

Canadian Association of Paediatric Health
Centres (CAPHC)

*Patient Safety Collaborative Annual Symposium
Promoting Patient Safety and Best Practices in Paediatrics through
Standardization of Medication Practices and Delivery Protocols*

*CAPHC Annual Conference
Sunday, October 15th, 2006
Fairmont Vancouver Hotel*

Proceedings Paper

About the Canadian Association of Paediatric Health Centres (CAPHC)

Established in 1968 CAPHC is a national, not-for-profit, organization whose members include multidisciplinary health professionals that provide health services for children, youth and their families within quaternary and tertiary health centres; community health centres; rehabilitation centres and home care provider agencies nationwide.

CAPHC is affiliated with all sixteen academic health sciences centres across Canada, providing important linkages to clinical care, education and research. CAPHC's current membership includes forty-two health organizations from across Canada – all children's hospitals in Canada are members of CAPHC. A complete list of CAPHC member organizations is posted on CAPHC's website – www.caphc.org.

CAPHC shares with all its members, a fundamental goal of advancing a national child and youth health service delivery agenda through knowledge creation and transfer in high priority areas. Central to this goal is the facilitation of linkages and partnerships to mobilize the expertise and resources of organizations whose common and complementary goals and objectives advance child and youth health.

In addition, CAPHC is committed to enhancing the application of knowledge from research to practice, practice to health policy, to the development and promotion of evidence-based clinical practice guidelines for all children and youth.

Patient safety is one of CAPHC's national priorities. Under the direction of the CAPHC Board of Directors, the National Patient Safety Collaborative provides a forum to unite individuals, groups, and organizations to facilitate partnerships, improve communication, and, when appropriate, undertake collective action to improve patient safety for children and youth. Membership in the collaborative is open to all members of CAPHC, Health Canada, and other provincial and national organizations with a specific expertise and/or interest in patient safety. The membership is multidisciplinary and represents child and youth health organizations from coast to coast.

Supporting Information

The presentations from the Annual Patient Safety Symposium held at the CAPHC Annual Meeting on October 15th, 2006 and the Proceedings paper are available for download on the CAPHC website at www.caphc.org

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Acknowledgement

These proceedings summarize the Annual Patient Safety Symposium held at the CAPHC Annual Meeting on October 15th, 2006. This symposium was a genesis of a working collaborative between CAPHC, the Canadian Patient Safety Institute (CPSI), Paediatric Health Centres and related organizations, and the Baxter Corporation, focused on creating a safer healthcare environment **for children** through standardized practices for all paediatrics patients.

Abstract

Paediatric healthcare institutions face many unique challenges in the delivery of care; among these challenges is customization of paediatric medication dosing and delivery protocols. Non-standardized practices are a recognized challenge across the majority of paediatric health centres in Canada. Many adult centres have successfully adopted standardized dosing and medication delivery processes to increase efficiency and improve patient safety. Many of these best practices are sanctioned and supported by ISMP Canada, CCHSA, JCAHO and other organizations focused on improving patient safety. This symposium welcomed child and youth health professionals interested in promoting a national patient safety agenda, as well as national leaders focused on quality improvement and practice. The symposium featured current best practices, challenges, and opportunities to develop a national standardized best practice platform for our unique paediatric healthcare setting, and highlighted the Safer Healthcare Now! Campaign and the CAPHC – Safer Healthcare Now! Paediatric Medication Reconciliation Collaborative Quality Improvement Program.

Symposium Chair

Michele Lahey, Chair - CAPHC Board of Directors,
Stollery Children's Hospital,
Executive Vice President & Chief Operating Officer – Health Services
Capital Health, Edmonton, Alberta

Symposium Speakers

- Mat Dinneen, Manager, National Accounts and John Grisolia, National Specialty Manager, Pharmacy, Baxter Corporation
Leveraging Our Learning – exploring opportunities with the paediatric community
- Dr. Gerarda Cronin,
Director of Quality and Decision Support, Child Health Program, Winnipeg Regional Health Authority
Professor and Associate Head, Department of Pediatrics and Child Health, University of Manitoba
Why is Paediatrics Different? – Challenges and solutions for safe practices
- Carolyn Hoffman,
Director of Operations ON to BC Canadian Patient Safety Institute (CPSI)
Building a Safer System: Paediatric Partnerships
- Margaret Colquhoun,
Project Leader - Medication Reconciliation
Safer Healthcare Now! & Institute for Safe Medication Practices Canada (Canada)
Medication Reconciliation
- Dr. Anne Matlow
Director, Infection Prevention & Control Programme
Medical Director, Patient Safety, The Hospital for Sick Children, Toronto ON
Determining Adverse Events in the Paediatric Population – Development of a Trigger Tool

