The Canadian Association of Pediatric Health Centre's Paediatric Trigger Tool: Ready to go!!!!

CAPHC ACCSP

Anne Matlow MD FRCPC
for the Trigger Tool Design Group

October 19, 2008

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

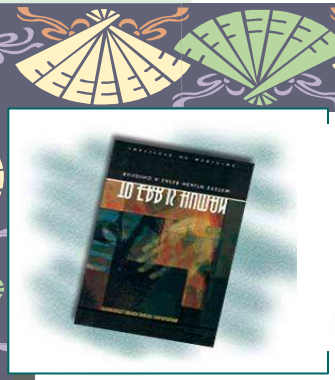
OBJECTIVES

- To review our path to date in the development of the Canadian Association of Pediatric Health Centre's Paediatric Trigger Tool, the CPTT
- To introduce the final CPTT
- To present future plans for the CPTT

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

2004: The Patient Safety Landscape



The Canadian Adverse Events Study: the incidence of adverse events among hospital patients in Canada

G. Ross Baker, Peter G. Norton, Virginia Flintoft, Régis Blais, Adalsteinn Brown, Jafna Cox, Ed Etchells, William A. Ghali, Philip Hébert, Sumit R. Majumdar, Maeve O'Beirne, Luz Palacios-Derflingher, Robert J. Reid, Sam Sheps, Robyn Tamblyn

ß See related article page 1688

Abstract

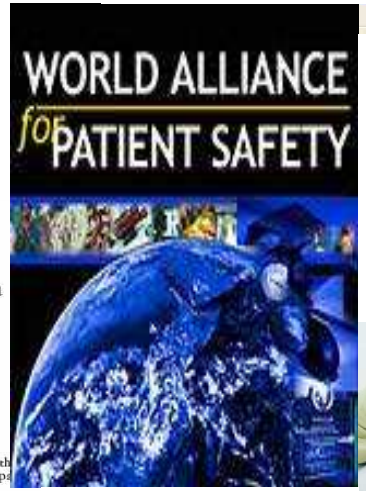
Background: Research into adverse events (AEs) has highlighted the need to improve patient safety. AEs are unintended injuries or complications resulting in death, disability or prolonged hospital stay that arise from health care management. We estimated the incidence of AEs among patients in Canadian acute care hospitals.

Methods: We randomly selected 1 teaching, 1 large community and 2 small community hospitals in each of 5 provinces (British Columbia, Alberta, Ontario, Quebec and Nova Scotia) and reviewed a random sample of charts for nonpsychiatric, nonobstetric adult patients in each hospital for the fiscal year 2000. Trained reviewers screened all eligible charts, and physicians reviewed the positively screened charts to identify

Canadian Patient Safety Institute, and many health organizations have initiated efforts to improve pa safety.

One important indicator of patient safety is the rate of AEs among hospital patients. AEs are unintended injuries or complications that are caused by health care management, rather than by the patient's underlying disease, and that lead to death, disability at the time of discharge or prolonged hospital stays.[1,2] Some AEs are the unavoidable consequences of health care, such as an unanticipated allergic reaction to an antibiotic. However, 37%–51% of AEs have been judged in retrospect to have been potentially preventable.[3-5]

In various countries, hospital chart reviews have revealed



CAPHC 2004 Annual Meeting
•Sharing our Wealth, Optimizing the Health of Canada's Children and Youth

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

Estimating Adverse Event Rates with Trigger Tools

Country	N	Year	# Trigger Positive	Incidence of AE
Canada	3,745	2000	1527 (40.7%)	7.5%
USA (U&C)	14,700	1992	2868 (19.5%)	2.9%
USA (NY)	30,195	1984	7817 (26.0%)	3.7%
Australia	14,179	1992	6210 (43.7%)	16.6%
UK	1,014	1999	405 (40.5%)	10.8%
N Z	1,326	1998	4197 (62.0%)	12.9%

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

We didn't know much about harm in pediatric in-patient care

- All adverse events: ~1.0/ 100 patients

  (Miller Pediatrics 2003 and 2004)

- Adverse drug events:
  - 2.3-11/ 100 admissions
  - 22- 60% preventable

  (Kaushal JAMA 2001; Holdsworth, APAM 2003; Takata, Pediatrics, 2008)

