



Pediatric Symposium

CQI Aggregate Analysis Trends in the Data

Data & Analytics
September, 2010

Children's Hospitals' Data Analysis

- **CQI Data from 14 Children's Hospitals**
- **February 2010– July 2010**
 - Drug/Fluid Alerts
 - Overrides
 - Possible harmful events averted
 - Guardrails[®] Suite Usage

Drugs/ Fluids with most alerts

- TPN
- IV Fluid, Unspecified
- Vancomycin
- Morphine
- Fentanyl
- Cefotaxime
- Heparin
- Fat emulsion 20%
- Gentamycin
- Midazolam

Guardrails® CQI Data Trends

Clinician Response to Alerts

- 83% overridden
- 10% reprogrammed
- Remainder cancelled or “other”

Drugs/ Fluids with most overrides

- TPN
- IV Fluid, Unspecified
- Morphine
- Vancomycin
- Fentanyl
- Cefotaxime
- Sodium Chloride 0.9%
- Heparin
- Midazolam
- Gentamycin

Morphine – Example Guardrails® Top 3 Alerts Overridden

- PCA Continuous Dose
- Continuous Dose
- PCA Dose

Harm Index Description

- Events averted are categorized into three possible categories:

Harm Index Category
Minimal (No to Minor Clinical Effect)
Moderate (Probable Significant Clinical Effect)
Severe (Potentially Life Threatening)

- Severe category represents potential Preventable Adverse Drug Event (PADE)

Harm Index

Harm Index Category	
Minimal (No to Minor Clinical Effect)	65%
Moderate (Probable Significant Clinical Effect)	22%
Severe (Potentially Life Threatening)	13%

Examples of Severe Harm Averted

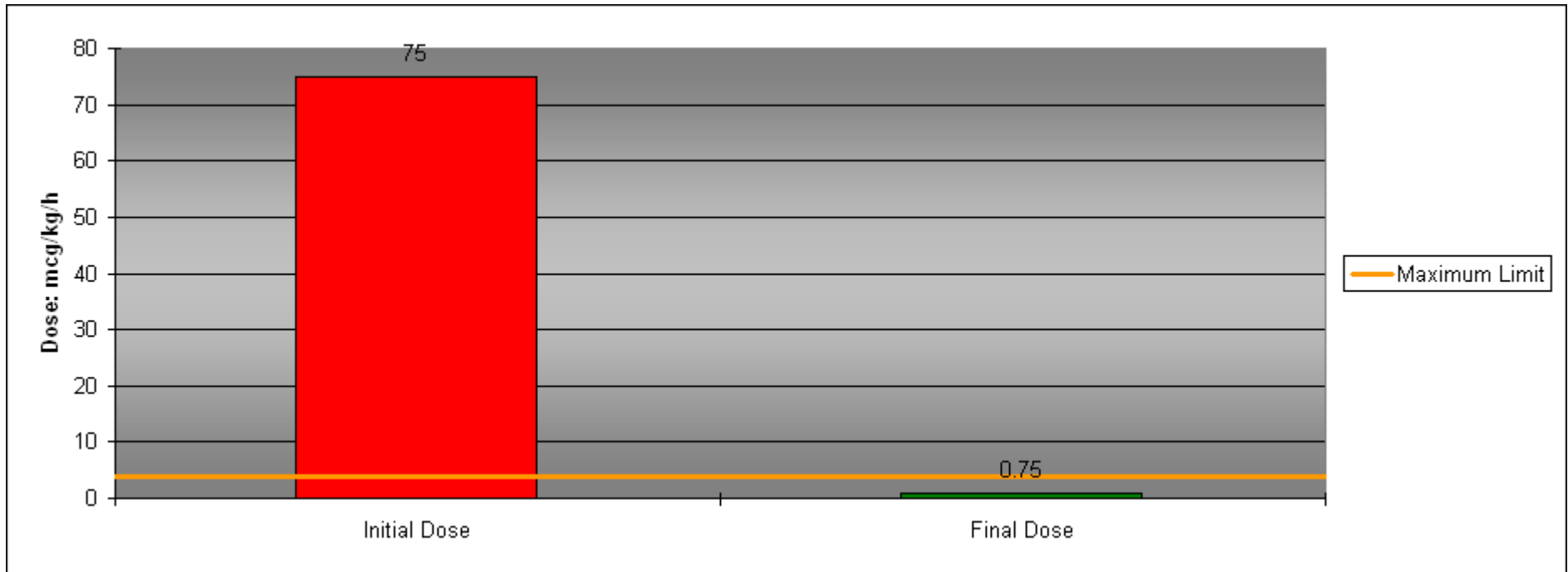
- Heparin
- Methadone
- Dexmedetomidine
- Midazolam
- Insulin
- Milrinone
- Propofol
- Dopamine

