



Winnipeg Regional
Health Authority
Office régional de la
santé de Winnipeg



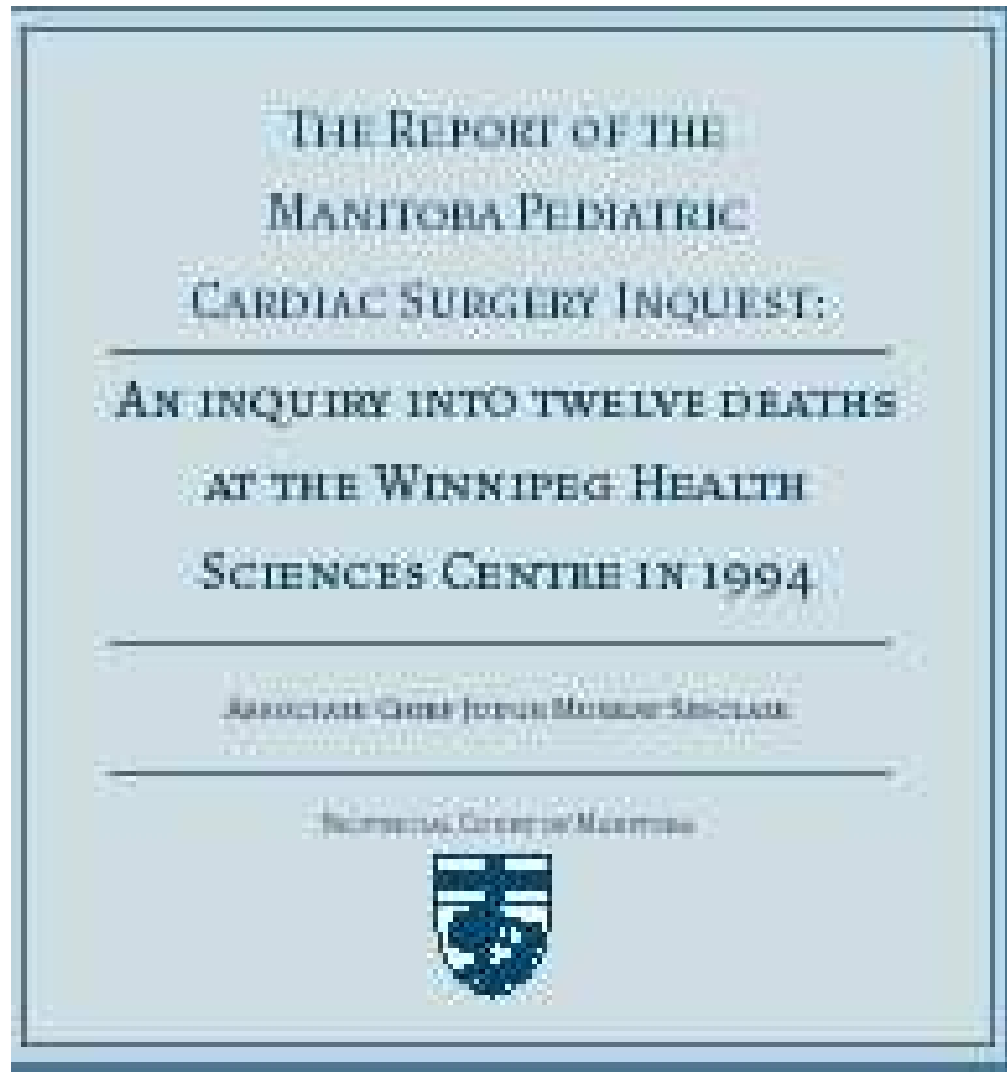
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Learning from Critical Incident Reviews: Seven years of experience using the London Protocol

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Objectives

- **Understand the main types of contributory factors observed in clinical critical incidents**
- **Be aware of the utility of the London Protocol as a method of investigation**
- **Know how to apply the protocol in your own organization**
- **Understand the challenges of getting your recommendations implemented**



<http://www.pediatriccardiacinquest.mb.ca/>

Clinical Risk Management

An approach to improving the safety and quality of care, with special emphasis on occasions in which patients are, or may be, harmed by treatment

Vincent, 2001

Methods of Analyzing Systems Failure



PROACTIVE

Disturbance-Effect-Barrier analysis (DEB)

Anticipatory Failure Analysis

- Hazard Operability Study
- **Failure Mode & Effects Analysis (FMEA)**
- Hazard Analysis & Critical Control Point
- Fault tree analysis