Introductions – Goals and Objectives of the Symposium

Michele Lahey, symposium chair, welcomed the participants, and summarized the purpose of the symposium – to improve quality of paediatric patient care through standardization of medication practices and delivery. Michele also thanked the organizations that sponsored the symposium – the Canadian Patient Safety Institute, the Baxter Corporation, Medbuy and Research and Development Canada. She explained that Elaine Orrbine would provide a brief overview of the agenda.

Elaine Orrbine welcomed all the participants and thanked everyone for attending. She outlined the goals and objectives of the program aimed at promoting patient safety and best practices including: to learn what is going on at a national level; to feature current and best promising practices that are making a difference; and to identify the unique challenges and solutions that can continue to improve patient safety for children and youth. The proposed primary outcome of the symposium was to explore new collaborative opportunities to create a national action plan aimed at developing national standards and delivery protocols to ensure the safety and well being of children and youth within the unique paediatric health care setting.

Elaine described Part 1 of the agenda – a series of short presentations to describe what is going on at a national level and challenge the participants to explore strategies for improving patient safety. Part 2 of the agenda consisted of the participants forming into groups to address a series of short questions, in order to provide an environmental scan of paediatric health care facilities and, as well, to focus on a key issue in depth.

Mat Dinneen, Manager, National Accounts and John Grisolia, National Specialty Manager, Pharmacy, Baxter Corporation

Leveraging Our Learning – exploring opportunities with the paediatric community

Mat Dinneen provided a brief introduction to the new partnership between Baxter Corporation and CAPHC. He highlighted the commitment of the Baxter Corporation to work with CAPHC to improve patient safety. He also recognized the preparatory work for the symposium done by the working group and thanked everyone for their commitment. Mat encouraged the participants to use the afternoon to explore what could be. He introduced John Grisolia who provided more information about current Baxter programs.

John Grisolia built on Mat's introductory comments and described the common goals of Baxter and CAPHC including a strong patient safety focus and mandate, a commitment to facilitate collaboration, promotion of best practices and dissemination of knowledge. John noted that Baxter is a lead corporate sponsor of the Safer Healthcare Now! campaign and are very committed to a safer healthcare environment. They are a leader in all aspects of adult and mixed-community healthcare and partner with health care facilities on patient safety initiatives. Baxter is looking forward to building the same level of involvement in Paediatrics.

John described a number of Baxter's current patient safety quality improvement initiatives on various elements of medication delivery including standardized critical, high alert medication concentrations, streamlined dosing of standard medications and fluids and standardized pain management infusions. As a specific example, John described their work with hospitals to create a clearer, bolder label for IV fluids including the cartons. Such initiatives are accomplished with comprehensive programs that include feedback from multiple stakeholders.

In summary, John advised that the symposium participants could consider Baxter as a business partner that can support change initiatives, promoting the implementation of standardized practices and procedures. He encouraged the participants to use this opportunity to share ideas and experiences in order to create some concrete initiatives at the end of the symposium. Baxter welcomes the collaboration with the paediatric community to improve the lives of children and youth.

Dr. Gerarda Cronin,
Director of Quality and Decision Support, Child Health Program,
Winnipeg Regional Health Authority
Professor and Associate Head, Department of Pediatrics and Child Health, University of Manitoba
Why is Paediatrics Different? – Challenges and solutions for safe practices

The intent of Dr. Cronin's presentation was to review the uniqueness of the paediatric setting and the reasons why paediatric patient safety challenges and solutions are not the same as in adult healthcare. She explored the complexity of paediatric healthcare and the theory behind successful approaches for dealing with complexity.

Dr. Cronin briefly reviewed the state of knowledge with respect to paediatric patient safety. She noted that while the much-publicized Canadian Adverse Events study has highlighted the extent and nature of patient safety issues in adult healthcare, similar data on the incidence of adverse events in paediatric settings are not available. Standardized reviews of 30 clinical incidents and near misses, done within the Winnipeg Child Health Program, using the London protocol revealed that medication errors were the issue in 50% of all errors reviewed. The reviews revealed that there were many routes by which medication errors occurred including incorrect medication or dose, wrong patient, incorrect route or incorrect timing (Cronin, CMG. 2006 Healthcare Quarterly Vol 9 (special issue); 16-21).