Dexmedetomidine (Continuous Dose) Above Maximum Reprogrammed

Dexmedetomidine 4 mcg/1mL

"Good Catches"

Programmed Dose: 75 mcg/kg/h
Dose Above Maximum Alert (Max Hard = 4 mcg/kg/h)



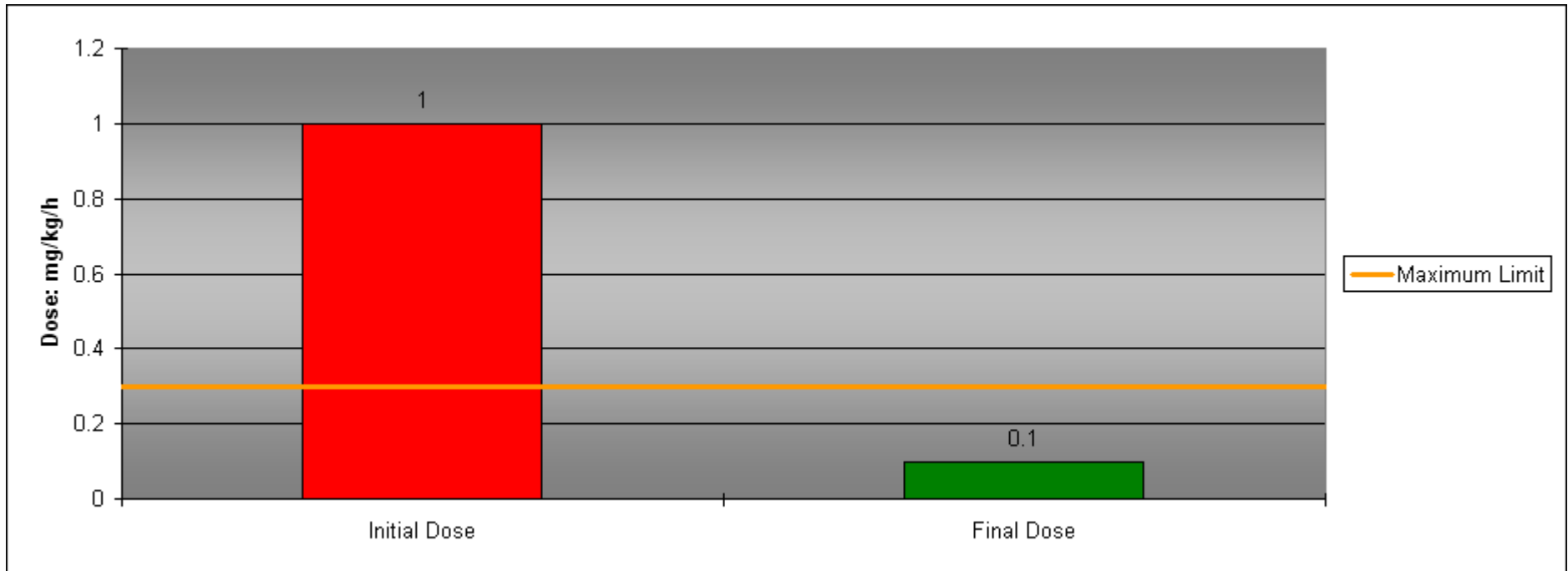
Dose reprogrammed to 0.75 mcg/kg/h following alert.