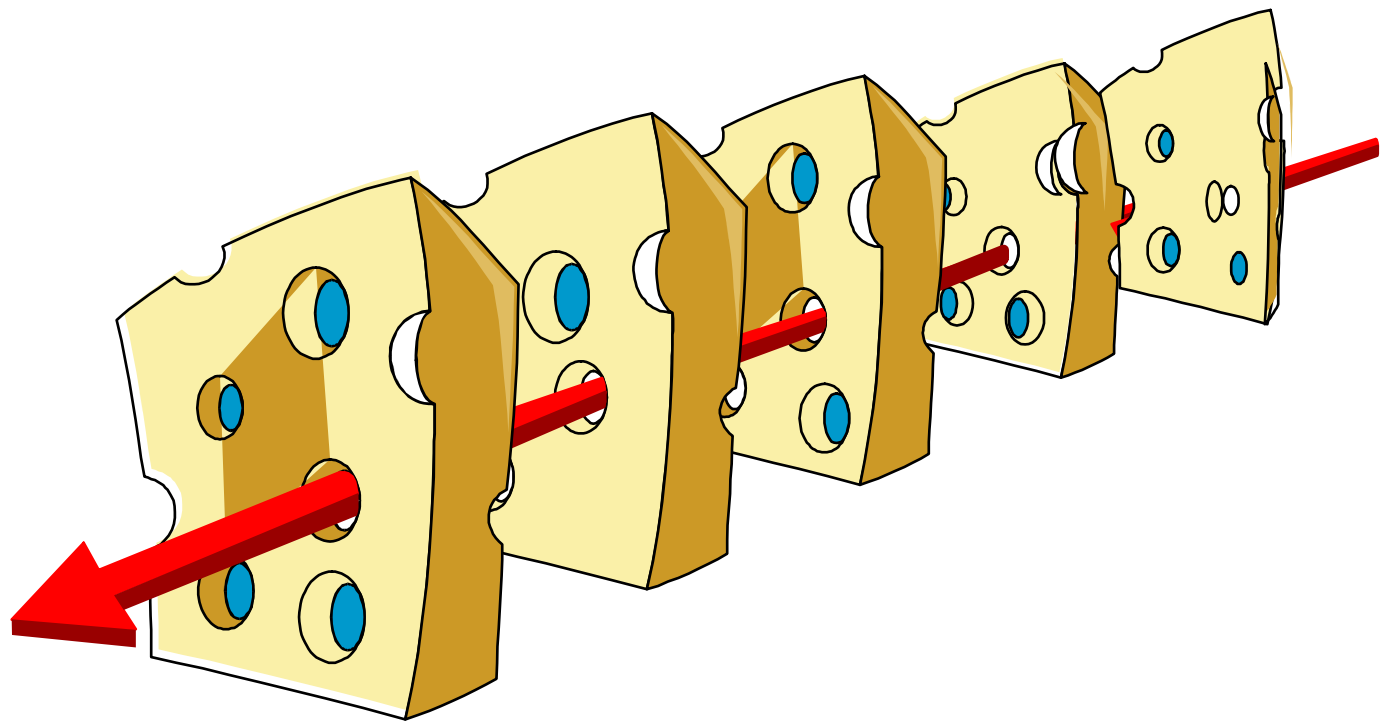
REACTIVE

Man-Team-Organization (MTO)

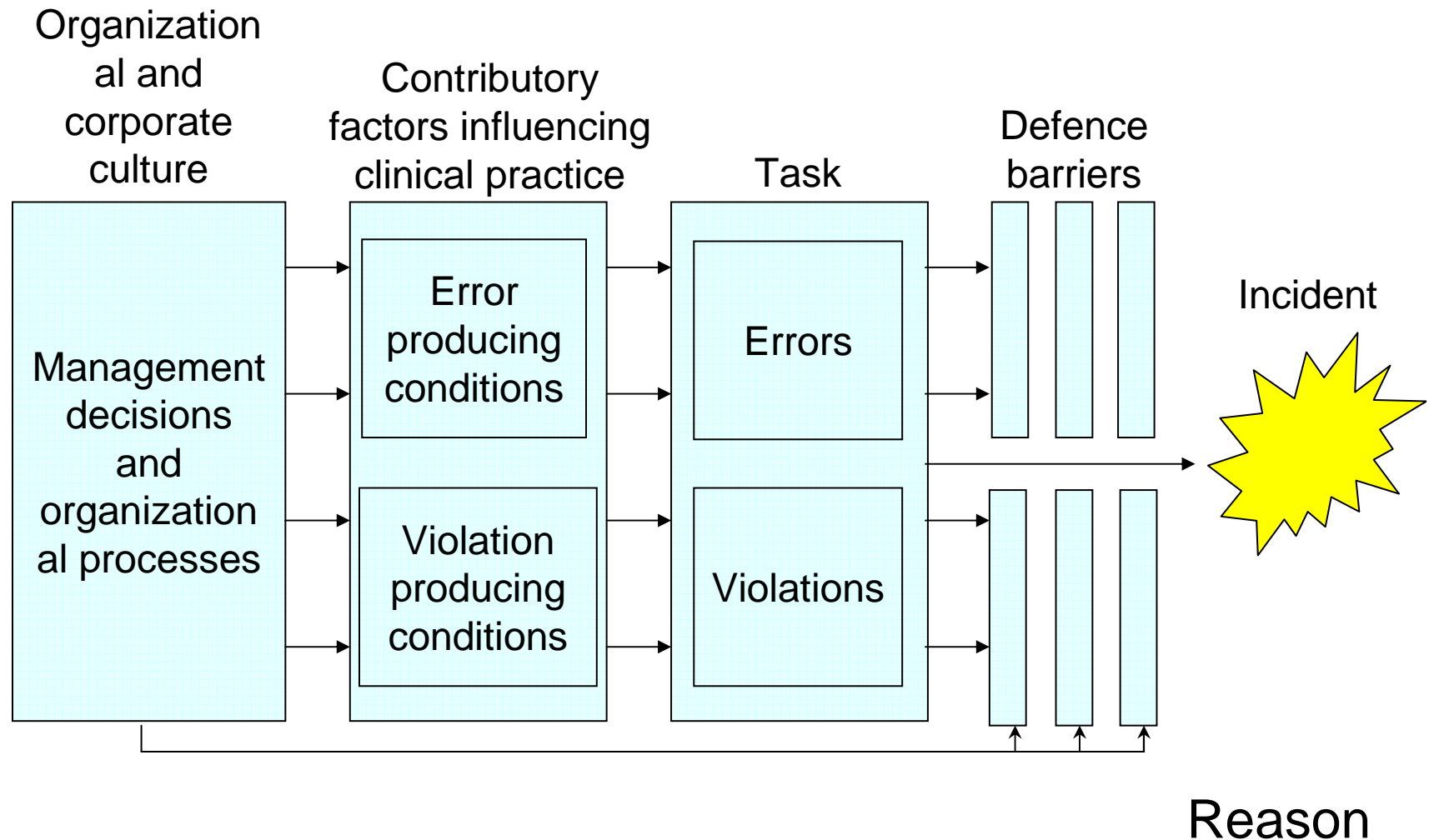
Root Cause Analysis (RCA)

