood what they meant and why sucrose or Maxilene® were important. Staff turnover was quite high on both units, with an influx of new medical staff and nurses every 3 months. Frequent retraining was necessary to ensure all staff complied with the standards of practice on each unit. New staff would often forget to order Maxilene® or sucrose or would forget how to use them appropriately, even when they were ordered.

The nursing *surveys* provided staff with the opportunity to be actively involved in the process and provide feedback, which made them feel valued. The surveys facilitated staff buy-in and gave the RPC members additional insight into the staff’s point of view, providing another perspective on what was working and what wasn’t.



Figure 5: Poster hung in patient and treatment rooms.

What was the impact?

The impact of the practice change and KT strategies was significant on Unit 1. Patients' families especially liked the posters and the t-shirts that the staff wore. Staff on other units were interested in the KT strategies that the RPC used and how this could impact pain management practices in their own areas.

The impact on Unit 2 was also significant. Patients' families liked the variety of methods the RPC used to deliver a consistent message to use Maxilene® for IV insertion. There was a significant increase in the use and documentation of Maxilene® on the unit. The nurses felt empowered to continue to improve patient care and felt that they were well on their way to achieving success.

What was learned?

Through experience with the successes and challenges of implementing EPIQ, I would consider a number of factors if I was going to implement EPIQ on a new unit. Staff turnover and the addition of new staff (nurses and physicians) on the unit have a profound impact on change initiatives. It is important to consider the timing of regular staff rotations (e.g., when a new group or residents starts on the unit) and to be aware of the arrival of any new staff to ensure they receive education about any practice changes and the KT strategies being used as part of their orientation. It is easier to incorporate good pain assessment and management practices as part of the standard of care from the beginning, rather than trying to change established habits later on.

Workload has a great impact on how successful practice change can be. If the patients on the units are more ill and require a great deal of nursing care, any change initiatives are put on the back burner. If the change is not currently a priority, it is harder to implement. Staff become focused on caring for the patients' immediate and sometimes life-saving needs, as opposed to considering the immediate and long term consequences of unmanaged pain.

The importance of "buy-in" from all staff affected by the change is critical as they are the vehicles for change. If they do not believe in the change it will not happen. Buy-in may be facilitated by soliciting feedback from the staff regarding the proposed changes, how to proceed, and any challenges that may need to be overcome. This feedback may be obtained through staff surveys, informal conversations with as many staff as possible, or through focus groups.

Identification of champions who can promote and sustain the practice change, beyond those who are actively involved as members of the RPC, will facilitate involvement of a greater number of staff. It is the staff that will be implementing the change, so inclusion of their opinions cannot be overemphasized.

"Pearls of wisdom"

- 1. Ensure new staff understand pain assessment and management as part of the unit's standard of care.**
- 2. Identify pain champions to support and sustain changes in practice.**
- 3. Actively involve all staff who will be affected by any practice changes.**

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CHAPTER 5

On the Path to Better Pain Assessment and Management

Where was Evidence-based Practice for Improving Quality (EPIQ) used?

The 2 units that participated in the EPIQ process were both medical units. Unit 1 was a 16 bed inpatient medical unit that also has a “not for admission” (NFA) program. NFA is for children who require single doses of antibiotics, blood products, or chemotherapy, who are not admitted but still receive care in the unit for a short period of time. Regular admissions typically include medical patients from the following subspecialties: oncology, bone marrow transplant (BMT), nephrology, renal transplant, neurology, cardiology, and endocrinology. Patients range in age from newborn to 17 years, with an average stay of 4 days. Care is provided by an interprofessional team of more than 50 staff including: staff nurses, clinical resource nurses, nurse clinicians, managers, educators, respiratory therapists (RTs), rehabilitation therapists, unit clerks and assistants, pharmacists, social workers, dietitians, and child-life specialists. Access to the Acute Pain Service and all other disciplines is available. Some

painful procedures done on the unit include: dressing changes, blood draws, blood glucose measurement, suctioning, and nasogastric (NG) tube insertions.

Unit 2 is a 22 bed, acute medical unit that includes 4 beds for patients who need close monitoring (1 nurse for every 2 patients). Patients are typically admitted for treatment of a respiratory or neurological condition. Other patient populations include children with metabolic disorders or heart conditions. The average length of stay on this unit is approximately 5 days. Care is provided by an interprofessionals team of more than 50 staff including: staff nurses, clinical resource nurses, educators, managers, unit clerks and assistants, child-life specialists, pharmacists, social workers, and dietitians. The Acute Pain Service provides clinical support. Some painful procedures done on this unit include: blood draws, intravenous (IV) starts, lumbar punctures (LP), dressing changes, suctioning, and blood gas sampling.

Who was involved?

Following discussion and collaboration with the unit managers about possible participants for the Research Practice Council (RPC), I approached these individuals and explained the study and their potential role as an RPC member. All of the individuals that the managers suggested agreed to participate.

My relationship with these units was one of familiarity. I worked on Unit 1 as a staff nurse during the EPIQ process, and Unit 2 would see me when I occasionally “floated” to provide patient care. Trust was established from the beginning. My role was to facilitate, educate, and evaluate the units’ pain practice changes. I served as a reminder each time I walked on the units.

My relationship with this unit grew over the 4 PDSA¹ cycles as I became a more familiar face.

The RPC on Unit 1 consisted of 2 staff nurses, a child life specialist, an educator, and a pharmacist. The RPC was fairly consistent for the 2 years of the EPIQ study, the only change being a staff nurse who left on maternity leave and was not replaced. The unit manager was involved but was not an active member of the RPC. My role on this RPC was to coordinate the majority of knowledge translation (KT) strategies. During certain Plan-Do-Study-Act (PDSA)¹ cycles, some RPC members were more involved and developed their own KT strategies. I edited, photocopied, and laminated KT strategies as needed, and coordinated and chaired the RPC meetings. My relationship with this RPC was solid, as I continued to work on the unit as a part-time staff nurse during the EPIQ process.

The RPC on Unit 2 consisted of 2 staff nurses, 2 clinical resource nurses, an educator, and a unit manager. The RPC was fairly consistent through most of the 2 years. A staff nurse left half way through for maternity leave and the educator left 6 months prior to the completion of the PDSA¹ cycles. The staff nurse was replaced by another staff nurse, but the educator wasn’t replaced. This RPC did a few more things independently. For example, once they developed a KT strategy, such as posters, I photocopied or laminated them. I coordinated and chaired all of the RPC meetings. My relationship with this unit grew over the 4 PDSA¹ cycles as I became a more familiar face.

What needed to change?

The baseline audit data on pain practices in the units guided both RPCs in identifying their pain practice changes. On Unit 1, baseline data indicated that pain assessments were being documented on a daily basis (118 out of 120 charts included a documented pain assessment). However, the same assessment scale was being used for all patients. Given that the children on the unit typically ranged in age from newborn to teenage years, the RPC realized that they needed to use more than one pain assessment scale. After they reviewed the literature and *evidence summaries* provided by the core research team on validated pain assessment scales, the RPC decided to improve pain assessment and documentation through appropriate use of 5 pain assessment scales (Faces, Legs, Activity, Cry, Consolability [FLACC] Scale,² Faces Pain Scale-Revised [FPS-R],³ Visual Analog Scale [VAS],⁴ Numerical Rating Scale [NRS],⁵ and Pieces of Hurt⁶) for 50% of all patients. This aim was the focus for all 4 PDSA¹ cycles, gradually increasing the implementation goal to 90%. In cycles 3 and 4, the RPC also targeted increased use and documentation of non-pharmacological interventions to 25% for all patients. The RPC felt staff were already providing non-pharmacologic interventions but were not documenting the interventions or their effectiveness.

On Unit 2, baseline data indicated that pain was not routinely assessed and documented. The RPC members were slightly skeptical of these results, so 1 RPC member conducted an additional assessment of current pain assessment practices on their unit and found similar results. This additional review convinced the RPC to focus on pain assessment and documentation for all 4 PDSA¹ cycles. After review of the *evidence summaries* provided by the core research team, the aim statement for cycle 1 and 2 was to increase the use and documentation of the FLACC,² FPS-R,³ VAS,⁴ and NRS,⁵ for 50% of all patients. This aim was the focus for all 4 PDSA¹ cycles, with an increase in the implementation goal to 80% by cycle 4. In cycles 3 and 4, the RPC also targeted increased use of sucrose for pain management for all children under the age of 4 months undergoing any minor procedure to 25%. The RPC later increased the implementation goal to 35%.

What was done?

On Unit 1, the RPC initially posed questions to staff on *stop signs* posted around the unit, in the conference room, medication room, and hallway (Figure 1). Each stop sign posed 1 of 3 questions: “Do you know where your pain scales are?” “Did you use your pain scale today?” “Did you document your patient’s pain and the pain scale used today?” Staff were also asked to complete short comment cards to provide feedback about the use of the



Figure 1: Initial poster used in Unit 1.

pain scales (Figure 2). Once enough comments were collected (a 25% response rate was achieved), the RPC finalized the pain assessment scales that would be appropriate for their unit and used the staff comments to guide development of KT strategies.

The RPC created a *handbook* of pain assessment scales called “*Little Book of Pain Assessment Tools*,” which was available in all patient rooms. Some RPC members developed *reference cards* that included a review of the scales used on the unit. I coordinated the copying, laminating, and organizing of the handbook. Once this was completed the RPC members and I together provided *education sessions*, either 1:1 or in small groups, to increase staff awareness of the pain scales and the availability of the handbook and reference cards. As my time was more flexible, I conducted most of the education sessions. Communication during this time was essential. Through the use of *e-mail*, *verbal communication*, *posters*, or the *unit communication book*, we kept all staff informed of the EPIQ process. Another KT strategy that was implemented was the use of a *sticker* on the nursing activity flow sheet to assist nurses in choosing which pain scale to use and the scores for each scale. This reminder during charting was so beneficial, that the flow sheet was eventually reformatted to include the pain scales permanently. Another KT strategy was a *handout* called “Pain as the 5th Vital Sign—Core Principles of Pain Assessment,” which was attached to all the bedside clipboards. *Buttons*, *pens*, *calculators*, *posters* (Figure 3),

and *stickers* were also developed as *reminders* of the pain practice changes. The total cost for the KT strategies on Unit 1, over the 2-year study period, was \$900.