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

An Idea is Born at CAPHC's Patient Safety Collaborative Meeting, November 2004

pipsqc
pediatric international patient safety and quality collaborative

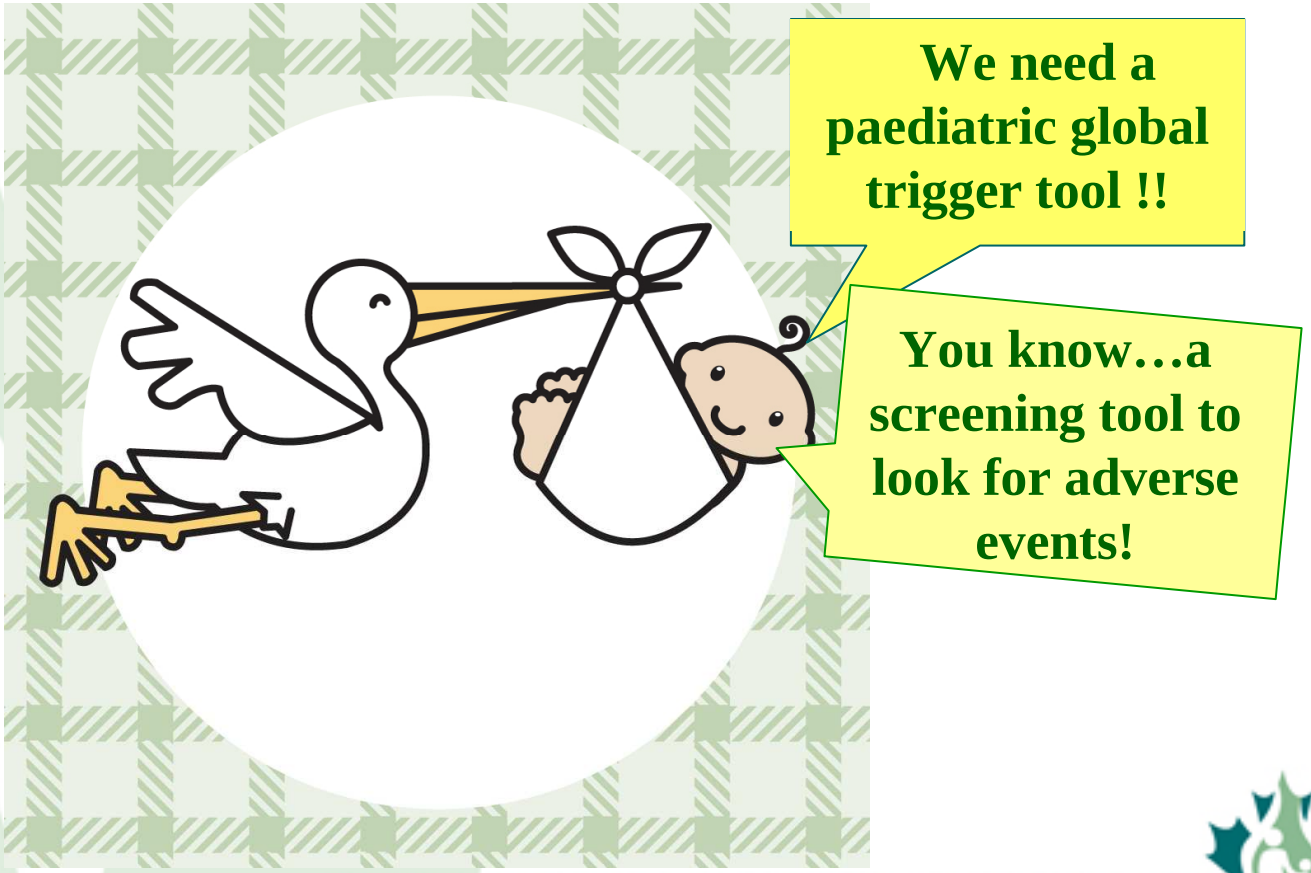
CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

An Idea is Born at CAPHC's Patient Safety Collaborative Meeting, November 2004

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

An Idea is Born at CAPHC's Patient Safety Collaborative Meeting, November 2004



pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

Canadian Association of Pediatric Health Centres Trigger Tool Design Group

- Anne Matlow, Chair
- G. Ross Baker
- Barbara Brady-Fryer
- Gerarda Cronin
- Mark Fleming
- Virginia Flintoft
- Mary-ann Hiltz
- Michele Lahey
- Cheri Nijssen-Jordan
- Elaine Orrbine
- Margaret Zimmerman