The data illustrated the complexity of care in paediatrics with multiple factors contributing to all the cases of medication errors reviewed. Dr. Cronin reviewed the aspects of complexity in paediatric and perinatal care including multiple patients, patients with complex diseases and co-morbidities, social complexities, and multiple medications. In addition, multiple high-risk procedures are often required in acute paediatric care, with multiple sequential tasks and complex decisions. A number of examples were described.

The issue of complexity was further illustrated by comparing the simple task of following a recipe (with clear instructions, known risk, and no particular expertise needed) to a complicated task such as launching a rocket to the moon (formulae critical, risk knowable, experience improves future outcomes, high level of expertise necessary) and then to a complex task such as raising a child (formulae of limited use, risk unknown, experience does not guarantee future outcome, expertise helpful but not sufficient). Dr. Cronin explained that in complex situations, such as healthcare, making improvements requires courage, a simple set of rules and applying local solutions using existing relationships and networks.

Dr. Cronin noted that minimum specifications and simple rules allow creativity and accountability to coexist. Too many institutions have detailed protocol books on shelves that no one looks at or is familiar with. With minimum specifications and simple rules, no one can claim ignorance of the rules.

Measured by total lives lost per year and the number of fatalities per encounter, healthcare is as hazardous as mountain climbing or bungee jumping, and significantly more hazardous than airline travel or nuclear power. The practices of High Reliability Organizations such as the airline industry have much to teach healthcare organizations. The characteristics of High Reliability Organizations were reviewed.

Dr. Cronin encouraged the participants to start thinking like engineers by beginning with the premise that anything can go wrong, designing systems accordingly and not expecting humans to perform perfectly without variation. She finished her presentation by challenging CAPHC members not to apply complicated solutions to complex problems and to enact the following guidelines:

- Standardize – when we can!
- Recognize Complexity
- Develop and use Simple Rules
- Become High Reliability Organizations
- Have Courage
- Leverage Relationships

Carolyn Hoffman,
Director of Operations ON to BC Canadian Patient Safety Institute (CPSI)
Building a Safer System: Paediatric Partnerships

Carolyn Hoffman introduced the Canadian Patient Safety Institute and the key initiatives that they have underway with their partners across the country including CAPHC. She thanked Baxter for their great support and echoed John Grisolia's point with respect to the value of collaborative relationships and how pivotal such relationships are within patient safety work.

The Canadian Patient Safety Institute was established by Health Canada in 2003. The mandate of CPSI is to provide national leadership in building and advancing a safer Canadian health system. There are a number of initiatives currently underway including research/demonstration projects and collaborations to enhance patient safety education in undergraduate and graduate health provider programs. Carolyn noted that 28 research projects were funded in 2005. A second call for proposals is currently underway and decisions are expected in November 2006. Carolyn noted that there are currently no Canadian standards for patient safety education and CPSI will be doing a survey with respect to this in the next year. Additional initiatives include the Canadian Root Cause Analysis Framework, Canadian Patient Safety Week and Safer Healthcare Now!

The Safer Healthcare Now! campaign is modeled on the Institute for Healthcare Improvement *100K Lives* Campaign and is aimed at reducing preventable complications and deaths in Canadian hospitals. At the core of the campaign structure are patients and the grassroots teams implementing each intervention across Canada. CAPHC in partnering with CPSI to provide support to paediatric teams implementing medication reconciliation. The key objective for each intervention is to solve the gap between research/knowledge about what works and the ability to reliably provide these standards of care on a day-to-day basis for all patients by solving implementation issues. The first stage of the campaign will be concluding within the next 6 months and the focus over that time will be measurement. The campaign will be continuing into 2007 with the details to be announced in the New Year.