On Unit 2, the RPC developed their first *poster*, entitled “Got Pain.” This poster summarized the results from the baseline data collection. They chose this as a way to increase awareness that pain needs to be assessed and documented on a regular basis. Another way they raised awareness was by applying a *sticker* on their nursing activity flow sheet entitled “Pain: The 5th Vital Sign” to remind staff to assess pain. One RPC member developed and laminated a “Tools of the Trade” resource that included information on the targeted pain scales and was taped to all the bedside clipboards. RPC members and I conducted *education sessions* to review these scales. A number of *reminders* were developed including: *posters* (Figure 4), *buttons*, *calculators*, *stickers* on the vital signs record, and *lanyards* with the CIHR Team in Children’s Pain logo. These items and coffee cards were used in conjunction with *education sessions* as both an incentive and reminder to keep up with the pain practice change. When the RPC chose to implement the sucrose practice change, I developed an *education package* and *poster*. *Education sessions* were provided to clerical staff, as they played a pivotal role in the communication process when transcribing orders and were responsible for placing a red dot on the lab test sheet to alert the lab technicians that the child was under the age of 4 months and required sucrose. Education was also provided to lab technicians around this process. The cost for the KT strategies on Unit 2 totalled \$900.

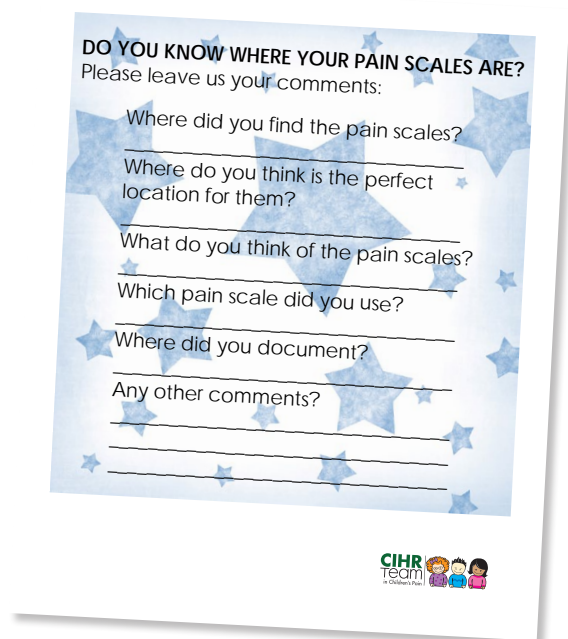


Figure 2: Comment card used with stop sign posters.

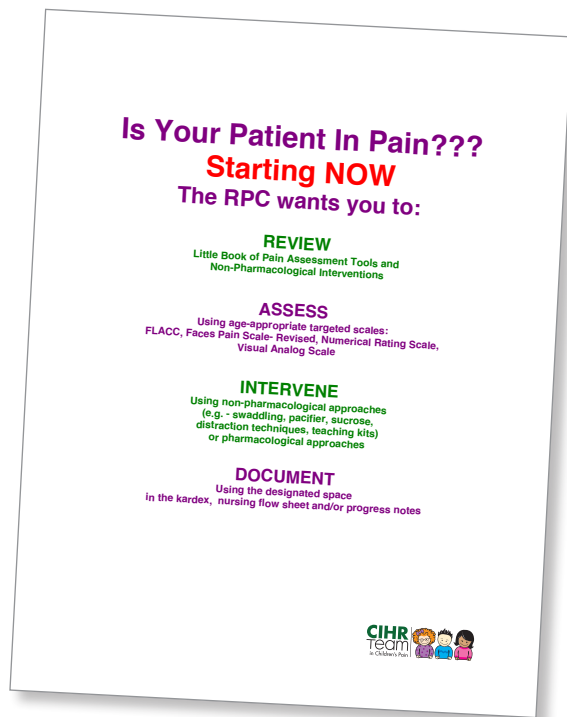


Figure 3: Example of a poster used on Unit 1.

What worked and why?

For both units, my presence, taking the time to review the practice changes, and being sensitive to what was happening on the unit were key to success. The staff positively responded to the *education sessions*, the *small incentives*, and *positive reinforcement/reminders* about what a great job they were doing in assessing their patients' pain; they just needed a *reminder* to document it. Communication was the best KT strategy in any of the formats: *e-mail*, *posters*, *communication books*, *staff meetings* via the unit manager, and *one-on-one interactions*. Items that provided a reminder but also served a useful function, such as a *pen* or *calculator*, were particularly well received. *Feedback* was provided to the unit following each PDSA¹ cycle using *posters*, which seemed to be well received. Providing nutrition breaks on the units to thank staff for their commitment to practice changes were always a huge success.

What didn't work and why?

For both units *buttons* were not well received. Some staff felt they got in the way of patient care, collected dust, fell apart, or were a safety issue when caring for their patients. *Posters*, although informative, eventually became lost on a bulletin board when other posters were placed on top of them. *Stickers* required someone to attach them to the flow sheet, which did not always

happen. Sometimes the stickers were lost and no one thought to call me for more. Some staff were simply not interested, for whatever reason, in any education or information provided; however, patience, timing, and perseverance usually won out!

What was the impact?

During the EPIQ study, staff on both units grew in their ability to assess and document pain on a consistent basis. Unit 1 achieved their initial goal of 50% and then maintained it through to cycle 4 at 82%. Unit 2 was a little slower to achieve their goals. Initially their goal was set for 50%, and they were slightly shy at 38%, but by the end of EPIQ, they were maintaining their practice changes at 73%.

It was impossible to prevent KT strategies from spreading to other units. At times children needed to be transferred from one unit to another while they were in the hospital, and any information on a flow sheet, including KT strategies like stickers, followed the child. "Tools of the Trade" from Unit 2 was seen on the surgical, emergency, and other medical units. The stickers from Unit 1 attached to the front of patient charts were sometimes left on a chart when a child was transferred to another unit. Staff floating from one of the standard care units were exposed to the KT strategies used in the EPIQ intervention

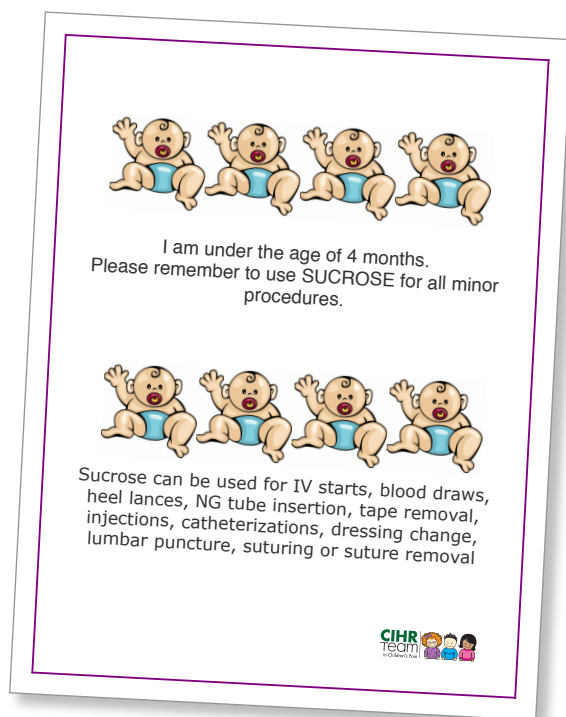


Figure 4: Example of a poster used on Unit 2.

units. One nurse from a surgical unit told me, “I’m going to start assessing my patients using those scales.” While this “spread” of strategies across units likely benefitted patient care, it was a confounding factor when later trying to compare pain practices between units where EPIQ was implemented and units that continued to provide standard care.

What was learned?

Throughout the study, communication among the RPC, research coordinator, and staff was key to achieving practice changes. These changes needed to be seamlessly integrated into current nursing care, without adding to the existing workload. The KT strategies needed to be practical, simple, and located in appropriate places (e.g., “Tools of the Trade” on the clipboard, “Little Book of Pain Assessment Tools” in the patient’s room, and easy to read, well located posters). A diverse and keen RPC and a supportive unit manager were also important in facilitating change. Challenges occurred and it was important to adapt to the culture of the unit. The most important lesson was realizing that it was okay to stumble and not achieve everything; however, we knew we were on the right path and baby steps were okay too!

“Pearls of Wisdom:”

1. Communication is key to achieving practice change.

2. KT strategies should be practical, simple, and well located.

3. Baby steps are okay too.

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CHAPTER 6

Facilitating Knowledge Translation as an Insider and Outsider

Where was Evidence-based Practice for Improving Quality (EPIQ) used?

The Pediatric Intensive Care Unit (PICU) and Neonatal Intensive Care Unit (NICU) were the two units involved in implementing the EPIQ intervention. The PICU is a 22 bed unit, consisting of the Intensive Care Unit (ICU) with 14 beds and the Transitional Care Unit (TCU) with 8 beds. In the ICU, care is provided for newborn infants to children 17 years old who have urgent needs due to life-threatening disease, injury, or following surgery. Most newborns and preterm infants are treated in the NICU unless the infant has a cardiac lesion in which case they are cared for in the PICU. Children who require special observation or support are cared for in the TCU, one step down from the ICU. Children admitted to the TCU usually have complex, chronic conditions and are more stable than children in the ICU.

The types of patients cared for in the PICU include trauma victims, patients with a brain or cardiac injury, or post-operative patients. The average length of patient stay is approximately

5 days. A variety of painful procedures occur in the PICU, such as: intravenous and arterial line insertion and removal, endotracheal insertion and suctioning, nasogastric insertion and removal, dressing changes, and capillary blood sampling. In extreme cases, the PICU also performs extracorporeal membrane oxygenation (ECMO), which is an invasive technique that provides both cardiac and respiratory support to extremely critically ill patients. As result, nursing care in the PICU is very specialized and each staff nurse cares for only 1 or 2 patients at a time. Care in the PICU is provided by a multiprofessional team of more than 150 staff including: staff nurses, managers, clinical support nurses, educators, clinical nurse specialists, pharmacists, respiratory therapists (RTs), rehabilitation therapists, child-life specialists, social workers, dieticians, and intensivists and other physicians.

The NICU is a 60-bed unit, consisting of 3 separate areas: 1 for critical care, 1 for more stable infants, and 1 with private rooms, which are reserved for infectious, palliative, or infants

with long-term chronic conditions. Infants in the critical care area are very sick but when they improve, they can be transferred to the area for more stable infants, where they continue to grow and learn to feed. The infants admitted to NICU can range from 24 weeks preterm to full-term. Most infants are admitted for prematurity; however, infants can also be admitted for other complications, such as gastroschisis, congenital diaphragmatic hernia, meconium aspiration, genetic anomalies, or abdominal complications requiring surgery. Infants stay in the NICU for an average of 10 days, but can stay for up to a year.