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey: environmental scan for triggers

BAKER-NORTON STUDY

Recherche

The Canadian Adverse Events Study: the incidence of adverse events among hospital patients in Canada

G. Ross Baker, Peter G. Norton, Virginia Flintoft, Régis Blais, Adalsteinn Brown, Jaïna Cox, Ed Etchells, William A. Ghali, Philip Hébert, Sumit R. Majumdar, Maeve O'Beirne, Luz Palacios-Derflingher, Robert J. Reid, Sam Sheps, Robyn Tamblyn

ß See related article page 1688

Abstract

Background: Research into adverse events (AEs) has highlighted the need to improve patient safety. AEs are unintended injuries or complications resulting in death, disability or prolonged hospital stay that arise from health care management. We estimated the incidence of AEs among patients in Canadian acute care hospitals.

Methods: We randomly selected 1 teaching, 1 large community and 2 small community hospitals in each of 5 provinces (British Columbia, Alberta, Ontario, Quebec and Nova Scotia) and reviewed a random sample of charts for nonpsychiatric, nonobstetric adult patients in each hospital for the fiscal year 2000. Trained reviewers screened all eligible charts, and physicians reviewed the positively screened charts to identify AEs and determine their preventability.

Canadian Patient Safety Institute, and many health care organizations have initiated efforts to improve patient safety.

One important indicator of patient safety is the rate of AEs among hospital patients. AEs are unintended injuries or complications that are caused by health care management, rather than by the patient's underlying disease, and that lead to death, disability at the time of discharge or prolonged hospital stays.[1,2] Some AEs are the unavoidable consequences of health care, such as an unanticipated allergic reaction to an antibiotic. However, 37%–51% of AEs have been judged in retrospect to have been potentially preventable.[1-5]

In various countries, hospital chart reviews have revealed that 2.9%–16.6% of patients in acute care hospitals experi-

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey: environmental scan for triggers

BAKER-NORTON STUDY

94 !

triggers

Recherche

The Canadian Adverse Events Study: the incidence of adverse events among hospital patients in Canada

G. Ross Baker, Peter G. Norton, Virginia Flintoft, Régis Blais, Adalsteinn Brown, Jaïna Cox, Ed Etchells, William A. Ghali, Philip Hébert, Sumit R. Majumdar, Maeve O'Beirne, Luz Palacios-Derflingher, Robert J. Reid, Sam Sheps, Robyn Tamblyn

ß See related article page 1688

Abstract

Background: Research into adverse events (AEs) has highlighted the need to improve patient safety. AEs are unintended injuries or complications resulting in death, disability or prolonged hospital stay that arise from health care management. We estimated the incidence of AEs among patients in Canadian acute care hospitals.

Methods: We randomly selected 1 teaching, 1 large community and 2 small community hospitals in each of 5 provinces (British Columbia, Alberta, Ontario, Quebec and Nova Scotia) and reviewed a random sample of charts for nonpsychiatric, nonobstetric adult patients in each hospital for the fiscal year 2000. Trained reviewers screened all eligible charts, and physicians reviewed the positively screened charts to identify AEs and determine their preventability.

Canadian Patient Safety Institute, and many health care organizations have initiated efforts to improve patient safety.

One important indicator of patient safety is the rate of AEs among hospital patients. AEs are unintended injuries or complications that are caused by health care management, rather than by the patient's underlying disease, and that lead to death, disability at the time of discharge or prolonged hospital stays.[1,2] Some AEs are the unavoidable consequences of health care, such as an unanticipated allergic reaction to an antibiotic. However, 37%–51% of AEs have been judged in retrospect to have been potentially preventable.[1-5]

In various countries, hospital chart reviews have revealed that 2.9%–16.6% of patients in acute care hospitals experi-