In conclusion, Carolyn reviewed 7 steps that can be taken to improve patient safety (from the National Health Service, England):

- Build a safety culture - Create a culture that is open and fair
- Lead and support staff - Promote / facilitate a patient safety focus
- Integrate risk management activity - Client concerns, incidents, litigation, good catches
- Promote reporting - Actively seek and support reporting
- Involve and communicate with patients / public - Listen to learn, supportive disclosure processes
- Learn and share safety lessons - RCA, FMEA
- Implement solutions to prevent harm - Teams collaborate and implement tests of change then integrate effective changes into practice

Margaret Colquhoun,
Project Leader - Medication Reconciliation
Safer Healthcare Now! & Institute for Safe Medication Practices Canada (Canada)
Medication Reconciliation

Margaret Colquhoun reviewed the relationship between CAPHC, ISMP Canada, and the Safer Healthcare Now! Campaign. The vision of ISMP Canada is to collaborate with national and international organizations to advance safe medication use. As organizations who are providing clinical support within the SHN! Campaign, CAPHC and ISMP Canada are focusing on the medication reconciliation intervention.

Margaret reviewed the key concepts of medication reconciliation – simplifying and standardizing processes, reducing reliance on memory, establishing a 'best possible medication history', and improved access to accurate medication information. She noted that teams across Canada have found the implementation of

medication reconciliation to be far more complex than expected. Successful implementation is dependent on a team approach, both within and across institutions. Senior leadership support, multidisciplinary involvement, and the involvement of families are critical.

The progress of the teams currently enrolled in the CAPHC Paediatric Medication Reconciliation Collaborative was reviewed. The PMRC members have benefited from sharing successes and tools across healthcare organizations in order to facilitate changing processes to improve medication safety. The teams are noting success incorporating medication reconciliation into existing workflows and seeing evidence that standardizing the processes for obtaining a medication history is reducing redundancies. A recent survey of the teams revealed that more than 92% of the teams judged medication reconciliation to be important.

Margaret noted the importance of collecting data to show improvement. The definitions of the two primary indicators for medication reconciliation, undocumented intentional discrepancies, and unintentional discrepancies were reviewed. The preliminary baseline data from the PMRC has revealed that, in the paediatric populations reviewed, approximately one in two patients had a documentation discrepancy and approximately one in two patients experienced an unintentional discrepancy. Since errors in documentation and unintentional discrepancies represent potential harm, this data emphasizes the importance of medication reconciliation processes in paediatrics.

Dr. Anne Matlow
Director, Infection Prevention & Control Programme
Medical Director, Patient Safety, The Hospital for Sick Children, Toronto ON
Determining Adverse Events in the Paediatric Population – Development of a Trigger Tool

Dr. Matlow reviewed one of the primary projects of the CAPHC Patient Safety Collaborative, the development of a Trigger Tool to determine the extent and nature of adverse events in the paediatric patient population. She set the stage by defining an adverse event (AE). An adverse event is an unintended injury or complication which results in 1) disability at the time of discharge, 2) death or 3) prolonged hospital stay and is caused by health care management rather than the underlying disease process.

Little is known about AEs in paediatrics. The limited published research suggests the incidence of AE's is 1 per 100 patients and the incidence of adverse drug events (ADE) is approximately 2.3 to 11 per 100 patients of which a significant percentage are preventable. The incidence of AE's is significantly higher in NICU populations with a published value of 74 per 100 admissions. Even less is known about harm in ambulatory care. There are no published data that estimate the magnitude of the problem in hospitalized Canadian children. There are many reasons to suspect the paediatric numbers will be different, given the unique vulnerabilities of children related to their developmental stages, pharmacokinetics, dependency on adults, and the different spectrum of their illnesses.

There are a number of methods to detect adverse events including occurrence reports, concurrent or retrospective chart reviews, medical records review of deaths and trigger tools. A trigger tool is a screening tool used to identify sentinel signals or "triggers" that suggest medication related errors and ADE and precipitate a more thorough review of the chart. Dr. Matlow reviewed a number of existing trigger tools including that used in the Canadian Adverse Events Study.

The CAPHC Patient Safety Collaborative has established the Canadian Paediatric Trigger Tool Design Group (CPTTDG). This group consists of a team of paediatric clinicians and administrators, human factors scientists, health information professionals, stakeholders, and two members of the Canadian Adverse Events Study team. The CPTTDG was challenged with the task of developing a Canadian paediatric trigger tool for potential adverse events. The objectives of the CPTTDG are to determine the incidence of AEs in Canadian children, compare the incidence of AEs in Canadian children vs. Canadian adults and then to launch QI efforts

To date, the group has done an environmental scan; reviewed published and unpublished trigger tools; developed the CAPHC Canadian Paediatric Trigger Tool; developed a procedure manual/tool kit and conducted a feasibility study. In the feasibility study the draft trigger tool was piloted at 3 healthcare centres: a stand-alone paediatric hospital, a hospital within a hospital, and community hospital. There were 40 charts per site with 2 reviewers per chart. At each site charts were chosen from 4 age categories with half of the charts from medicine and half from surgery. The inter-rater agreement (Kappa statistic) was 0.83 and 32% of charts were triggered.