A variety of painful procedures occur in NICU, such as: intravenous insertion (IV), percutaneous and arterial line insertion and removal, endotracheal insertion and suctioning, nasogastric insertion and removal, dressing changes, and capillary blood sampling. Nursing care in the NICU is very specialized and each nurse cares for only 1 or 2 infants at a time. In some cases, staff nurses will care for 3 infants at once, but only if all 3 require no respiratory support and are considered quite stable. Care in the NICU is provided by a multiprofessional team of more than 220 staff including: staff nurses, pharmacists, RTs, rehabilitation therapists, managers/supervisors, clinical support nurses, educators, social workers, dieticians, and neonatologists and other physicians.

Who was involved?

I began working as the research coordinator in Year 3 of the study, and as such, was not involved in selecting members of the original Research Practice Councils (RPCs) for both the PICU and NICU. The former research coordinator provided me with information about the creation of both RPCs. Most of the PICU and NICU RPC members were chosen after they responded to advertisement posters. These members volunteered their time and expertise because they wanted to get involved in the study and were interested in improving pain assessment and management practices in their unit. To complete the RPC team, either the site investigator or research coordinator directly approached health care professionals from the unit, who had specific expertise in pain assessment and management.

The PICU RPC consisted of 6 members: a quality and safety leader, a pharmacist, an educator, a clinical nurse leader, a physician, and a clinical nurse specialist. These 6 members remained with the PICU RPC throughout the entire EPIQ study. The NICU RPC consisted of 5 members: a clinical nurse leader, an educator, a neonatologist, a child developmental health scientist, and a staff nurse. These 5 members also remained with the NICU RPC throughout the entire study, except for the educator who retired prior to the final 2 Plan-Do Study Act (PDSA)¹ cycles

and was not replaced. RPC members' meeting attendance and involvement in implementing knowledge translation (KT) strategies on both units fluctuated according to workload and other competing priorities.

Prior to becoming the research coordinator for the study, I had worked as a staff nurse in the NICU for 5 years. As a result, I had a strong background with the NICU environment and familiarity with some members of the NICU RPC. I felt very comfortable and at ease with the NICU RPC members. Conversely, I had no past experience with the PICU or the PICU RPC members. I had never entered the PICU and had no knowledge of the PICU environment. As a result, when I first began working with the PICU RPC, I felt out of my element and knew I needed time to get to know both the PICU RPC members and the unit.

Each RPC chose pain practice changes that were evidence-based, likely to be accepted by the unit staff, and feasible to implement in the unit.

What needed to change?

The RPCs held discussions and brainstorming sessions to choose their targeted pain practice changes. Staff at the central study site, the Hospital for Sick Children, had conducted an extensive literature review to synthesize the most common evidence-based, pharmacological, physical, and psychological pain management strategies for infants and children. Both RPCs used this information to inform which pain practice changes they would target for their units. Each RPC chose pain practice changes that were evidence-based, likely to be accepted by the unit staff, and feasible to implement in the unit. These pain practice changes resulted in aim statements that were clearly outlined and measurable. An example of an aim statement the NICU RPC created was, "to provide comfort measures (facilitated tucking, non-nutritive sucking, and skin-to-skin care) to our infants 80% of the time, during painful procedures."

Prior to our involvement in the EPIQ study, a hospital-wide, quality improvement initiative related to pain assessment and management had taken place. Through this initiative, staff on each hospital unit were encouraged to focus on their existing pain practices and how they could be improved. Consequently,

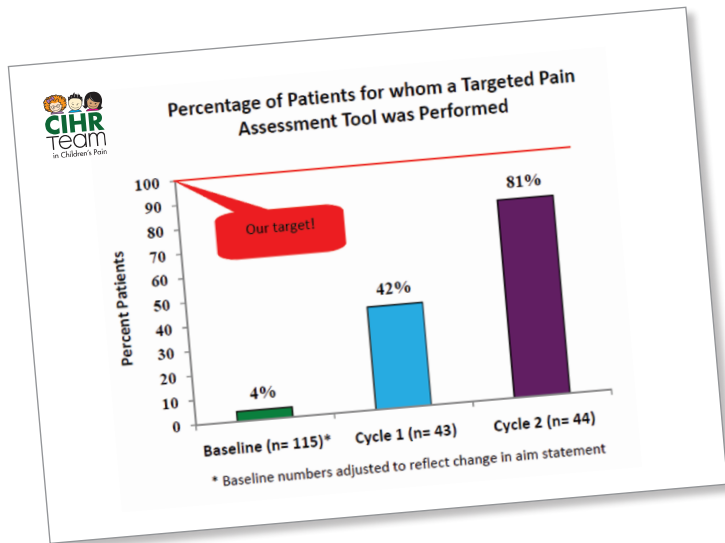


Figure 1: Example of a poster used in PICU to share the results of chart audits.

when the EPIQ study began, the PICU RPC members chose to focus on the improvement of current pain practices, rather than introducing a new pain practice. During the first 3 PDSA¹ cycles, the PICU RPC focused on 2 targets for pain practice change. The first was to implement a pain management algorithm that would provide the PICU nurses some measure of autonomy in managing their patients' pain. The second was to implement the State Behavioral Score (SBS)² and Multidimensional Assessment of Pain Scale (MAPS)³ tools for pain assessment. During the final PDSA¹ cycle, the PICU RPC realized that auditing the use of the pain management algorithm was extremely ambiguous and complex. Therefore, they shifted their focus to auditing whether the SBS² was between 0 and -1 (indicating the patient was awake and calm or responsive to gentle touch or voice) and the MAPS³ score was between 0 and 2 (indicating the patient was comfortable).

Prior to the EPIQ intervention, the NICU did not use pain assessment or management systems. As such, the NICU RPC decided to focus their practice changes on increasing the use of the Behavioral Indicators of Infant Pain (BIIP)⁴ tool for pain assessment as well as increasing the use of evidence-based physical comfort measures, including non-nutritive sucking, facilitated tucking, and skin-to-skin care during minimally invasive procedures. The NICU RPC viewed these physical comfort measures as good choices because many nurses were already using them and their implementation would require a minimal change in the unit culture. Moreover, staff nurses or parents can provide these physical comfort measures (except for skin-to-skin care, which only parents provide).

What was done?

The PICU RPC met monthly to brainstorm ideas for KT strategies that would support the practice change targets and discuss whether the PICU nurses were using the pain management algorithm, SBS,² and MAPS.³ The PICU RPC chose to focus on a small number of simple KT strategies and stayed away from incentives, tokens of appreciation, or unit celebrations to engage staff. As a result, the PICU RPC used very little of the funds allotted for KT strategies. The PICU RPC gravitated towards conducting informal, *one-on-one teaching* sessions led by one RPC member with a staff nurse at the bedside, inviting discussion about the nurse's thoughts regarding the pain management algorithm, SBS² and MAPS.³ The RPC member also asked the staff nurse what hindered and facilitated the use of these tools, and reinforced the importance of each tool.

Another KT strategy used by the PICU RPC involved adding the SBS² and MAPS³ to the *patient rounds' checklist*. This strategy stemmed from a hospital-wide initiative focusing on how patient rounds could be improved. Staff in the PICU decided to standardize rounds by creating a topic checklist that would be discussed at each rounds session. The PICU RPC added the SBS² and MAPS³ to this checklist so that the staff nurses would be reminded to discuss their patients' pain in rounds using validated tools. In addition, I conducted *formal chart audits* at the end of each PDSA¹ cycle and shared the information with all staff using colorful *posters* placed throughout the unit (Figure 1). The PICU quality and safety leader conducted more frequent *informal chart audits* to share only with the RPC members. The informal audits provided more frequent information for the RPC about how well the staff were meeting their practice aims and stimulated further brainstorming about additional KT strategies that could be implemented.

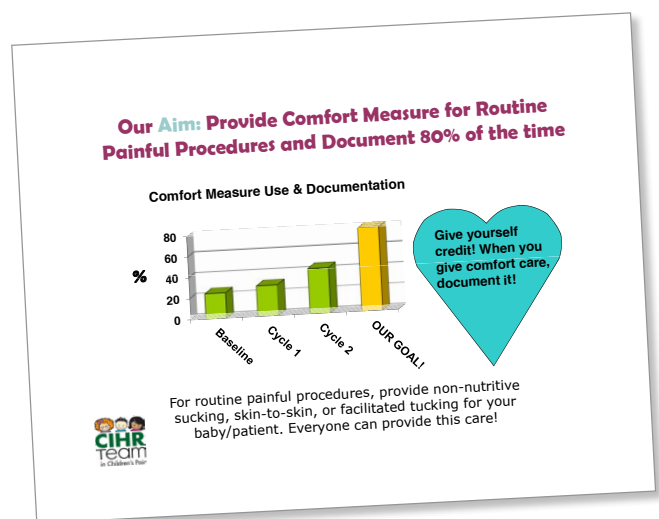


Figure 2: Example of a poster used in NICU to provide feedback to staff.

The NICU RPC also met monthly to brainstorm ideas for KT strategies and discuss whether staff members were using the BIIP⁴ tool for pain assessment and physical comfort measures for pain management. Since I was a nurse in the NICU, during the study I knew the staff well and was aware of the unit culture and other intricacies of the unit. Therefore, I was more actively involved with the RPC in brainstorming ideas and implementing KT strategies. The NICU RPC liked to use a variety of different strategies and implement numerous strategies at one time. They used *parties* and *tokens of appreciation* to engage staff in the study and *posters* to provide feedback on practice change progress (Figure 2). As a result, the NICU RPC used most of the funding allotted for their KT strategies.



Figure 4: Example of a button.

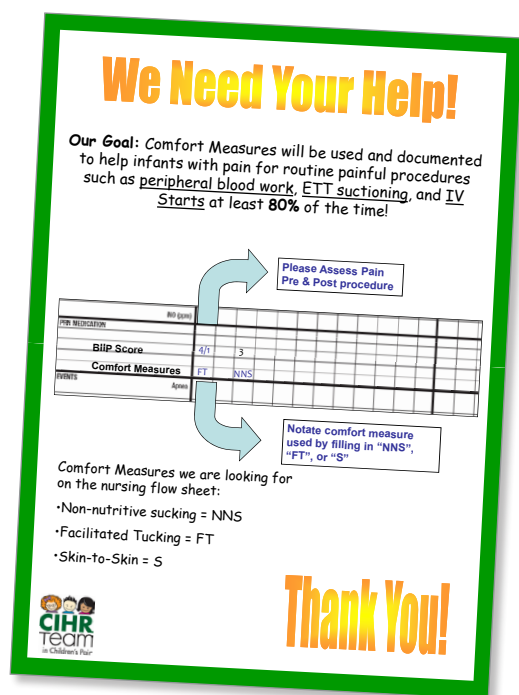


Figure 3: Poster indicating where to chart BIIP⁴ scores and comfort measures.