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey

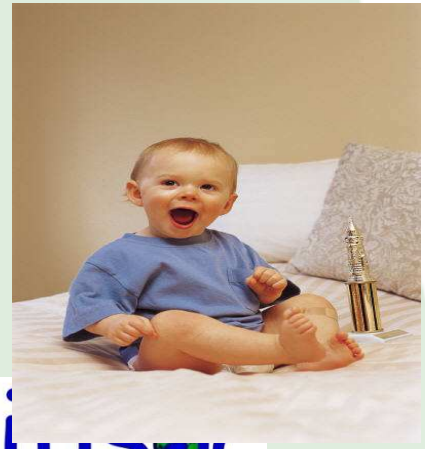
Preliminary CPTT with **47** triggers by risk assessment and consensus

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey

Preliminary CPTT with 47 triggers by risk assessment and consensus



pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey

Preliminary CPTT with 47 triggers by risk assessment and consensus

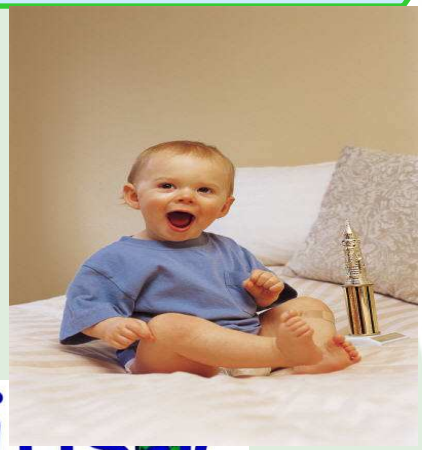
pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey

Preliminary CPTT with 47 triggers by risk assessment and consensus

Feasibility Testing:
40 charts in each of 3 centres in Alberta



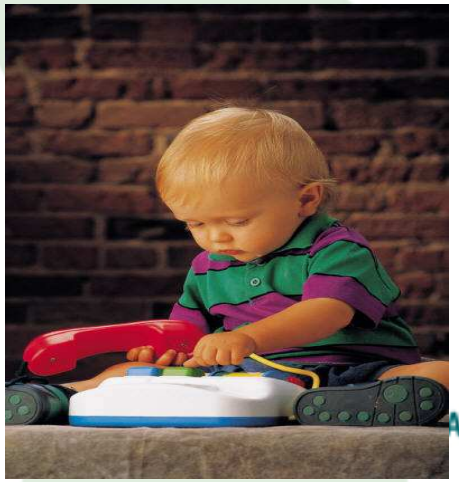
pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey

Preliminary CPTT with 47 triggers by risk assessment and consensus

Feasibility Testing: 40 charts in each of 3 centres in Alberta



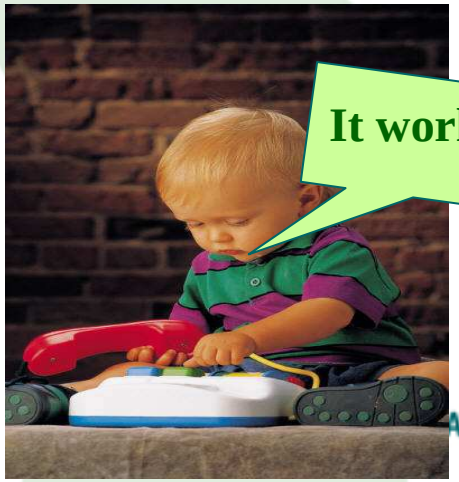
pipsqc
pediatric international patient safety and quality collaborative

ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey

Preliminary CPTT with 47 triggers by risk assessment and consensus

Feasibility Testing: 40 charts in each of 3 centres in Alberta



pipsqc
pediatric international patient safety and quality collaborative

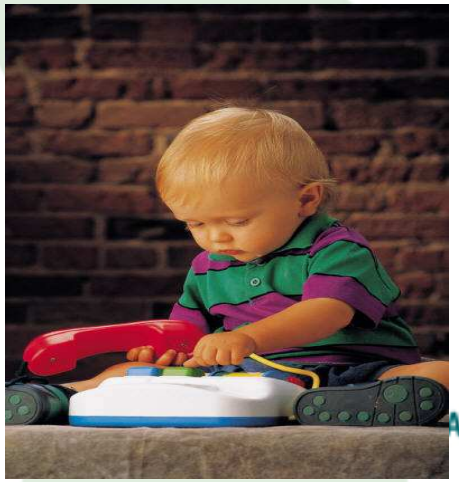
ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey

Preliminary CPTT with 47 triggers by risk assessment and consensus

Feasibility Testing: 40 charts in each of 3 centres in Alberta

Validation: 591 Charts in 6 centres



pipsqc
pediatric international patient safety and quality collaborative

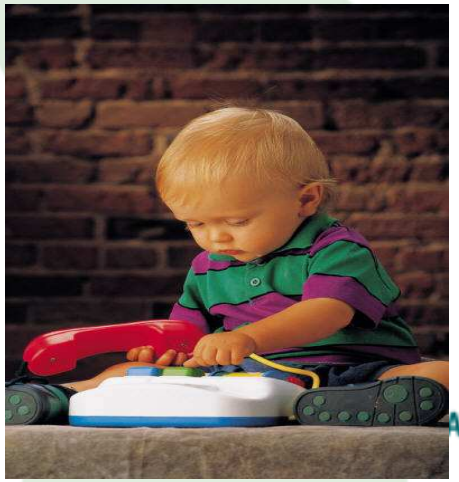
ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

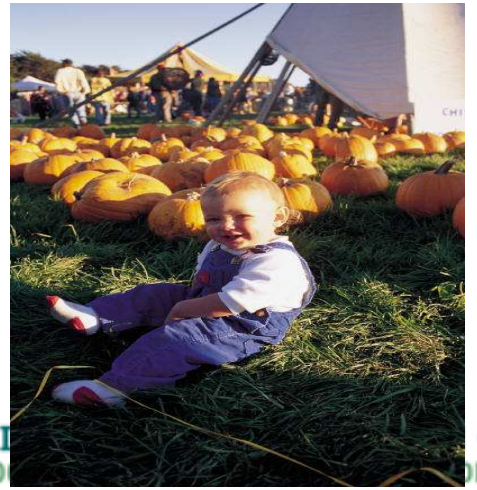
The Journey

Preliminary CPTT with 47 triggers by risk assessment and consensus

Feasibility Testing: 40 charts in each of 3 centres in Alberta

Validation: 591 Charts in 6 centres





pipsqc
pediatric international patient safety and quality collaborative

ASSOCI
ASSO

CENTRES
DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

PRELIMINARY CANADIAN PEDIATRIC TRIGGERS: n=47

	CARE MODULE
C1	Transfusion/ use of blood products
C2	Any code or arrest
C3	Dialysis (New Onset)
C5	Diagnostic Imaging for Embolus/thrombus with/without confirmation

	MEDICATION MODULE
M6	Vitamin K (excluding newborns)
M7	Benadryl (Diphenhydramine) - for symptoms of allergic reaction
M8	Romazicon (Flumazenil)
M9	Narcan (Naloxone)
M10	Anti-emetic Use (for treatment of symptoms)
M11	Over sedation / hypotension
M12	Abrupt medication stop
M14	Antidiarrheals - Diphenoxylate (Lomotil), Loperamide (Imodium), Kaopectate, Pepto-Bismol

Adverse event

Criteria

1. Injury or complication
2. Associated Disability
   - Prolonged LOS
   - Impairment at discharge
   - Subsequent hospitalization after index stay
   - Death
3. Causation
   - Caused by medical management rather than underlying disease process

pipsqc
pediatric international patient safety and quality collaborative

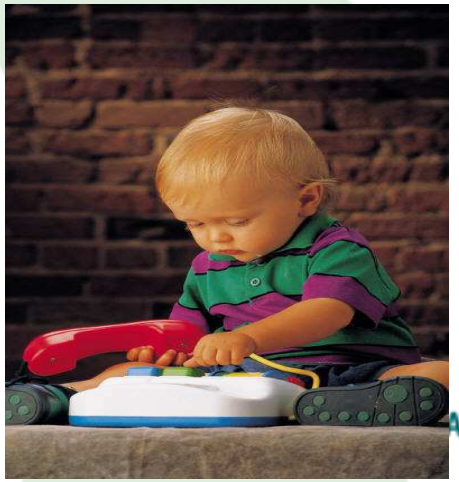
CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Journey

Preliminary CPTT with 47 triggers by risk assessment and consensus

Feasibility Testing: 40 charts in each of 3 centres in Alberta

Validation: 591 Charts in 6 centres



Yes… we found them!