London Protocol

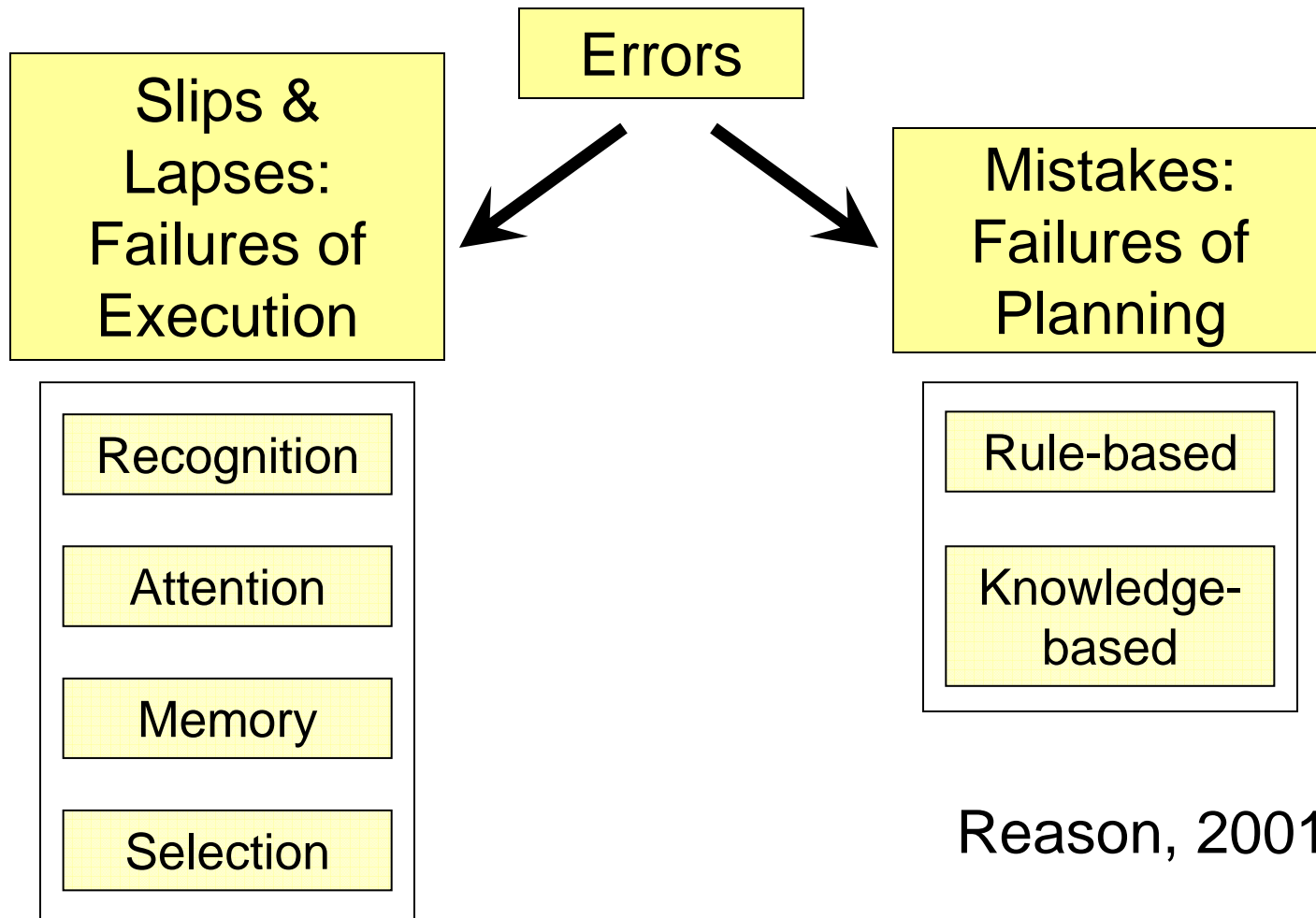
The holes in the Swiss Cheese



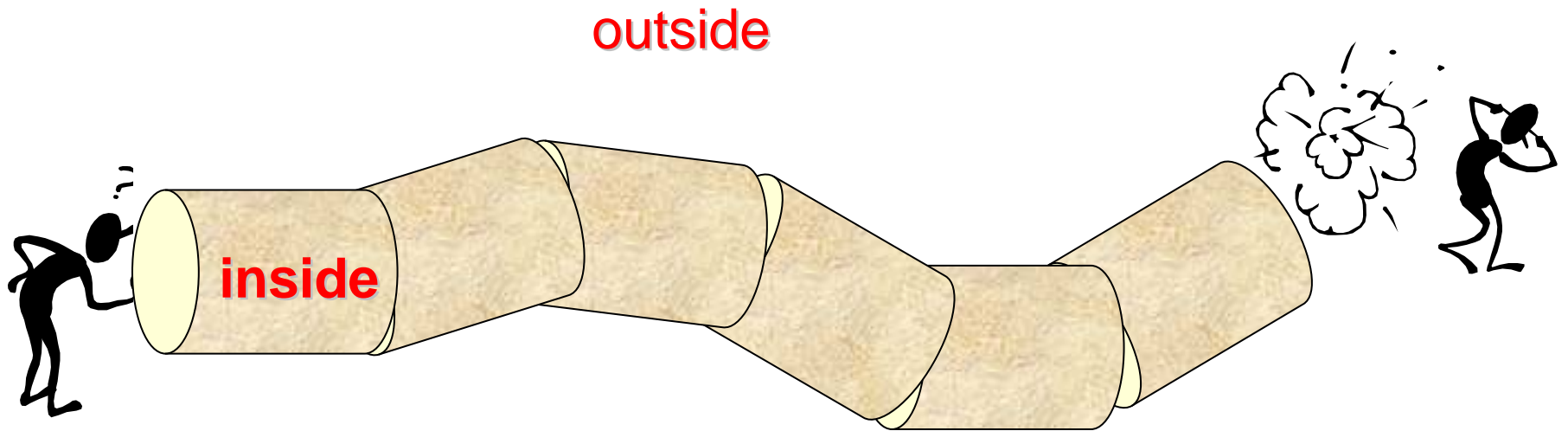
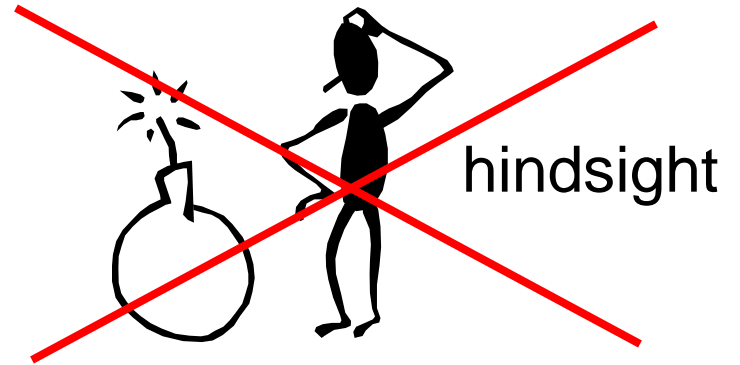
Anatomy of an Incident



Types of Error



Reason, 2001





Pilot Study

To determine the utility of subjecting clinical incidents on a high risk neonatal service to systems investigation, using

A Protocol for the Investigation and Analysis of Clinical Incidents. Dr. Charles Vincent, Clinical Risk Unit and Association for Litigation and Risk Management, London, 1999

What we learnt in the pilot study

This takes time!

- Sometimes 6-8 interviews

Staff did not always recognize the importance of timely reporting

Every case had multiple contributing factors

Task problems and institutional problems were much more common than people problems

Some problems can be solved quickly

The protocol is a great teaching tool!

System Improvements arising from 8 reviews

Call room too far away



Call room relocated

Short staffing at night



Non-value added activities eliminated

Failure to adhere to Code of Conduct



Code of Conduct enforced

Hierarchical thinking in new IMG



Mentorship and leadership training given

No protocol



Protocol developed and implemented

Shortage of educators



Additional educators recruited

London Protocol

Care Management Problem

Clinical Context

Factor types	Contributory factors
Patient factors	
Task & Technology factors	
Individual (staff) factors	
Work Environment Factors	
Organizational & Management Factors	
Institutional Factors	

Actions, By Whom, When, Follow-up

Risk Rating

The London Protocol 2004
<http://csru.org.uk/index.htm>

Application of the Protocol in the WRHA Child Health Program, WRHA, 2002-2008

~40 additional case reviews completed to date

Involvement of multidisciplinary teams, staff, managers,
trainees, families

Multisite teams

Collaboration with other programs and external partners

Mentoring

Debriefings and feedback

Great teambuilding exercise

Cronin, CMG. Five Years of Learning from Analysis of Critical Occurrences in Pediatric Care using the London Protocol. Healthcare Quarterly, Volume 9, Special Issue, October 2006, pp. 16-21.