The NICU RPC used many KT strategies during nursing education days, including a *presentation* about sucrose and physical and psychological comfort measures conducted by the child developmental scientist. This educational session reached the majority of the staff nurses in the NICU since they are required to attend education days. In addition, an existing *online practice module* about the BIIP⁴ tool was made available to staff. The RPC also inserted information cards about the BIIP⁴ in each patient care plan and developed *posters* (Figure 3) indicating where to chart BIIP⁴ scores and comfort measures. At the start of 2 PDSA¹ cycles the NICU RPC held a *launch pizza party* to engage NICU

staff, parents, and lab technicians. Both these parties were fun, engaging, and included a variety of KT strategies to promote buy-in, such as *buttons* (Figure 4), *trivia quizzes*, and *presentations* related to the BIIP⁴ score and physical comfort measures. Similar to the PICU, the NICU RPC also added a pain assessment and management item to their *patient rounds' checklist*.

The NICU RPC made particular efforts to reach parents on their unit. They created a *pamphlet* on physical and psychological comfort measures, which they put inside admission packages for parents and in the parent lounge. They also put up a digital picture frame with a *slide presentation* (Figure 5) on pain assessment and management that played continuously. The NICU RPC also held a parent *"tea and learn"* where parents could ask questions about getting involved in managing their infant's



Figure 5: A digital picture frame with a presentation on pain assessment and management for parents.

pain. Parents also participated in a survey about their opinions regarding their active participation in pain management.

What worked and didn't work and why?

In the PICU the *informal education sessions* were very useful in enabling the PICU RPC to achieve their pain assessment and management goals because these education sessions allowed nurses to ask questions and receive immediate feedback in an informal setting. In addition, teaching was individualized to the nurses' needs and allowed the RPC member to convey the rationale and importance for using each tool. Adding the SBS² and MAPS³ to the *patient rounds' checklist* in the PICU was extremely useful because inserting this prompt in a daily event, such as rounds, ensured sustainability of the practice change by adapting a pre-existing tool. Although the *informal audits* conducted by the quality and safety leader were not done on a regular basis and PICU staff were often unaware of them, the PICU RPC still considered them to be helpful in providing information on the progress of their targeted practice change. The *posters* depicting results of the *formal audits* that I conducted were also not perceived as very useful because they were eventually lost among the other posters hung throughout the unit and became "invisible" to the staff.

The NICU RPC was drawn to more celebratory engagement strategies and used *launch parties* to promote their targeted practice changes, which were well received. They also made use of existing hospital-wide nursing education days by adding a *presentation* on sucrose and physical and psychological comfort measures, thus reaching many of the NICU staff. The RPC *pamphlet* on physical and psychological comfort measures was well received by both parents and staff as it was easily accessible, and the nurses could distribute it to parents as a convenient way of providing information. The digital picture frame was useful, because parents could view the *presentation* while sitting in the parent lounge and learn about how they could get involved in managing their infant's pain. Several other strategies appeared to be less effective. The *BIIP⁴ information cards* in patient care plans were not always accessed by nurses, despite their placement at the bedside. The parent "*tea and learn*" was not well attended, and there were very few responses to the parent *survey*. Unlike in the PICU, the addition of a pain assessment and management item to the *patient rounds' checklist* was not effective in the NICU because, despite being a requirement, neither nurses nor physicians asked about the BIIP⁴ score during rounds.

What was the impact?

Overall, both units made significant achievements in improving patient pain assessment and management as demonstrated by audit results. The PICU staff were pleased to learn about pain assessment tools like the MAPS³ because it provided them with a validated way of measuring patient pain. Conversely, the pain management algorithm was not widely used in the PICU, where nurses reported it to be confusing and difficult to use. The PICU nurses preferred to discuss possible pain medication changes with the physician rather than relying on an algorithm and standing physician orders.

Feedback regarding the BIIP⁴ tool was mixed in the NICU. Some staff members routinely used the tool and found it an effective means of measuring infant pain, while others did not. As a result, the use of the BIIP⁴ tool was not consistent in the unit. According to audit results, use of physical comfort measures was also inconsistent in the unit. Yet, staff reported that they automatically use these measures but do not always document them. Overall, the NICU RPC felt the KT strategies implemented were effective in raising awareness about the importance of infant pain assessment and management even though the chart audit results did not indicate all of the practice change goals were met.

What was learned?

A key lesson learned during the EPIQ intervention was that knowledge of the unit's culture and working within it was important for success. The PICU and NICU had different unit cultures, styles, and receptivity to the KT strategies introduced. The PICU gravitated towards more educational KT strategies that could be viewed as more mainstream and academic, whereas the NICU was drawn to KT strategies that focused on engagement and were more celebratory and colorful. Although each set of strategies differed, they were effective for the unit where they were implemented.

A second key lesson was that establishing rapport with the staff of each unit was essential to success. Prior to the study, I had no relationship with any of the PICU staff and thus, I was viewed as an outsider trying to dictate how the PICU should function. However, as the study progressed, I was able to build relationships and the PICU staff began to know me. As a result, I was no longer viewed as an outsider and had some influence over the change process. Conversely, I knew the NICU staff and unit quite well and thus, was viewed as a valid insider and change agent. It was important to establish relationships with the staff of each unit, learn about the unit culture, and obtain insider status prior to implementing KT strategies.

If I were to begin the study again, I would continue to foster and support the individual style of each unit. However, I would encourage the PICU RPC to utilize my skills and the study's resources more frequently. Alternatively, I would encourage the NICU RPC to work more independently and have greater ownership over their KT strategies. Finally, I would encourage both RPCs to include more staff nurses in their targeted pain practice changes, because their input is essential to success. Therefore, the final take home message is implement a "grass roots" design. Pick practice changes and create goal statements that come from the staff, because ultimately, if the staff does not believe in what you are trying to change, the change will not occur.

"Pearls of wisdom"

1. Work within the individual style of the unit.

2. Establish rapport with all staff members.

3. Actively include staff nurses in all aspects of the pain practice change.

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CHAPTER 7

A Personal Approach to Improving Pain Assessment

Where was Evidence-based Practice for Improving Quality (EPIQ) used?

The EPIQ intervention was implemented in a Pediatric Intensive Care Unit (PICU) and a Surgical Unit. The PICU is a multidisciplinary rehabilitation department that provides close monitoring of patients 24 hours a day. The department has 24 beds and modern remote monitoring equipment. There is also a 6 bed intermediate care unit. Patients come from a wide geographical area and range in age from 0 to 18 years. Patients are admitted for medical (e.g., severe respiratory infection, multiple organ impairment, and shock) and surgical (e.g., post-operative care of cardiac surgery, traumas, third-degree burn wounds, major orthopedic surgery, or neurosurgery) reasons. The average length of stay is approximately 4 days. Children who have undergone a liver, heart, or kidney transplant are also cared for in the PICU during the initial period after their surgery. The department offers specialized care to pediatric patients who are severely ill or require close monitoring.

More than 100 staff nurses work in the PICU, with a 1 to 1 nurse-patient ratio. Additionally, more than 30 staff make up the remainder of the multiprofessional team including: respiratory therapists, physiotherapists, psychologists, pharmacists, dietitians, social workers, pediatric intensivists, heart surgeons, junior and senior residents (from the pediatric anesthesia or emergency medicine programs), and intensive care fellows. Specialized consultants from all medical and surgical specialties are also available upon request. These professionals work in collaboration and with parents to offer children the care required for their condition.

Children in the PICU are exposed to a wide variety of painful, ongoing daily medical and therapeutic care, such as physiotherapy, mobilization, X-ray examinations, dressing changes, skin care, endotracheal aspiration, pleural/abdominal drain insertion/removal, central line insertions, and blood testing.

The surgical department has 50 beds spread over 2 inpatient care units. Patients who are admitted to the unit receive care through 6 different surgical specialties: general pediatric surgery, plastic surgery, neurosurgery, orthopedics, Ear-Nose and Throat (ENT) surgery, and urology. The average length of stay on the inpatient units is about 4 days.

On the Surgical Unit, care is provided by a multiprofessional team of more than 100 staff including: staff nurses, nursing assistants, surgeons, fellows, residents, respiratory therapists, rehabilitation therapists, psychologists, social workers, dieticians, and educators. Patient mobilization, physiotherapy treatments, thoracic drain withdrawals, dressing changes, hydrotherapy, blood tests, venous port installations, and urinary and gastric probe installations are among the most common painful procedures performed.

Who was involved?

Members of the Research Practice Council (RPC) in the PICU included an anesthetist, a pediatric intensivist, a physiotherapist, a nursing staff manager, a nursing counselor, and 2 staff nurses who worked on different shift rotation schedules. Only 1 member left the RPC during the course of the study, due to leaving the hospital. Participation in the RPC was voluntary. All members were motivated and brought expertise and interest in improving pain assessment and management in PICU.

Despite some difficulties encountered in scheduling meetings, all RPC members enthusiastically participated in the 4 Plan-Do-Study-Act (PDSA)¹ cycles of the EPIQ intervention. As the research coordinator, I collaborated with the RPC members to plan and develop the various knowledge translation (KT) strategies for each cycle. Due to the clinical work overload all the team members experienced, I implemented most of the strategies, planned the training sessions, and organized various meetings with the members.

The RPC members on the Surgical Unit were from a variety of different clinical fields, including: anesthesiologist, a surgeon, 2 physiotherapists, an occupational therapist, a nursing staff manager, a nursing counselor, and 2 staff nurses who worked on different shift rotation schedules. All members volunteered to join the RPC and participated in all 4 PDSA¹ cycles. During the meetings, RPC members from the Surgical Unit were very involved in the selection and planning of the various KT strategies that were adopted during the different cycles. However, as was the case with the PICU, despite the RPC members' strong desire to participate, the bulk of the implementation process fell to me.

What needed to change?