The next step is validation and reliability testing of the trigger tool. A grant has been submitted to Canadian Medical Protective Association (CMPA) to fund this phase. Ultimately the goal is to do a prospective study across Canada using the trigger tool to define the incidence of AE in hospitalized children, and compare to data in adults.

(NB: At the time of writing these proceedings we are pleased to announce that we have been successfully funded by CMPA to further our work with the CPTT.)

Exploring a National Action Plan – Table Discussion and Open Mike

Following the presentations there was a short Q & A session, with some discussion around bar coding, physician disclosure and transparency with respect to patient safety culture. Following the Q&A session and a short break, the symposium participants broke into groups to complete two tasks. The first task was to answer a series of questions that were pre-circulated at the beginning of the symposium. These questions were developed to provide an environmental scan of paediatric health care facilities represented at the symposium. The second task was to discuss selected patient safety topics.

The following issues were discussed during the Q & A session:

- Progress on standardizing bar coding
 - ISMP has a working group addressing this issue
 - It was noted that there are some limitations on bar-coding labels due to space issues
 - Baxter is making progress on bar-codes on IV containers
- Patient Safety Culture – Physician disclosure and transparency
 - Perception of blame impedes patient safety culture and while health centre employees are usually not named, any adverse event that a physician is involved with is recorded on the CMPA record. (and on the provincial College record in some provinces).
 - Currently there is potential for an adversarial situation between insurers, institutions and physicians with respect to reviewing critical incidents, facilitating blameless reporting and building an enhanced patient safety culture, due to liability issues.
 - CPSI will be holding meetings with ADMs and CEOs to address this issue.
 - CMPA and HIROC stakeholders will be part of a national disclosure working group whose goal will be to standardize disclosure and transparency and to push forward openness
 - This discussion was linked to Dr. Cronin's presentation and it was noted that the goal should be to act with courage and learn from positive handling of experiences
 - In some, but not all, provinces, legislation provides protection of information that is discovered during the investigation of harm. Saskatchewan was the first province to develop progressive legislation; Quebec has effective legislation, and Manitoba is about to implement legislation (it became law on November 1).

Environmental Scan

The environmental scan consisted of five pre-determined questions that were circulated at the beginning of the symposium. Participants within each breakout group participated in the discussions and one person from each group reported the group consensus. The following represents a compilation of the reports from each group.

1) List and rank the main types of safety incidents that occur in your institution involving medication and IV fluid delivery (e.g. under the headings of ordering, dispensing, storage and administration).

Symposium participants reported the common safety issues/incidents with respect to the *ordering and dispensing* of medications

- Wrong drug dispensed from the pharmacy
- Reliance on non-formulary drugs as well as reliance on ward stock
- Lack of medication reconciliation in the community
- New / Short-term staff, such as locum physicians, who use different medications and dosages
- Concern that there is not enough safety checks with respect to pre-dispensing

The participants noted various safety incidents concerning the *administration of medications*

- Incorrect patient identification
- Errors in the timing of administration of medications including delays and confusion around the definition of stat or urgent
- Medications administered by the wrong route, e.g. the wrong IV
- Errors in medication preparation including incorrect dilutions, 10-fold errors, misplaced decimals, vague orders with respect to weight
- Issues in identification of appropriate medications, e.g., including unfamiliarity with drugs, using the wrong drug or missing drugs
- Language issues, e.g., in the context of multi-linguistic caregivers who may struggle with reading labels in a hurry
- The font size on labels, e.g., as a problem for older caregivers who are challenged by smaller print
- It was also noted that Tall-Man lettering to differentiate sound alike drugs is not available on all medications

Some issues were noted with medication storage including:

- Improper storage – in room air as opposed to in a refrigerator
- Storage of adult and paediatric medications in the same area

2) What are the main medications in which safety incidents occur?