pipsqc
pediatric international patient safety and quality collaborative

ASSOC
ASS

CENTRES
E SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

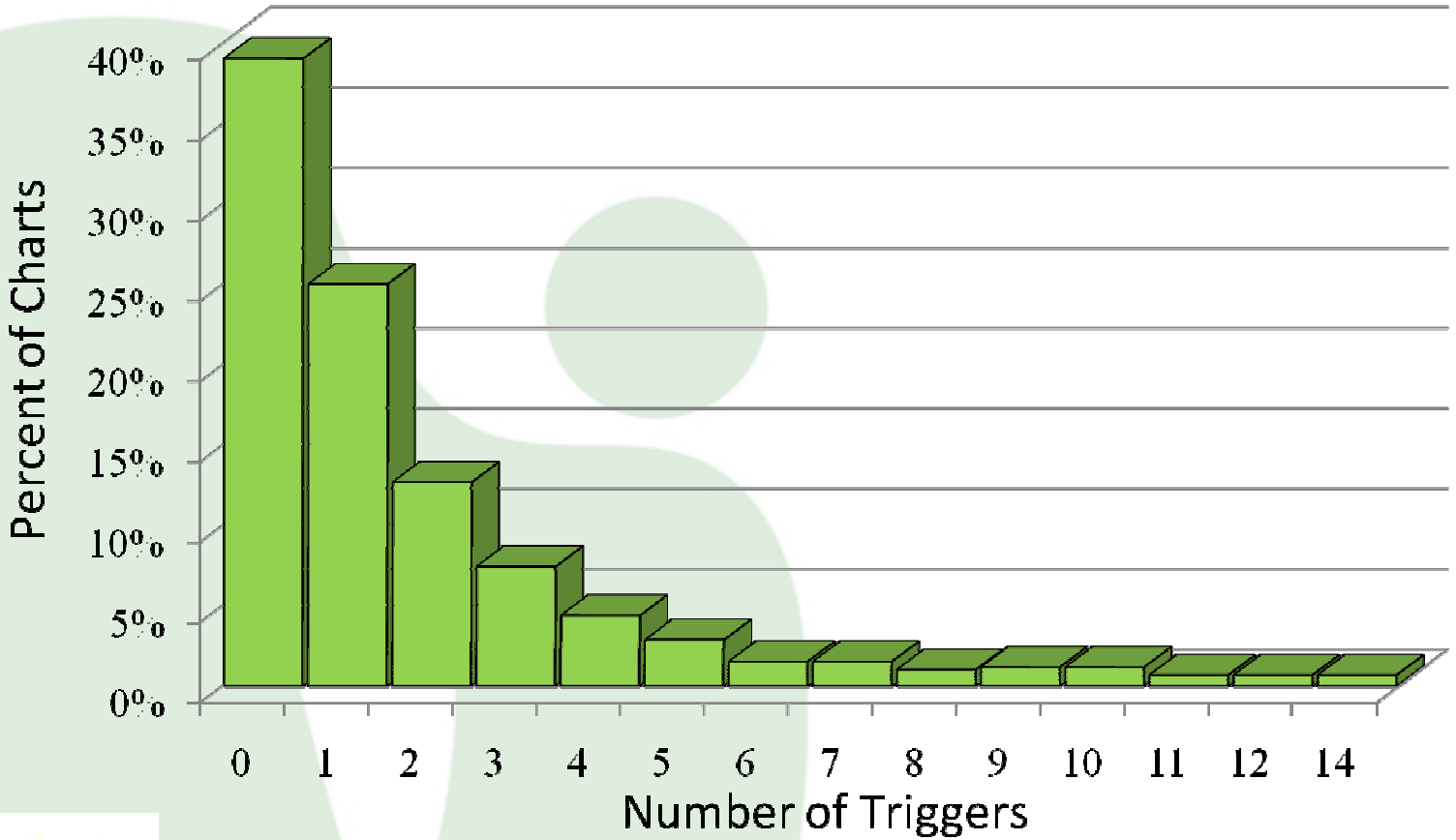
Trigger Positive Charts

Trigger	Charts	Percent
+ve	361	61.08%
-ve	230	38.92%
	591 charts	

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

Frequency of Triggers per Chart



pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

Most Frequently Identified Triggers

Module	#	Trigger	# of Charts with Trigger
Care	01	Transfusion/ use of blood products	89
Med	04	Anti-emetic use (for symptoms)	85
Care	16	Unplanned admission (including readmission) within the 3 months prior to the index admission	80
Care	11	Cranial imaging in infants ≤ 3 mo	67
Lab	08	Potassium: K+ < 3.0 mmol/L or > 6.0 mmol/L	59
Lab	10	Hypoxia: O_2 Sat < 75%	52