Prior to the EPIQ study, a hospital protocol was introduced in the PICU that allowed staff nurses to increase or decrease analgesic or sedative infusions, based on patient pain and sedation scores. An essential component of the protocol was the use of validated scales to measure pain and sedation. Nursing staff received training on the use of pain scales that were available for use and could be recorded on a 24-hour patient care evaluation form, which was also introduced at the time. However, the baseline chart review, conducted in the EPIQ study, indicated that only 21% of patients in the PICU had at least one pain assessment done with a validated pain scale, in a 24-hour period. As the previous training did not seem to result in optimal use of validated pain assessment tools, the RPC members chose to focus on increasing the use of age appropriate, validated pain scales for all patients, based on the specific patients' characteristics on the unit (e.g., intubated patients, patients with neurological impairment). RPC members reviewed existing research and chose to focus on implementing the Face, Legs, Activity, Cry & Consolability (FLACC)² Scale, Faces Pain Scale-Revised (FPS-R),³ Comfort Scale,⁴ and Visual Analogue Scale (VAS).⁵ Their practice change aim was to increase pain assessment with an age appropriate, validated tool to 80% of patients in a 24 hour period. Documentation in patient records of pain assessment scores, using validated scales, slowly improved over the PDSA¹ cycles. For this reason, the RPC kept the same goal: to reach at least an 80% threshold at the end of the 4 cycles.

Documentation in patient records of pain assessment scores, using validated scales, slowly improved over the PDSA¹ cycles.

The RPC members from the Surgical Unit pursued different goals during each of the 4 PDSA¹ cycles. Baseline results from the chart audits indicated that 81% of patients had at least one documented pain assessment, using a validated scale, in a 24-hour period. The RPC was very satisfied with this result, as it indicated that the use of validated pain scales was part of the staff nurses' routine practice. Throughout the EPIQ intervention, one of the goals of the RPC was to maintain the unit's pain assessment rate, using validated scales, at above 80%. Additional goals were also set during each PDSA¹ cycle. During the first PDSA¹ cycle, the main goal was to establish better communication between the physiotherapists and nurses, so that patients could receive an analgesic at the correct time

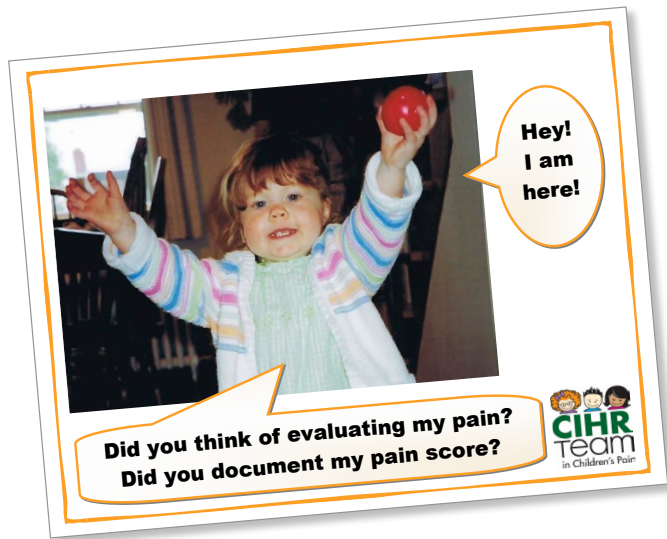


Figure 1: Poster placed at head of patient's beds.

prior to physiotherapy, to provide optimal pain relief and promote better participation during therapy. The RPC created an interprofessional communication sheet for this purpose. During PDSA² cycle, RPC members continued to work on increasing the use of the interprofessional communication sheet. They also added a goal of increasing the use of age appropriate pain scales for burn patients before, during, and after a painful procedure (e.g., changing dressings and hydrotherapy) as well as during thoracic or abdominal drain removal. In PDSA¹ cycle, the goals from the previous cycles continued, but the RPC members focused more specifically on increasing the use of the FLACC scale² with 0 to 7 year old patients and the Numeric Rating Scale (NRS)⁶ with patients older than 7 years before, during, and after a painful procedure, such as dressing changes, hydrotherapy, application of orthotic devices, and thoracic or abdominal drain removal. Finally, during Cycle 4, the RPC continued with their goals from Cycle 3 and also promoted the use of the Non-Communicating Children's Pain Checklist-Post-op Version (NCCPC-PV)⁷ pain scale for children who were unable to provide a self-report.

What was done?

The PICU RPC worked together to identify KT strategies to support their targeted practice changes. A number of strategies were used concurrently over the 4 PDSA¹ cycles. Some strategies were repeated in several cycles. I met with the nursing staff manager and staff members (nurses, respiratory therapists, pharmacists, and physicians) to exchange views on pain assessment in the PICU and identify KT strategies that could be effective in encouraging caregivers to assess pain, using the

scales that the RPC members had selected. The strategies focused on highlighting the importance of evaluating pain and how to use the various pain and sedation assessment tools. The RPC provided information both orally and in writing.

The educational KT approaches that the RPC implemented included: the development of *large posters* showing the importance of evaluating pain in the PICU and descriptions of the various pain scales; *interactive education sessions* in large and small group settings, as well as individually, focused on problem solving related to the care of particular patients; and pain tools on *laminated cards* that were readily available for staff. Pain specialists from the clinical pain team assisted in providing many of the education sessions.

To support use of the knowledge gained through the *education sessions*, the RPC created reminders targeting all staff members who worked days, evenings, or nights. A small cardboard *poster* (Figure 1) was placed at the head of patients' beds, which stated: "Did you think of evaluating my pain...?" We also created *buttons*, *stickers*, and *pens* with similar reminder *messages* and the study logo (Figure 2). Throughout the PDSA¹ cycles we provided staff with various *incentives*, such as *lunch boxes* and *pens* for doing a good job with pain assessment. We also regularly presented *audit results* to all staff members to let them know how they were doing in reaching their goals.

The primary goal of the RPC members from the Surgical Unit during the first PDSA¹ cycle was to establish better communication between the physiotherapists and the staff nurses, so that patients undergoing physiotherapy treatment could receive an analgesic at the right moment (peak action) before their treatment to improve pain relief and promote better patient participation in therapy. The RPC developed an *interprofessional communication sheet* that we placed in the patient's chart. The information sheet included space for health care professionals



Figure 2: Example of a button

Remember to
assess and document
your patient's pain



Figure 3: Example of a sticker

to note the pain ratings and the analgesics the patient received prior to or during physiotherapy treatment. In addition, RPC members developed various KT strategies to meet their aims over the 4 PDSA¹ cycles. As in the PICU, they used a number of creative KT strategies, including: *laminated copies of all pain tools* (FLACC,² NCCPC-PV,⁷ FPS-R³), *stickers* (Figure 3), *pens* with the inscription "Remember to assess and document your patient's pain!", *large posters*, *interactive learning* in small and large groups, *learning by problem solving* and *educational visits*, and *individual training* with pain management leaders from the pain clinic. *Posters*, *buttons*, and *stickers* were easy to view on the unit, since there were a lot of them and they were all orange-colored with the study logo (Figure 4). We also handed out snacks or lunch boxes to staff as *incentives* during education sessions.



Figure 4: Example of a poster.

What did and did not work and why?

In the PICU, the KT strategies used had an impact at various levels. Despite the large number of *posters* placed in all the patient rooms, many health care professionals did not seem to notice them. Staff members greatly appreciated receiving the *pens*. Participation of unit staff during *training and information sessions* depended to a large extent on the unit workload. The staff members who could attend these sessions indicated that it was very interesting to have a chance to express their views and learn more about pain assessment. *Individual learning* sessions that the anesthetist and pain clinic nurse conducted at patients' bedside were undoubtedly the most helpful strategy. During rounds, they strongly encouraged the use of pain scales; however, individual staff members' motivation regarding the use of pain scales was mixed.

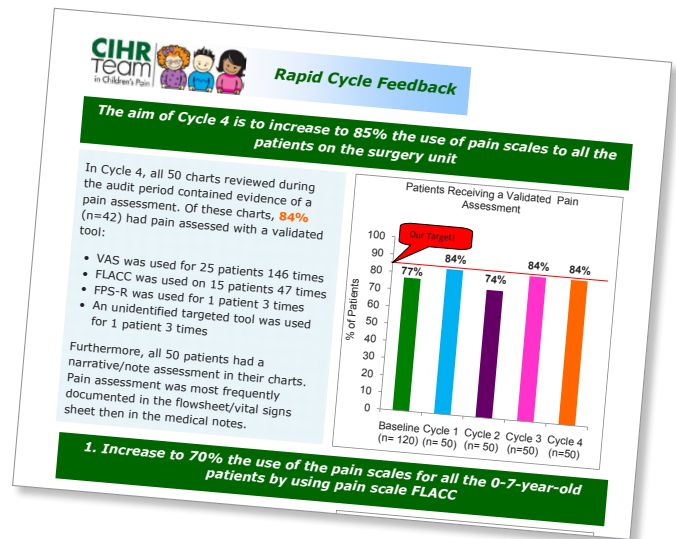


Figure 5: Example of a poster used to share the results of chart audits.

Nursing staff on the Surgical Unit showed a lot of enthusiasm by taking part in a large number of the *training and information sessions* and by frequently inquiring about the progression of the project and the results of the data gathered at the end of each PDSA¹ cycle. The KT strategies that were most well received included: personal approaches, *face-to-face interactions*, *interactive educational sessions*, involvement of *pain management experts*, *laminated pain tools*, and *audit and feedback* (Figure 5). The *posters*, *stickers*, and *buttons* seemed effective, especially in the short term. The *communication sheet* was not used very much over the 4 PDSA¹ cycles. However, we observed better oral communication between nursing staff and the physiotherapists about pain management.

A number of elements were of great help in meeting the aims both of the units had set: reviewing research literature to identify knowledge to translate into practice; using a combination of KT strategies; using the opinion of informal leaders; face-to-face interactions; my credibility and that of the RPC members; the level of motivation of health care professionals; physicians' involvement; using an interdisciplinary approach; administrative support; keeping the staff informed and involved; using reminders with short simple messages; monitoring and integrating audit results; and maximizing human and financial resources.

What was the impact?

There were some fluctuations across the 4 PDSA¹ cycles, but audit data showed that both units came very close to achieving or surpassing all of their pain practice aims by the end of the fourth PDSA¹ cycle. All staff were very proud of their achievements in relation to improved pain assessment for all patients on their units.

What was learned?