Common themes (n = 30 reviews in acute pediatric care)

	Number	%
Medication	15	50%
Resuscitation	4	13%
Patient ID	4	13%
IV fluids/pumps	2	7%
Child Protection	1	3%
Ventilation	1	3%
Drug tampering	1	3%
Abduction	1	3%
Bulk oxygen	1	3%



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Top Ten Things we've Learnt

1. Acute pediatric care is a tightly coupled system with multiple high risk processes

Characteristics of High Risk Processes (in which a failure is likely to jeopardize safety)

- Variable input
- Complexity
- Lack of standardization
- Tight coupling
- Heavily dependent on human intervention
- Time constraints that are too tight or too loose
- Hierarchical versus team orientation

2. Most incidents have multiple contributory factors, and patient complexity is a prominent one!

Contributory Factors

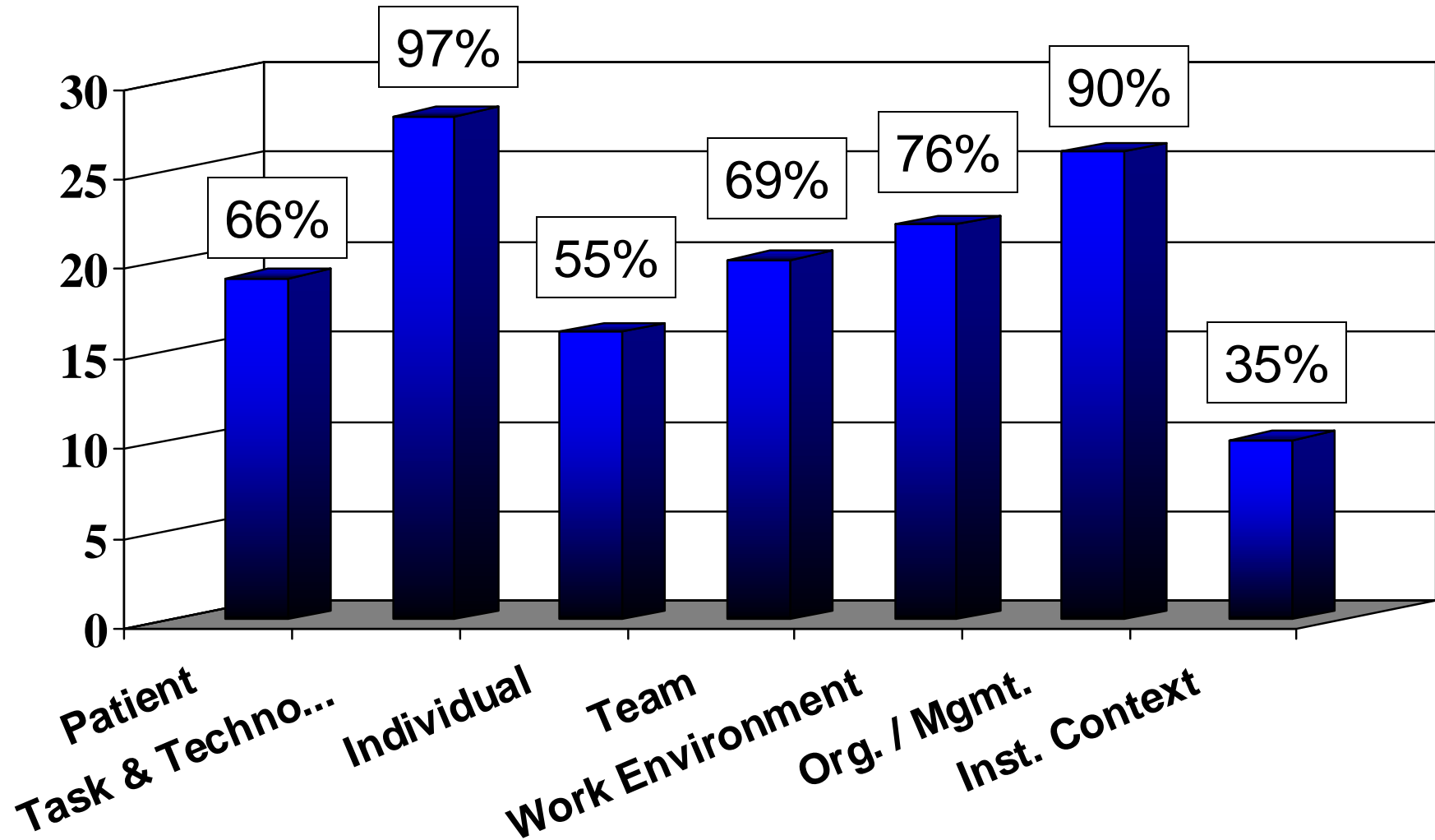


EXHIBIT 1A: Actual Administration of Vancomycin

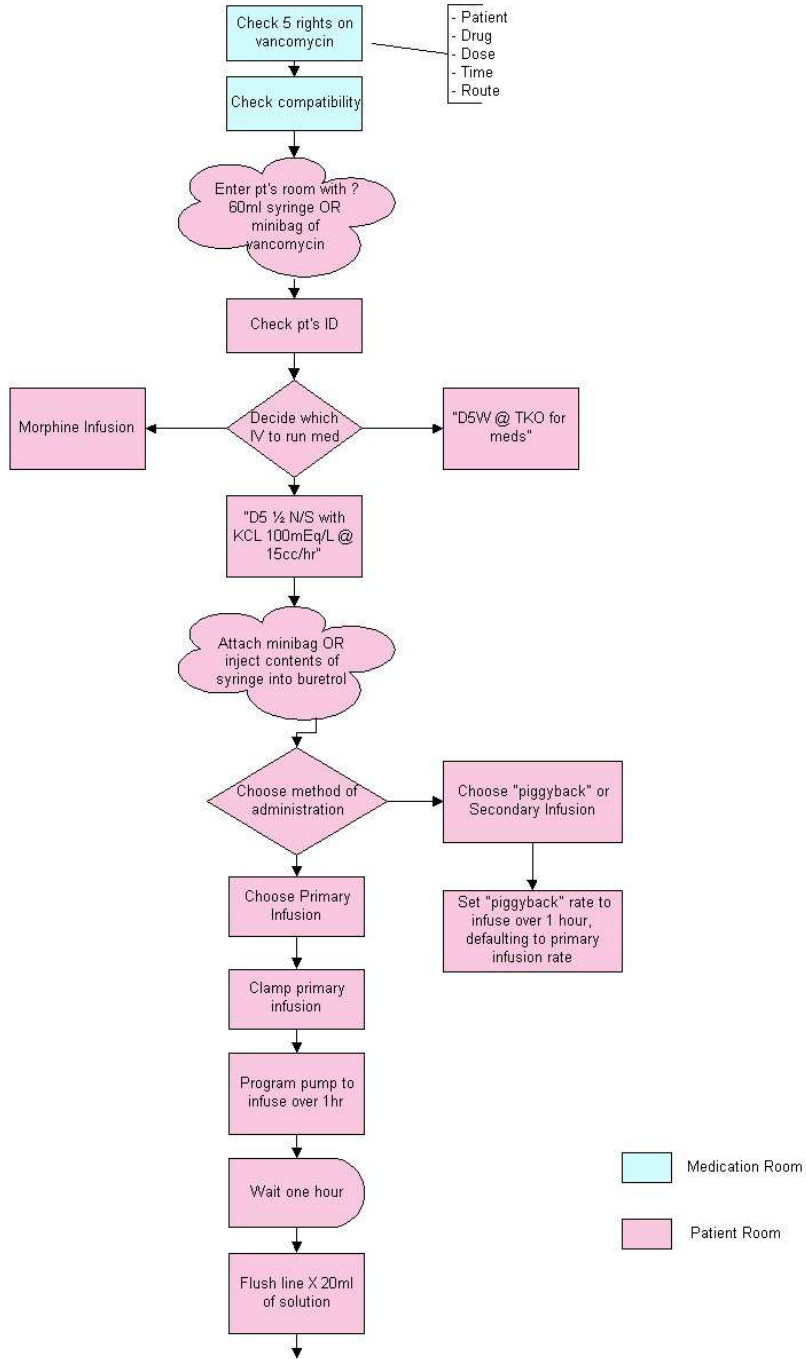
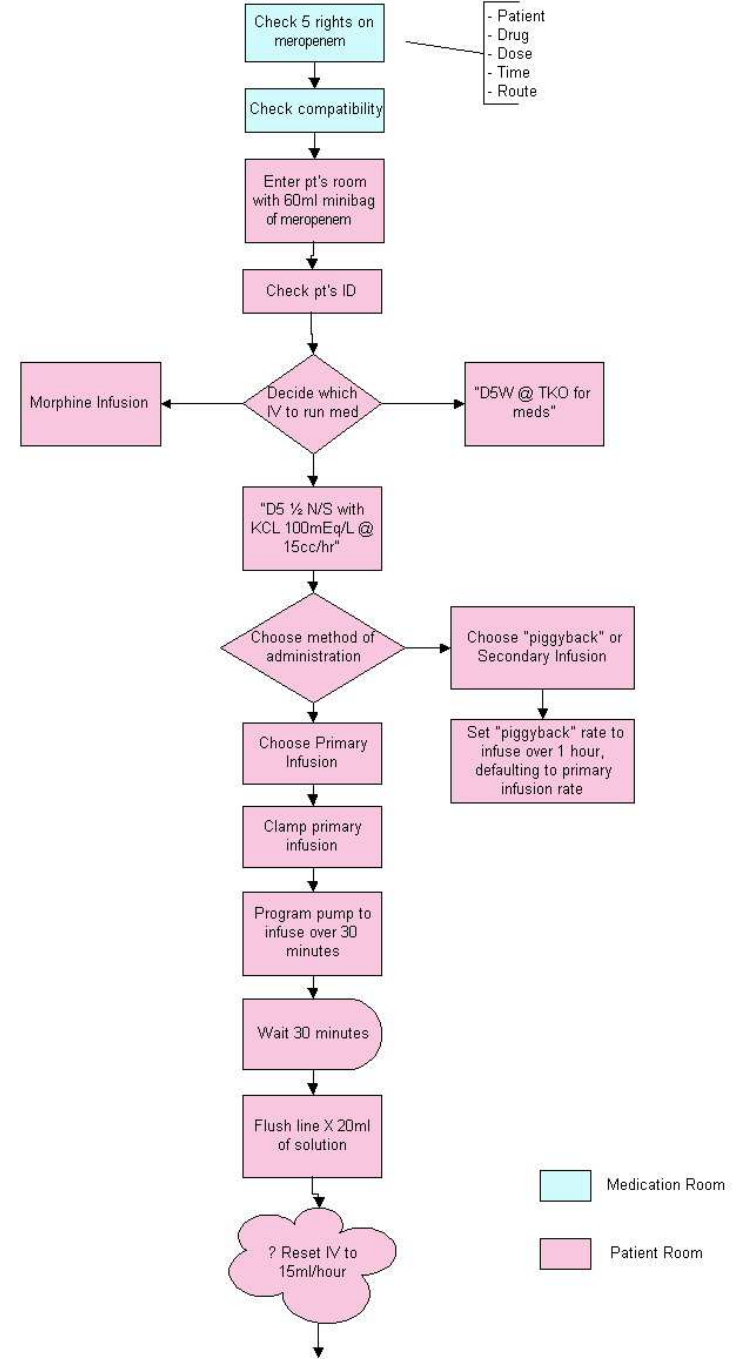