There were consistent responses from the break-out groups with respect to the medications that are the most common in safety incidents including opioids (narcotics), anticoagulants/heparin, insulin and concentrated electrolytes. Also noted as significant medications with respect to safety incidents were TPN, Anti-epileptics, High dose antibiotics, Conscious sedation, Lasix, Dopamine and unusual medications

3) Are there populations of infants, children, and youth who are particularly prone to medication and IV fluid incidents?

The reports from the participants were very consistent and noted the following populations as most at risk for medication and IV fluid incidents:

- Highly complex patients with multiple co-morbidities and multiple services involved in their care
- Infants admitted to NICU
- Patients in complex critical care including ICU, CCU, cardiac, oncology, and renal patients

4) Do you have computerized physician and order entry (CPOE) in your institution?

From the reported discussions it was apparent that the use of CPOE is limited at this point - only a few institutions present at the symposium have implemented the use of CPOE in select units and other institutions are in trial stages

5) Have you introduced smart pump technology (SPT) at your institution?

As with CPOE the use of smart pump technology is limited at this point - only a few institutions report having fully implemented and some are in progress of implementing

Discussion Questions

The six discussion questions were pre-determined by the symposium planning committee. Each breakout group was assigned one or two of the six questions. Participants within each breakout group discussed the assigned question(s) and reported back on their consensus. The following represents a compilation of the reports.

Is there a role for standardizing medication practices across all paediatric institutions, e.g. maximum and minimum doses of particular medications for continuous or bolus infusions?

Two breakout groups discussed this question. The reports indicated that there was resounding support for standardization and the following points were noted:

- Standardization forces necessary discussion and debate
- Standardization allows for consistency across sectors
- Standardization has the potential to enhance learning and knowledge transfer
- There will be an economic gain in purchasing power
- While standardization is recommended, there is a need to recognize the equally powerful role of customization when clinically indicated

The two groups made a number of *recommendations* including:

Health care institutions should move away from the rule of 6 (Rule of 6 dosing is sometimes used in NICU. The infant's weight, in kilograms, is multiplied by 6 and the resulting number is added as milligrams of drug to 100 ml of solution. Using the Rule of 6 to prepare infusions results in varied concentrations, thus standardization of critical care drug concentrations cannot be implemented)

- It was suggested that CAPHC could create a statement on this issue
- Health care institutions should build standards for administration techniques, e.g. IV medication delivery. It was recommended that IV manuals should be standardized across institutions with the following course of action
 - Analysis of current practice to determine what is being done at each institution
 - Compare information on current practice with evidence on best practice
 - Create a national paediatric IV manual
- In conjunction with these recommendations it was noted that there is a need for better evidence on administration practices, e.g. who can do what and how to do it?
- It was suggested that the focus should be on high risk drugs.
- Health care institutions should explore point of care bar coding technology

How can we improve our capture of safety incidents related to medication and IV fluid delivery in order to reduce error and harm?

This question was also discussed by two of the breakout groups. While the reports suggested some specific strategies, the main *recommendations* focused on strategies to enhance the culture of patient safety and an open and fair reporting system.

- A number of strategies for improving safety culture and insuring consistent reporting of incidents were noted
 - Encourage patient safety rounds – rounds serve to lower staff anxiety and open up dialogue, allow staff to talk about concerns and discuss safety issues

- Close the loop – feedback to the providers as to the outcomes of safety incident reports should be provided
- Have a simple process for reporting, software should allow reports to be easy to create and analyse
- One example provided is the use of Risk Monitor Pro – incidents can be input by any staff member on computers, one institution found that this increased reporting by 80%, the focus is not on “you did it” but rather on “I found it”
- It was also noted that independent double checking and double signing of high risk meds (identified through ISMP alerts, incidents, med-safety reviews) was a valuable strategy
- Another example provided was the “transfer of accountability” procedure that has been initiated at McMaster Children’s (for details refer to Alvarado et al, 2006. HealthCare Quarterly Vol 9 (special issue); 75-79)
- Creation of a blame free environment was also noted a critical issue. Some *recommendations* included:
 - Removal of staff identifiers from reports
 - Work with the media, professional organizations and legal bodies to help create a blame free environment
 - Work with patients and families
 - Interview families with specific questions about their experience with during hospitalization or after discharge
 - Provide suggestion boxes and/or a hot line for near misses and errors
- Additional suggestions included for improving patient safety included;
 - Standardization is key – a consistent approach to medication administration and enables identification of errors
 Training – academic institutions should be training all healthcare providers in safety –approach needs to be integrated
- The suggestion was also made that tools for lunch and learns could be created for the use of all CAPHC members – poster displays, newsletters etc.