Our greatest challenge, during the EPIQ project, was to get RPC members to participate actively in the KT activities. In spite of their intention to collaborate, RPC members indicated it was very difficult for them to take time from their clinical duties. It may have been helpful if I had established a clear mandate with RPC members from both units at the very first meeting; we could then better distribute tasks by assigning specific roles and responsibilities to each member over the 4 PDSA¹ cycles. Members of both RPCs worked very hard during the meetings to develop KT strategies. However, due to their lack of availability and work overload, I had to prepare most of the tools and resources myself. Some of the planned training sessions, particularly with the medical staff, were cancelled. Developing a more specific plan for implementation may have assisted in identifying adequate resources and support, such as asking additional staff to be involved (e.g., the receptionist could have participated more by putting up posters or putting stickers on the health records). A staff nursing shortage, summer vacations, the high unit patient census, and a large number of projects underway at the same time also represented significant obstacles when it came to meeting the practice aims on both units. It may also have been helpful to engage additional staff to assist with more frequent chart audits. More regular feedback to staff using existing systems, such as the hospital's newsletter or intranet site may have facilitated reaching a wider audience as well as encouraging more staff to implement the pain practice changes and achieve the set goals.

"Pearls of Wisdom"

1. Facilitate consistent involvement of the RPC.
2. Find ways to involve all staff in the change process.
3. Use a variety of KT strategies simultaneously.

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CHAPTER 8

Creative Pathways to Changing Pain Practices

Where was Evidence-based Practice for Improving Quality (EPIQ) used?

In my institution, the EPIQ intervention to promote changes in pain assessment and management practices was implemented in a Pediatric Intensive Care Unit (PICU) and a general Medical Unit. On these units, children from newborn to 17 years of age are cared for by interprofessional healthcare teams consisting of physicians, nurses, respiratory therapists, pharmacists, child life specialists, social workers, rehabilitation therapists and dietitians. Over 80 health care professionals in the PICU provide care to medical and surgical patients, including cardiovascular surgical patients, experiencing life-threatening illnesses. Children admitted to this unit experience painful skin-breaking procedures (e.g., venipuncture, capillary blood sampling, and intravenous [IV] insertion), as well as insertion and removal of tubes (e.g., endotracheal tube, pleural chest tube, nasogastric [NG] tube, and urethral catheter). Bed occupancy in the PICU ranges between 7 and 12 beds and the average length of stay is less than 4 days. More than 65 health care professionals

provide care on the Medical Unit to children experiencing a wide variety of acute medical and/or exacerbation of chronic illnesses, such as respiratory compromise related to bronchiolitis and pneumonia. On this unit, the length of stay ranges between 5 and 11 days, and bed occupancy ranges between 20 and 28. Children on this unit experience painful procedures, such as venipuncture and capillary blood sampling, IV and NG insertions, and nasal/oral suctioning.

Who was involved?

The site investigator and I met with the leadership teams of both units to identify potential members for the RPC based on their insider perspective of staff members who were interested in improving their unit's pain practices. I then approached the suggested participants and invited them to take part. These individuals also identified others on their units who they thought would be interested in being approached. The resulting RPCs

were interprofessional groups whose members expressed a willingness to be involved in this initiative. Membership numbers were somewhat restricted by the study's protocol; therefore, not all professions were represented on each RPC. The PICU RPC consisted of staff physicians, the nurse educator, nursing team leaders, clinical staff nurses, and a pharmacist. The Medical Unit RPC included a nursing team leader, the nurse educator, a clinical staff nurse, a child life specialist, and pharmacists. Both RPCs experienced membership turnover related to leaves of absence, resignation from the institution, or reassignment to a different clinical area. No member left due to lack of interest in the project. Turnover for both units included staff nurses, a physician, and pharmacists. Replacement of these members with other interested individuals from the same disciplines helped to maintain the interprofessional composition of the committees. The Medical Unit RPC also added a nurse from the IV service midway through the project to promote uptake of the planned improvement initiative by members of this service when delivering care to patients on that unit. The facilitator role embedded within my research coordinator position appeared to be respected and accepted, as I was well known to both units in relation to my current and past clinical roles in the institution.

RPC members were surprised at the baseline audit results, which served as a “wakeup call,” for as one member voiced, “We thought we were better than what the data said.”

What needed to change?

Following a review and discussion of each unit's baseline data collected by the research team, each RPC group worked hard over the course of 3 meetings to identify specific pain practices they wanted to improve. The PICU RPC chose to improve documentation of the use of topical anesthetic agents, specifically, EMLA[®], Ametop[®], and PainEase[®], to 50% of all needle stick procedures. They were surprised at their baseline audit results, which served as a “wakeup call.” As one member voiced, “We thought we were better than what the data said.” They identified the use of topical anesthetics as the focus of their first Plan-Do-Study-Act (PDSA) 1 cycle activity because: (i) there was good evidence to support their effectiveness in reducing pain and distress; (ii) the application of a topical anesthetic agent was already within the scope of practice for nurses; (iii) a physician



Figure 1: Reminder sticker affixed to patient chart, MAR, and Kardex.

order was not required; and (iv) the team felt that this would be an easy first step to enable an early success upon which to build further goals.

The Medical Unit RPC initially identified an interest in focusing on one specific procedure (i.e., nasogastric [NG] tube insertion) as their practice change target, but following review of the baseline audit data, which indicated the procedure was not frequently performed, group members decided to broaden the focus of their efforts to improve assessment and documentation of pain using appropriate, validated pain measurement tools with children undergoing potentially painful procedures, such as IV starts, blood work, oral/nasal suctioning, and NG tube insertion. The target for their practice change was to improve documented pain scores to 50% of patients on the unit undergoing the above procedures, when a nurse was directly involved with the patient during the procedure.

What was done?

Over the course of the project, each RPC intentionally worked on implementing pain practice changes using the various levels of the organization to support progress towards their goals. Members of the PICU RPC championed revisions to the hospital's *policy and procedure* that better enabled nurse-initiated application of topical anesthetics. This policy was then embedded into their unit policy as a unit-level knowledge translation (KT) strategy. At a unit management level, the RPC members and I worked with the unit manager and the pharmacy department to add PainEase[®] to the stock of medications kept on the unit to improve accessibility for nurses to use any of the 3 products prior to a needle stick procedure. Similarly, the Medical Unit RPC chair and I worked with the management level of the organization to garner support for the addition of a representative on the RPC from the IV service, which was not part of the clinical unit. RPC members felt that this additional support would help staff see



Figure 2: Poster to remind staff to use topical anesthetic agents.

the purpose and intent of the project and enhance uptake of the practice change. For the most part, however, KT strategies were targeted at the unit-level with both RPCs.

Each RPC made the decision at the outset of the project that the RPC members, rather than the research team, would be the “public face” of the project to unit staff. I worked collaboratively with the RPCs to identify unique and context specific ways to communicate information about the project to each unit’s staff. It was deemed important to demystify the research aspect of the project and to bring the activities into the real day-to-day world of nursing practice, using informal, personal, and accessible formats. An overall aim of the RPCs was to engage unit staff closely in the KT activities and practice changes on multiple levels. Consequently, all communication to unit staff came from members of the unit RPC. The Medical Unit RPC used cartoon characters to represent each RPC member, while the PICU RPC used computer generated caricatures (accessible at: www.charactercreator.net). The RPC member logos accompanied the CIHR Team in Children’s Pain study logo on all *newsletters*, *posters*, and *electronic communications*. I facilitated the work of both RPCs by producing the first draft of all communications and posters, which the RPC members then reviewed and revised. The final versions were then directly distributed to the staff by the RPC members to promote a personal connection with the unit staff.

Reminders: KT strategies at the unit-level that are considered reminders were used in both units. The PICU developed a *stamp* that highlighted dosing and application of the 3 topical anesthetics that the RPC had chosen. The unit clerk added the stamp to the Medication Administration Record (MAR), to act as a cue for nurses to document the administration of a topical anesthetic. *Posters* were used to remind staff to consider the use of a topical anesthetic prior to any needle stick procedure.

In a similar fashion, the Medical Unit RPC members produced reminders, such as *laminated pages* outlining the pain tools to be used for assessing and documenting pain, which were maintained in bedside folders for ready access by clinicians. In addition, visual reminders (printed messages on bright yellow *stickers* (Figure 1) were affixed to patient charts, MARs, and kardexes to highlight the focus of the project. They also created pens with their logo “Rate it... write it” to encourage each staff member to consider the documentation of pain assessment.

Posters were a commonly chosen strategy as they were easy to develop, relatively inexpensive, highly visible, and not resource intensive or time consuming. The PICU RPC designed posters to focus on 3 different aspects of the practice change, namely the (i) clinician (e.g., Stop! You need to freeze the skin before the needle goes in!) (Figure 2) (ii) patient (e.g., Be a Prince Charming – Freeze the Skin), and (iii) anesthetic agents (e.g., Topical Anesthetics - EMLA®, Ametop®, and PainEase® – When and How to Use). The Medical Unit RPC designed a poster focused on both the identification of the appropriate pain assessment tools and clinician’s responsibilities for their patient populations. Both RPCs intentionally posted the posters for a limited time period and situated them within already established and visually prominent structures within each unit (e.g., pain bulletin board, nursing station, medication room, computer workstations on wheels that are used on daily patient care rounds, and bedside line insertion procedure cart). The posters and reminders were replaced on a regular basis to keep the momentum and interest high. Posters were created based on the RPC design and plan, and intentionally used bright colors, cartoons, photographs, and humor.

The PICU RPC also identified 2 already established unit practices that they modified to act as additional reminders to staff. The unit medical and nursing leadership had introduced the use of a *checklist on daily rounds* to improve patient safety and promote continuity of goal-directed care, 3 years prior to the start of the study. The nursing team leaders used this checklist to trigger interprofessional discussion on daily patient-care rounds. The RPC members revised the checklist to incorporate a question about the use of topical anesthetics. As well, they revised the *quality assurance checklist* for central line insertion—kept on the procedure cart, as a reminder to prepare special equipment and



Figure 3: Incentive for staff to use topical anesthetic agents.

procedures for line insertions—to ask if a topical anesthetic had been used for this procedure.

Both RPCs sponsored a “*Comfort Coupon*” activity (Figure 3) in which staff received a coupon for coffee cards if they noted, discussed, or completed any aspect of the project’s activities or goals. *Emails* and *e-posts* (short emails) were sent regularly to all staff to ensure that the messaging about the project continued to be read. Although not specifically related to the targeted practice change, the Medical Unit RPC also chose to promote the study and raise awareness about pain management by using a “*Sucrose Sample Jar*,” embellished with the RPC logo and placed in a central location within the nursing station, as another visual reminder to staff. A PICU RPC member also developed a *word search activity* (Figure 4). Each staff member who handed in their completed word search received a bag of treats decorated with the CIHR Team in Children’s Pain logo as an incentive. As an additional reminder to use topical anesthetics to freeze the skin, members of the PICU RPC sporadically distributed *popsicles* to staff during daily interdisciplinary patient care rounds. On behalf of each RPC, I prepared *treat bags* for staff on both units at special times (e.g., Valentine’s Day, Easter, Halloween) to continue to highlight the project’s goals.