EXHIBIT 1B: Actual Administration of Meropenem



3. Many of the errors reported reach the patient, but only a minority cause harm

Harm

	Number	%
Errors that reached the patient	23 / 30	77%
Errors that caused harm	10 / 30	33%

**4. Pediatric Rapid Response
Teams are definitely
worthwhile – provided they
are available 24/7**

Pediatric Rapid Response Team

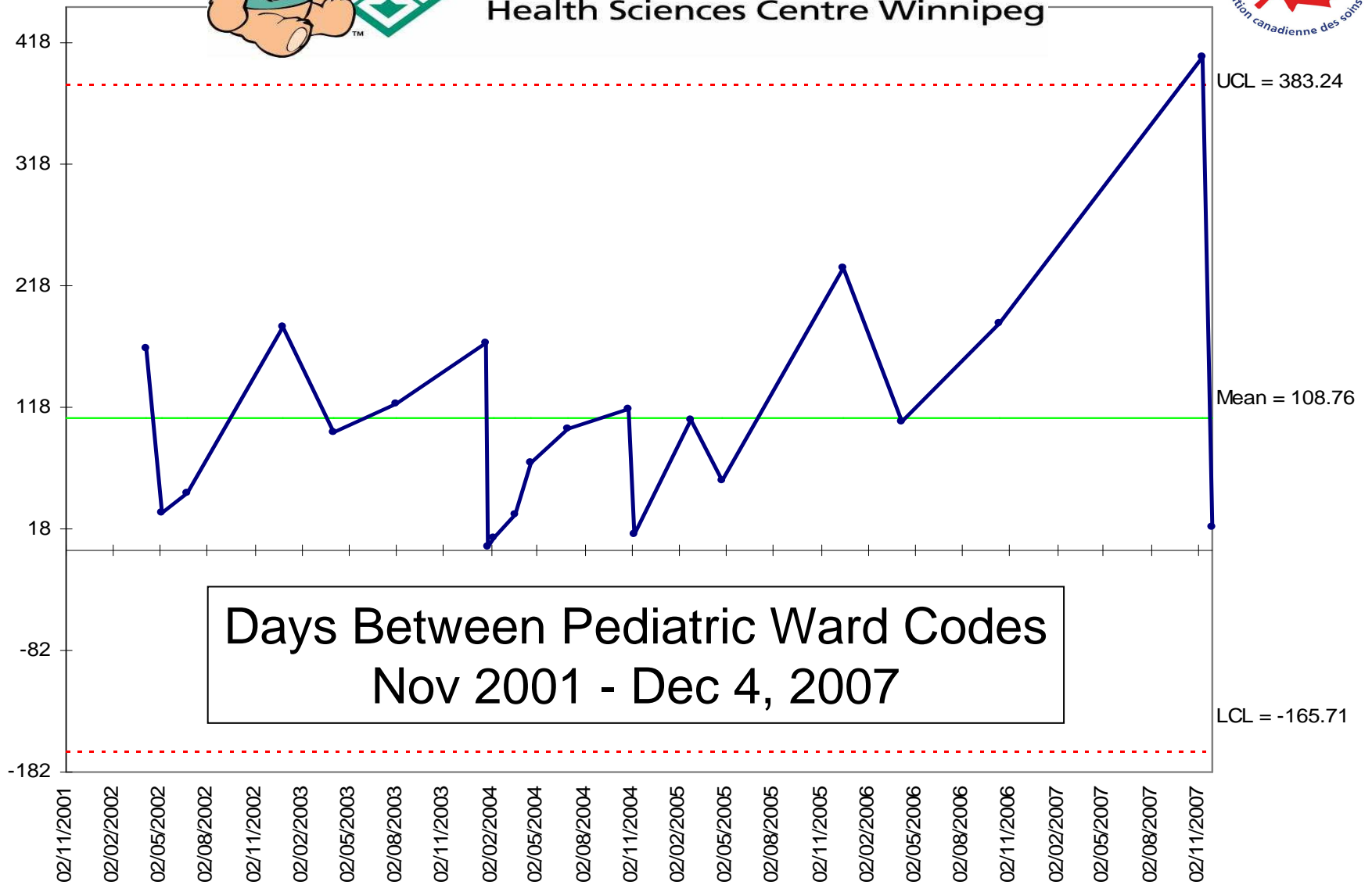
- Primary Goal: decrease ward codes. In Year 1 (October 10, 2006 to October 9, 2007) there was one cardiorespiratory arrest on the inpatient wards.
- In the second year there have been two codes, both related to upper airway obstruction.
- The number of ward codes per 1000 discharges decreased from an annual rate range of 0.26 to 1.71 per 1000 discharges to **0.07 per 1000** for 2006/2007.