Midazolam, standard (Continuous Dose) Above Maximum Reprogrammed

Midazolam 1 mg/1mL

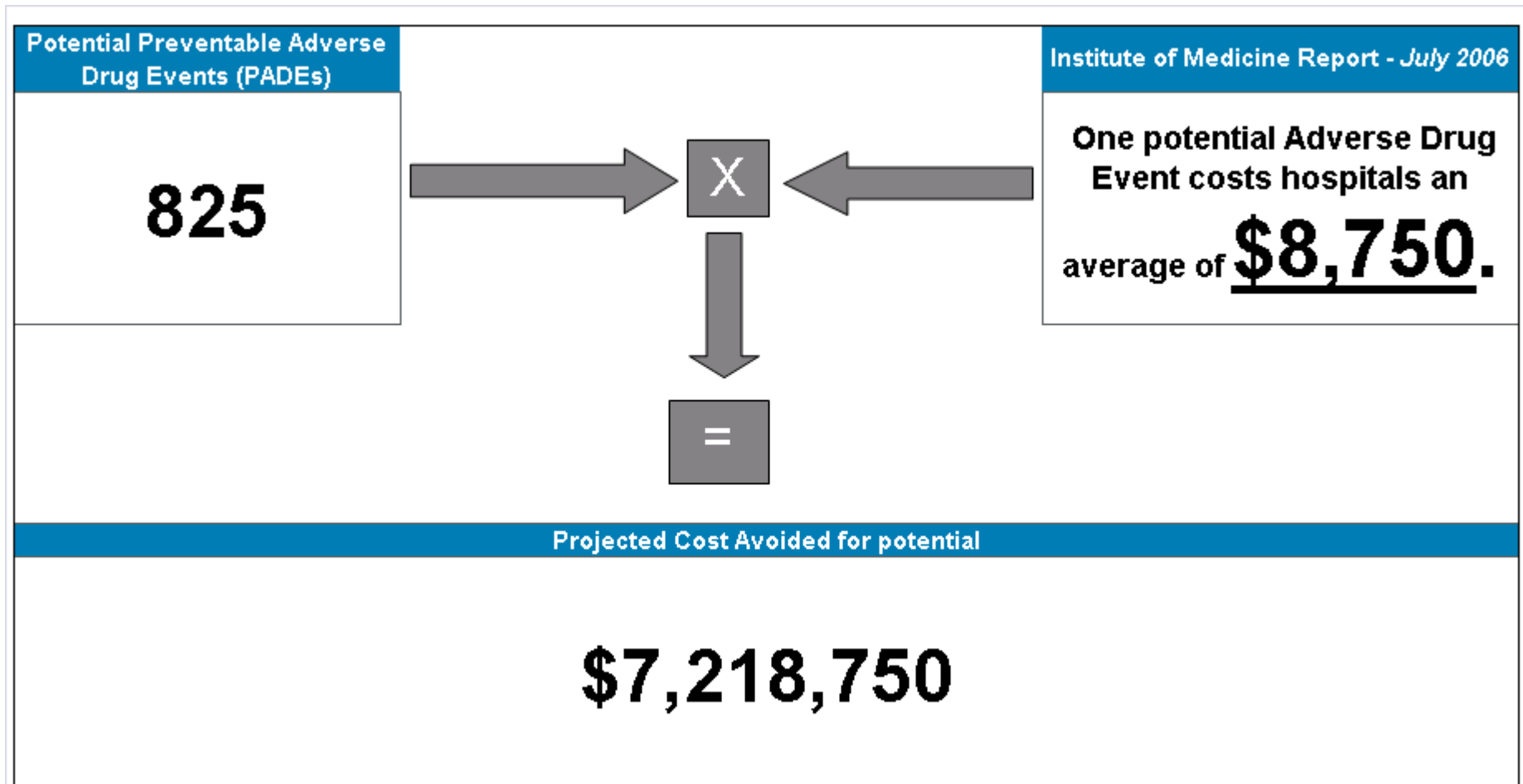
"Good Catches"

Programmed Dose: 1 mg/kg/h
Dose Above Maximum Alert (Max Soft = 0.3 mg/kg/h)



Dose reprogrammed to 0.1 mg/kg/h following alert.