Education: Members of both RPCs were also directly involved in multiple educational strategies as part of this project. For the Medical Unit, I facilitated the development of a *pamphlet* outlining the goals of the study, the aim statement, and chart audit results showing positive improvement by the unit staff to reinforce the use of validated pain measures as part of the assessment of pain. The RPC reviewed and revised the tool and then electronically distributed it to all unit staff and posted hard copies on the unit. The PICU RPC developed a *learning package* that was electronically sent to all staff to explain the evidence related to the use of a new topical anesthetic. They created and placed a large *educational poster* (Figure 5) in the medication preparation room to explain how and when to use each of the topical anesthetics and how to access the policy and procedure related to their use on the hospital intranet. As requested by the PICU RPC, the site’s research team presented a *lunch and learn session* with unit physicians (staff, fellows, residents, and medical students) to share the evidence and highlight the practice changes chosen by the RPC. During this session, physician attendees identified that their involvement in the project was important to enhance the uptake of the evidence and that the use of topical anesthetic should be a physician as well as a nursing concern.

To share the messaging about the project with staff on weekends, evening, and night shifts, the Medical Unit RPC identified a group of clinical nurses as unit *champions*. These individuals provided ongoing *staff education* at the bedside on an as needed basis. To

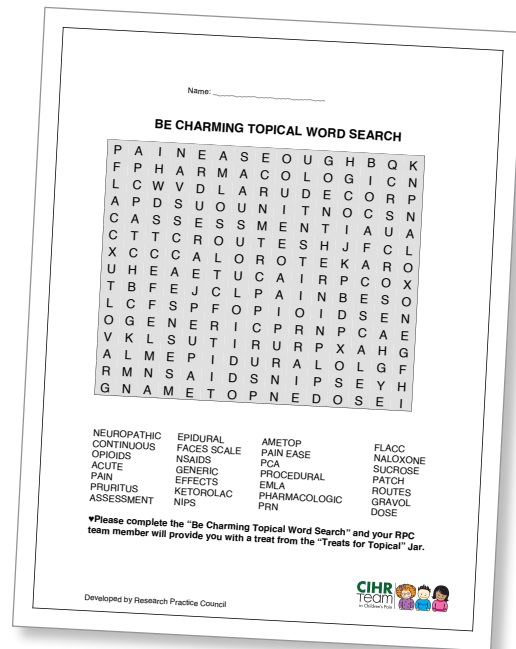


Figure 4: Word search activity.

recognize their contribution, I purchased *coffee mugs* embellished with the CIHR Team in Children’s Pain—at the RPC’s request—that a member of the RPC presented to the champions. In addition, also at the RPC’s request, the unit champions each received a *written acknowledgement* of their support from the study Site Investigators, which was shared with the unit nursing manager.

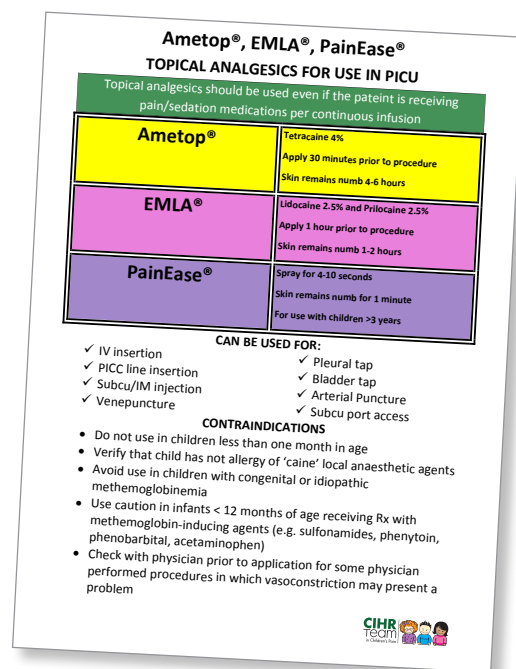


Figure 5: Educational poster.

During the project, our institution implemented new documentation practices communicated to staff using a “super-user” approach. “Super-users” were identified as front line support for clinical staff to learn and implement the new documentation processes. The Medical Unit RPC embraced this opportunity to lobby the unit’s super-users to *train staff* on documenting their pain assessments and the use of validated pain assessment measurement tools. The RPC members created a “*How to document pain tool*” to help staff quickly navigate to the new locations for pain assessment.

Audit and Feedback: Both RPCs used several formats of audit and feedback KT strategies. The Medical Unit RPC chose to gather data on the overall documentation of pain assessments, in addition to the data associated with their practice change statement. This information was reported in conjunction with the audit and feedback results collected for the project. Likewise, the PICU RPC used data from an informal audit of staff knowledge about the use of topical anesthetics and the frequency of use gathered by 2 clinical team leaders in verbal *face-to-face encounters* on 2 separate occasions. A total of 34 participants responded to the 3 questions: (i) Have you heard of topical anesthetics and if so what types? (ii) Have you heard of Pain Ease®? and (iii) Do you use topical anesthetics in your practice and, if not, why not? Both units used regular *newsletters* and *e-posts* to share the results of the changes in practices following PDSA1 cycles 2, 3, and 4 with unit staff. In addition, RPC members shared timely feedback as to unit progress towards the project goals in *one-on-one discussions* with unit staff.

Overall, both RPCs used a variety of KT strategies specifically designed to their context, staff, and culture. The cost of items, such as the *posters*, *pens*, and *treats* for staff was less than the allotted research funds allocated to each unit.

What worked and why?

It is difficult to discern which of the KT strategies the RPCs used were or were not successful, as multiple activities were conducted simultaneously. All strategies appeared to garner the staff’s interest to some degree. Several staff verbalized that having the unit RPC members as part of the project’s logo made the study less formal and more a part of the day-to-day activities. There was a good return rate on the “*Comfort Coupon*” activities. Staff viewed the *survey* of knowledge and self-report of topical anaesthetic use positively, as a way for each clinician to reflect on his or her own practice and the aim of the project. Unit staff also viewed the addition of unit *champions* very positively. The champions also appreciated being acknowledged for their positive role-modeling.

What didn’t work and why?

Likewise, it is difficult to discern which of the KT strategies were unsuccessful, if any. However, both RPCs experienced challenges during the project that may or may not have impacted the success of the KT strategies. During the same period in which the project was conducted, our hospital implemented new documentation practices. These charting practice changes presented challenges for staff on multiple levels. There was a steep learning curve for the staff in using these new documentation practices and processes, and the additional learning and practice changes related to the RPC aims may have been a lower priority for staff. In addition to the responsibility for the research project and implementing KT strategies, many RPC members were also responsible for supporting staff in their transition to this new change. This responsibility required a great deal of their energy and focus. Other challenges included addressing 2 broadly held views, namely: (i) continuous pain medication infusions are adequate for procedural pain relief, therefore, additional topical anesthetics are not needed; and (ii) practitioners do not always have time to “freeze” prior to a skin-breaking procedure. Additionally, RPC members discussed the challenge of documentation as proof that assessment and use of a topical agent has been carried out. Generally, the Medical and PICU RPC members felt that staff were conducting pain assessments and using more topical agents, respectively, than they were actually documenting. The Medical Unit’s leadership team at the manager and director levels also underwent change during the study. The study and activities of the RPC were new to both leaders who had not been involved in the development of the RPC at the start of the study.

The ability of all RPC members to attend meetings consistently throughout the project, particularly those members who worked different shifts or who had clinical responsibilities that required immediate attention, was a challenge faced by both groups. Membership retention over an 18-month period was also a challenge. When unable to meet face-to-face, I facilitated consensus decision-making for both RPCs by sending emails that were circulated to all RPC members to gather input, ideas, and direction for the teams. I also met one-on-one with members who were unable to attend meetings to keep the momentum moving forward. Overall, team members felt that even if they were not at the meeting, they had opportunity to have their voices heard and contribute to the project adequately.

What was the impact?

Although based on chart reviews, both units’ project goals, as identified in their aim statements, were not ultimately achieved, RPC members from both participating units felt that there was

movement forward and, therefore, some success. During the first 3 PDSA¹ cycles, steady progress towards achieving goals was noted, yet this progress declined between cycles 3 and 4 on both units. The PICU RPC noted that, although the data did not reflect a continued increase in the use of topical anesthetics, they observed more staff looking for and using topical anesthetics, and the ward stock of topical anesthetics needed replacement on a monthly basis, suggesting that the practice may have been implemented more widely than what was being documented. Similarly, RPC members from the Medical Unit noted that although the documentation of a pain assessment with specific procedural events was not as successful as hoped, there had been an overall increase in documented pain assessments within the unit.

What was learned?

As with many initiatives directed at changing the practice of an interprofessional team, I learned it is essential that the initiative be led and modeled by unit champions drawn from multiple professions, who have the courage, passion, energy, and enthusiasm for the project; are respected by unit staff; and are willing to take a risk in challenging the status quo of their colleagues' practices. Change cannot happen without the continued commitment of these unit champions. Additionally, a dedicated facilitator, preferably an insider to the clinical setting, must be available to actively support and guide RPCs to initiate and complete KT strategies.

As well, the practice change must be viewed as important by the unit staff not just by the RPC members. In our healthcare environment, where staff is frequently asked to uptake complex practice changes, it is difficult for initiatives that are not highly valued by staff to be enthusiastically and readily adopted. For future projects, it may prove helpful for the RPC to identify 2 or 3 aims and then seek feedback from the staff themselves as to what they believe is the most important practice change to initiate. Overall, facilitating change in the clinical setting requires many pathways that involve a variety of KT strategies and dedicated resources (human and financial) targeted at multiple levels within the organization as well as much inventiveness and creativity. Yet, at the end of the day, moving best evidence related to pain practices, still remains a bit of a mystery.

Pearls of Wisdom

1. Identify champions to lead change.

2. Identify a dedicated facilitator to support the RPC.

3. Solicit staff input prior to choosing a practice change.

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1. Langely GJ, Nolan KM, Norman CL, Provost L. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. San Francisco, CA: Jossey-Bass; 1996.