Children's Hospital
Health Sciences Centre Winnipeg



Children's Hospital
Health Sciences Centre Winnipeg



**5. The authority gradient is
alive and well in pediatric
acute care**



<http://psnet.ahrq.gov/glossary.aspx>

Authority Gradient - Refers to the balance of decision-making power or the steepness of command hierarchy in a given situation.

Members of a crew or organization with a domineering, overbearing, or dictatorial team leader experience a steep authority gradient. Expressing concerns, questioning, or even simply clarifying instructions would require considerable determination on the part of team members who perceive their input as devalued or frankly unwelcome.

Most teams require some degree of authority gradient; otherwise roles are blurred and decisions cannot be made in a timely fashion. However, effective team leaders consciously establish a command hierarchy appropriate to the training and experience of team members.

Authority gradients may occur even when the notion of a team is less well defined. For instance, a pharmacist calling a physician to clarify an order may encounter a steep authority gradient, based on the tone of the physician's voice or a lack of openness to input from the pharmacist. A confident, experienced pharmacist may nonetheless continue to raise legitimate concerns about an order, but other pharmacists might not.

6. Medication errors account for half of all significant incidents in hospitalized children

Central Venous Catheter

Epidural Catheter



Gastrostomy Tube

Arterial Catheter

**7. Violations do occur, and
must be dealt with justly**

Types of Violation

Unintentional (ERRONEOUS VIOLATIONS)

Intentional

- Intent to cause damage (SABOTAGE)
- No intent to cause damage
 - Routine violations
 - Natural tendency to cut corners (DESGN PROBLEMS)
 - Toleration of deviance (CULTURE)
 - Exceptional (INEVITABLE)

**8. Accountability matters, both
for individuals and for
organizations**



Fig. 2. Extent of the liquid oxygen leak. The main oxygen storage tank A (*right*) and the primary reserve tank B (*left*) are shown. Eight thousand gallons of liquid oxygen escaped from tank A, making it temporarily impossible for the engineers to assess either the primary or secondary reserve tank. At the time of the leak, medical center oxygen use was at a maximum, with approximately 30 operating rooms in use. At the time of this photograph, the temperature was 56°F and the relative humidity was 100%.

**9. The learning organization
is inclusive: partners need
to learn too**



John
April 2001 - August 2003



How the death of five-year-old Jeffrey Baldwin could - and should - have been prevented.



THE
VICTORIA CLIMBIE
INQUIRY

10. The road from investigation to implementation of countermeasures is political



Legislative support for patient safety



Know YOUR Province's Evidence Act

Some (e.g. Quebec) provide complete protection for all Quality activities; others are more restrictive

Saskatchewan requires RCA after a long list of specific adverse events

Manitoba defines critical incidents by 4 criteria and requires the RHA to report, investigate, disclose and mitigate

Manitoba Apology Act January 2008

A yellow starburst graphic with a black outline, containing the word 'NEW!' in red, bold, uppercase letters.

NEW!

“One investigator described how the writing and inclusion of recommendations is heavily determined by who is going to be on the committee assessing the recommendations for implementation. Language may be adjusted or changed, some recommendations may be left out in order to increase the chances for others. This illustrates that the road from investigation to implementation of countermeasures is largely a political one. Really good investigations may reveal systemic shortcomings that necessitate fundamental interventions which are too expensive or sensitive to be accepted.”

- Dekker

Elementary, my dear Watson!



Case #1:

What contributing factors can you find in the story?

Case #2:

What would you do now?

References

Cronin, CMG. Five Years of Learning from Analysis of Critical Occurrences in Pediatric Care using the London Protocol. *Healthcare Quarterly*, Volume 9, Special Issue, October 2006, pp. 16-21. Available at <http://www.longwoods.com/product.php?productid=18449&cat=452&page=1>

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Thank you!