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

% of patients with AEs

AE	Patients	Percent
+ve	89	15.1%
-ve	502	84.9%

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

Trigger vs Adverse Event

	Adverse Event		
Trigger	Yes	No	Total
Yes	78	283	361
No	11	219	230
Total	89	502	591

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

Physician /nurse agreement

	#	RN	MD
NO HARM	**442**	**2**	**34**
HARM + intervention	**80**	**38**	**22**
HARM + ↑ hospitalization	**56**	**41**	**25**

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

AE by Age Group

	Adverse Event		
Age Group	Yes	No	Total
0 - 28 days	33 (22%)	117	150
29 – 365 days	21 (14%)	127	148
>1 - 5 years	17 (15%)	98	115
> 5 years	18 (10%)	160	178
Total	89	502	591

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

MOVING FORWARD

47

35

Inter-rater agreement for nurses detecting triggers 88%, for coding of harm by physicians was 78%

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN

RIQUES
WWW.CAPHC.ORG

CARE MODULE

Transfusion/ use of blood products
Any code or arrest
Unplanned admission including readmission
Infection of any kind
In hospital stroke
Transfer to higher level of care
Catheter infiltration/burn
Complication related to Central Venous Catheter
Necrotizing Enterocolitis
Cranial imaging in infants ≤ 3 mos.
Extreme temperature - ≤35 degrees Centigrade (35oC) OR ≥ 41 degrees Centigrade
Intubation / reintubation / Accidental extubation
Unexpected Death
Emergent C-section delivery (Neonate Only)
Dissatisfaction with care / evidence of complaint lodged / litigation

LABORATORY MODULE
Abrupt drop >25% Hgb or Hct
Platelet count < 50,000/mm3 (50 X 10 e9L)
PTT>100 secs or INR>6
D-dimer positive
Sodium: 120 mmol/L > Na > 150 mmol/L
Potassium: 3.0 mmol/L > K+ > 6.0 mmol/L
Rising BUN/Creat > 2 x baseline
Hypoxia: O2 Sat < 75%
Positive blood culture
Gentamicin/Tobramycin: (except CF) Trough <2 mg/L or Peak >10mg

SURGICAL MODULE
Unplanned or Return To surgery
Intra-operative **IV** Epinephrine, Norepinephrine, Naloxone, Flumazenil
Removal / injury or repair of organ
Wrong site / wrong procedure / wrong patient
MEDICATION MODULE
Vitamin K (excluding newborns)
Heparin or Low Molecular Weight Heparin
ICU MODULE
Readmission to ICU
In-unit Procedure
Failed extubation
OTHER

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

CPTT: Ready to go!!

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

CPTT: Ready to go!!

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

CPTT: Ready to go!!

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

CPTT: Ready to go!!

QI

CPAES

research

SAFE HEALTHCARE FOR CHILDREN

pipsqc
pediatric international patient safety and quality collaborative

C HEALTH CENTRES
CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

Our sincere thanks to all our Funders

- Health Canada
- Canadian Medical Protective Association
- Partnership funding from
  - Rx & D
  - Manitoba Institute of Patient Safety
  - Winnipeg Regional Health Authority
  - Calgary Health Region
  - Stollery Children's Hospital, Edmonton
  - IWK Health Centre, Halifax
  - Spelman Cronin Consulting
  - CAPHC

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG

The Canadian Association of Pediatric Health Centre's Paediatric Trigger Tool: Ready to go!!!!

CAPHC ACCSP

THANK YOU!!

pipsqc
pediatric international patient safety and quality collaborative

CANADIAN ASSOCIATION OF PAEDIATRIC HEALTH CENTRES
ASSOCIATION CANADIENNE DES CENTRES DE SANTÉ PÉDIATRIQUES
WWW.CAPHC.ORG