CONCLUSION

Improvements in targeted pain practices were seen across all units that implemented the Evidence-Based Practice for Improving Quality (EPIQ) intervention. However, as highlighted in our *Stories from the Floor*, the path taken to achieve these improvements varied across units even when the units were located within the same hospital and the same research coordinator facilitated the intervention. The EPIQ intervention consisted of a standardized process to prepare for and implement change through 4 Plan-Do-Study-Act (PDSA)¹ cycles. The strength of the EPIQ intervention was in the Research Practice Council (RPC) members' ability to choose meaningful and specific pain practice change goals, to develop knowledge translation (KT) strategies that fit best with the needs, preferences, and culture of the unit, and to adapt these goals and strategies based on audit feedback and progress made over the PDSA¹ cycles. Despite differences in the experiences of implementing EPIQ, 5 *Key Learnings* emerged from our *Stories from the Floor*: 1) Build relationships, 2) Involve the right people to steer change, 3) Actively engage all staff, 4) Focus on seamless integration, and 5) Take baby steps. These *Key Learnings* may be instructive in guiding practice change in other health units, both specific for improving pain assessment and management practices or for addressing other clinical practice issues using the EPIQ process.

KEY LEARNINGS

1. Build relationships

Most of the research coordinators were well known to staff members on at least one of the units where EPIQ was implemented as a model to guide practice change. Some worked part-time as the research coordinator and part-time as a staff nurse on the same unit. Others did not have this familiarity and had to work to gain the trust of the RPC members and the unit staff. As the goal was generally to make changes in usual practice, an "outsider" designated to facilitate the change process was sometimes met with resistance from unit staff. The research coordinators who were "outsiders" often needed to tread carefully and put a great deal of effort into getting to know staff and the unit culture. Once trust was established, an "outsider" could sometimes offer a fresh perspective and new ideas. Overall, being an "insider" was not necessarily better or worse than being an "outsider," but building relationships with staff was an important component of implementing EPIQ. Relationships between individuals may be more important to

implementation success than other individual attributes and taking time to build these relationships can positively influence implementation.² Relationships build a sense of "teamness" or "community" that may contribute to implementation effectiveness.³ Building relationships based on trust and shared understanding takes effort and time, and thus, change initiatives should recognize their importance by building in time for relationship development as part of the change process. It is common to see organizations rush too quickly through the practice change endeavor in an effort to see it completed.

2. Involve the right people to steer change

Practice change initiatives require leadership; this often manifests as a team effort through the formation of "implementation teams."⁴ In these stories, the Research Practice Councils (RPCs) functioned as implementation teams, but how they were formed differed across units. On some units, RPC members were chosen by managers. Often the RPC role fit well with responsibilities that were already a part of the person's position on the unit; for example as an educator, advanced practice nurse, or quality improvement leader. In some cases, the manager chose people who were known to have a particular interest or expertise in pain practices. On other units, managers asked staff to volunteer to be a member of the RPC. Volunteers were considered ideal as they generally had a greater commitment and interest in the work and in implementing pain practice changes. It was also helpful to have RPC members who staff viewed as leaders or champions, whether or not they were in a formal leadership role.

The vast majority of targeted pain practice changes had direct impact on the work of staff nurses; therefore, representation of staff nurses on the RPC was essential. The downside of having staff nurses on the RPC was that they often were too busy providing direct patient care to attend meetings regularly or to be actively involved in implementing KT strategies. RPC members who were in other staff positions generally had more flexibility in their schedules to attend meetings and implement KT strategies; however, there were always competing priorities. The research coordinators were each hired to work 0.5 Full Time Equivalents (FTE) and split their time between the 2 units engaged in the EPIQ intervention. Dedicated time for the research coordinator role was key in ensuring that the implementation process kept moving forward despite changes in RPC membership or lack of time to implement KT strategies.

Once the RPC identified a practice change target, it was important to determine whether the practice change impacted the work of other professional groups or departments outside the unit. For example, plans to increase sucrose use for pain management generally required pharmacy staff to provide an increased supply on the unit. If the sucrose was to be given prior to blood draws done by laboratory staff, collaboration was needed between the laboratory and nursing staff to ensure sucrose was administered immediately before or during the procedure. At minimum, consultation and frequent meetings with staff impacted by the practice changes were needed to anticipate and plan for any modifications in procedures, rather than dealing with issues once they arose, and to create buy-in and active involvement in the practice change. Ideally, the RPC should include a manager or staff member from the relevant department to ensure any logistical issues are identified and addressed early, and that KT strategies can be developed to target all staff affected by the practice change. Similarly, it was important to consider the impact of the practice change on patients and families and provide them with information about the various educational posters and reminders around the unit. Once parents understood the goals and importance of the practice aim, they became a reminder to staff (particularly around pain management strategies) and could also contribute by providing or supporting this type of care for their child.

The composition of the RPC or implementation team – however named – must be diverse and include leaders, individuals with specific skills or expertise, and those representing roles that are impacted by the change. It is far easier to engage key people at the beginning of the change process, as this also paves the way for a smoother transition to new ways of doing. Successful implementation requires direct or indirect involvement of leaders at any level of the organization, including executive leaders, middle management, team leaders, and informal leaders to facilitate and steer change.^{5,6}

3. Actively engage all staff

Each RPC included up to 6 members to ensure broad representation from various teams or professional groups within the unit. However, it was important to engage all unit staff, beyond the RPC, in determining the practice change and developing the KT strategies for the unit. In some cases, RPC members chose practice changes with little input from other staff and this became a challenge, because staff did not view the selected pain practice change as a relative priority.⁵ Tension for change, or the degree to which stakeholders perceive the

current situation as intolerable or needing change, is considered a key factor for implementation success.^{5,7,8} To facilitate staff engagement it may be helpful to propose a few different practice changes and then survey unit staff to identify those considered the highest priority by the majority of staff. Similarly, asking staff for their input on KT strategies and how to implement them may also prove helpful. For example, an enjoyable activity such as a contest to develop or vote on a unit logo that would act as a reminder for the chosen practice change may help create additional discussion and build engagement and interest from staff members.

Staff engagement is necessary along the way, not only when planning a practice change. KT strategies often lost their effectiveness over time as posters, buttons, or stickers got lost, lost their novelty, or began to blend in with other items. Changing the messages, colors, or locations of some KT strategies, such as reminders, helped to keep them visible for staff. As well, high staff turnover was common on the units, which meant new staff needed to be engaged in the practice changes soon after their arrival. Ongoing education to incoming staff, whether a new rotation of residents or newly hired staff nurses, was a challenge. However, it was particularly important to engage new staff early to ensure they understood that appropriate pain assessment and management were a priority on the unit as part of the standard of care. As well, KT reminders were meaningless to new staff if they did not understand what the reminders referred to. Generally it was easier to ensure new staff incorporated the best pain practices from the beginning of their time on the unit, rather than later trying to change established practices that were less than optimal.

4. Focus on seamless integration

Any change can be a challenge, especially in a busy hospital unit with a large number of staff who have many competing priorities. Ideally, practice changes and supporting KT strategies should be seamlessly integrated into the existing infrastructure and culture of the unit and institution. Compatibility is a key factor in implementation success and speaks to how well the meaning and values attached to the practice change align with individuals' own norms, values, and perceived risks and needs, and how well the intervention fits with existing workflows and systems.^{7,9}

The KT strategies that seemed most effective were reminders incorporated into electronic charting systems that prompted staff to enter pain assessments and pain management information

into patient charts. If these prompts can be included in the system from the time electronic charting is first implemented, there may be immediate benefits. Conversely, changes can overwhelm staff if not carefully planned or if they are too complex. Complexity increases when staff perceive the implementation as being difficult due to the length, scope, fundamental changes in activities, disruptiveness, and the intricacy and number of steps required to implement.^{7,10} KT strategies used to integrate practice changes into the workflow of the unit may reduce complexity and contribute to implementation success. Strategic placement of reminders was important, such as ensuring they were visible and at the ready when needed. For example, placing reminder stickers on vital signs sheets to encourage completion of pain assessments along with vital signs assessment, or placing educational posters about pain management in treatment rooms where painful procedures were most commonly performed. Tools related to the targeted pain practice also needed to be readily available; for example, having pain scales printed on the back of the vital signs sheet or on lanyard cards. As well, incorporating education sessions about pain into morning rounds or existing education days, and using email or other means of communication already used on the unit facilitated seamless integration into existing structures and helped to reduce the complexity of the practice change.

5. Take baby steps

Trying to make big changes or introducing too many new things simultaneously made the change process even more challenging. Some units found it helpful to focus on a specific population (e.g., children less than 1 month of age) or the management of pain during a specific procedure (e.g., heel lance). Once improvements were achieved in specific areas it was easier to expand the focus to include other populations or procedures. This phased approach to implementation is captured in the work of the National Implementation Research Network (NIRN).⁴ Applications of the NIRN model in child and youth mental health practice have identified the importance of planned and phased practice change endeavours, and investigators have found that it is particularly important to guard against overwhelming staff when several practices are being implemented in close succession or simultaneously.^{11,12}

It is also facilitative when targeted goals for change are realistic and build on baseline data. For example, if baseline data indicates that pain assessments are conducted on less than 10% of the patients on a unit, it is unreasonable to expect an increase in pain assessments to 80% of the patients in the first PDSA¹ cycle. When reasonable goals are not met, the PDSA¹ cycles allow time for reflection on the process and examination of what worked and what did not, and whether change targets were feasible so that the expectations can be shifted, process can be modified, and/or different strategies can be implemented in subsequent PDSA¹ cycles. “Triability” is a key feature of implementation success⁵ and of the PDSA¹ cycle as it allows users to experience an intervention or practice change on a small scale and to change course as needed.⁷ Piloting practice change allows users to build experience and expertise through reflection on the implementation process¹³ and promotes successful adaptation of the intervention to the local context.¹⁴ Much can be learned in the process of implementing the EPIQ intervention to facilitate practice change even when targeted outcomes are not fully achieved. It is important to stay positive and creative in continuing to achieve targets and move forward in a steady and planned fashion.

MOVING FORWARD

The practice changes across all of the health units profiled in this casebook were guided by the EPIQ intervention, with the intent of bringing the best research evidence about the assessment and management of procedural pain in children to the practice setting – “on the floor” – and into the hands of those who were best positioned to use it to improve health outcomes and well-being. Achieving this goal realized the potential to decrease the consequences of pain to the child, hospital unit, and health care system. While EPIQ was somewhat resource intensive in terms of the dedicated time of the research coordinators and the ongoing support of the larger research team, it was effective in empowering children, families, and staff to prevent and alleviate procedural pain and its consequences, which may ultimately conserve resources. We hope these *Stories from the Floor*, written by those who were actively involved in implementing EPIQ, will inspire others to find creative ways to move forward with improving pain or other clinical practices in their own care settings.

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