What are the key considerations in introducing Computerized Physician Order Entry (CPOE) in paediatrics? What are its advantages and disadvantages? What role can pharmacy play in introducing CPOE and smart pump technology?

This question was discussed by one of the breakout groups. The report from this group noted that the advantages of CPOE included:

- A reduction in the need for transcription and hence the potential for errors
- Provision of clinical decision support

The report from the group also noted a number of disadvantages of CPOE:

- Medication libraries are not paediatric-based
- Defined alerts are not based on a paediatric system
- Too many meaningless alerts desensitize users
- Consensus on order sets/alerts is difficult to obtain
- The possible effects of computer crashes

The group listed a number of characteristics that CPOE systems should have:

- CPOE systems should be easy to learn, particularly because of high staff turnover
- The systems should have minimum specifications
- Keyword searches should be available
- An interface with other systems is vital, e.g. laboratories
- The system should be easy to audit

- Systems should reflect real time changes, e.g. nurses are alerted immediately of changes

The roles that pharmacy can play in introducing CPOE and smart pump technology were noted:

- CPOE systems need to interface with pharmacy systems
- Pharmacy should take the leadership role in interfacing systems
- Medication libraries need to be synchronized, e.g. Smart Pump libraries need to be the same as CPOE libraries
- Pharmacy should have a role in defining alerts
- Pharmacy should provide standardized concentrations

What are the key considerations in introducing smart pump technology in paediatrics? What are its advantages and disadvantages? Has smart pump technology adequately addressed paediatric needs in its decision support to date?

This question was discussed by one of the breakout groups. It should be noted that the environmental scan indicated that, within the institutions represented at the symposium, the use of smart pump technology is limited at this point - only a few institutions report having fully implemented and some are in progress of implementing. This question was discussed at a table at which one institution was implementing SPT and one was considering it. The participants in this discussion were unsure, at this point, if SPT is adequately addressing paediatric needs in decision support. This group felt that the key considerations in introduction smart pump technology were:

- Insuring staff have the technology know-how and computer comfort
- Adequate education will need to be provided
- Financial considerations have to be considered, e.g. lease vs. purchase
- Within general hospitals, with both paediatric and adults caution will be vital with respect to varying parameters

Note: Smart pump technology is pumps that are preset for specific drugs, primarily the most commonly used, with upper and lower limits. Each institution defines the protocols for the pumps.

Closing Remarks and Recommendations

Michele Lahey provided a synopsis of the afternoon's discussions and noted six main themes:

- Children are not little adults, e.g. CPOE systems must have paediatric-based alerts.
- Standardization is crucial. Michele noted that there is a lot of work to do and it will be necessary to distinguish where standardization is the most important. She also noted that it would be necessary to work with academic partners to address the need for staff support and education.
- Inconsistent implementation of CPOE and Smart Pump Technology. Michele noted that it will be important to identify in which areas these technologies should be implemented
- It will be important to work with pharmacy, both within institutions and academically, during implementation of medication safety initiatives
- Closing the loop is essential – it is vital to move away from a culture of blame and focus on communication, in rounds, with families and with the media.

Michele noted that the goal, moving forward, will be to build on work that has already been done, to share research on technology, to focus on education and support and to insure continuity of safety strategies from acute care to rehabilitation centres, community care access centres and home care facilities.

Recommendations for CAPHC to consider pursuing included the following:

- To explore strategies for building standards for medication administration techniques including
 - Creation of a national statement discouraging the rule of 6
 - Creation of a national paediatric IV manual

- Exploration of point of care bar coding technology
- To explore strategies that enhance the culture of patient safety and an open and fair reporting system
- To create tools for lunch and learns on patient safety culture and patient safety issues that can be used by all paediatric institutions

Summary

The 2006 Patient Safety Collaborative Annual Symposium; Promoting Patient Safety and Best Practices in Paediatrics through Standardization of Medication Practices and Delivery Protocols was planned to explore the challenges and opportunities for developing a national standardized best practice platform for our unique paediatric healthcare setting. The presentations set the stage for the discussions that explored some recommendations for initiatives to improve the safety of medication practices and delivery protocols. The CAPHC Patient Safety Collaborative will review these recommendations and will develop a strategy for bringing them to fruition.