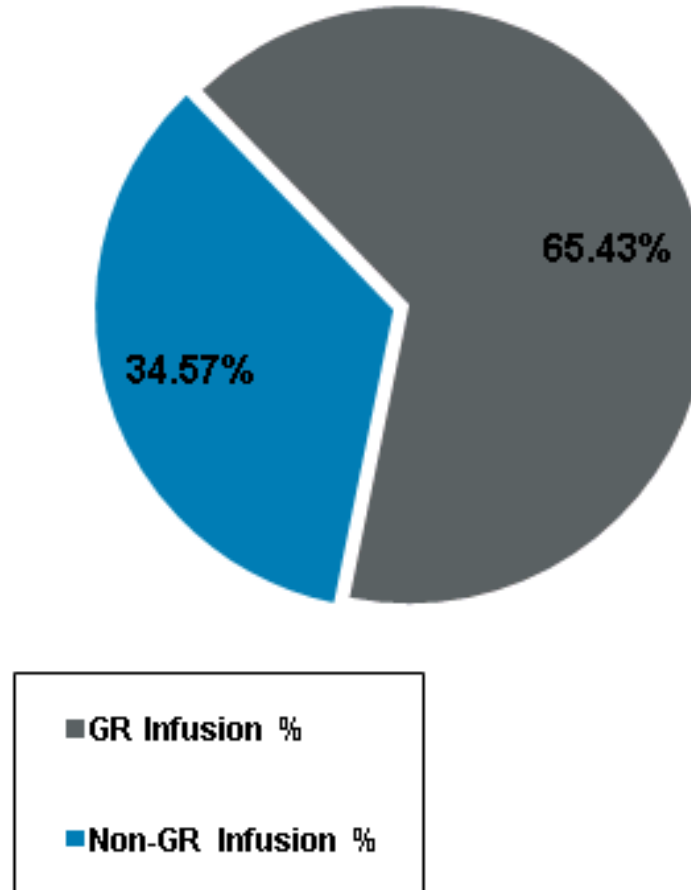
Projected Savings: Feb-10 - Jul-10



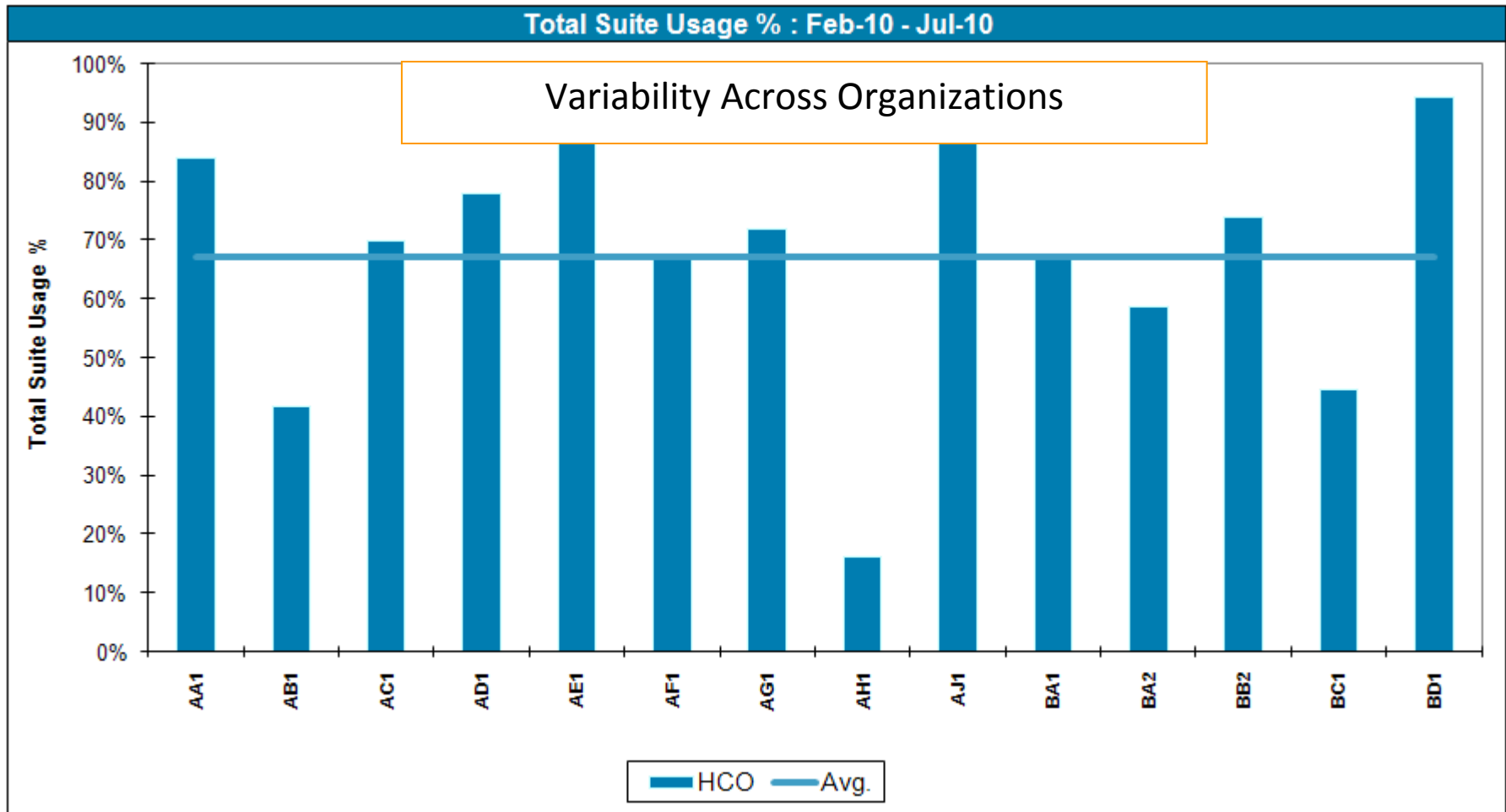
Once every 5.2 hours at one of the 14 Children's hospitals analyzed, a nurse programs a pump with a potentially deadly or significant drug overdose. The nurse presses start and the safety software stops it.

A potentially deadly or significant drug overdose was averted on average at each hospital every 3.1 days.

Guardrails® Suite Usage



Guardrails® Suite Usage



Data Source: Alaris® System

Guardrails® Suite Usage: Feb 10 - April 10 Summary

Actual Severe Harms

825 potential Preventable Adverse Drug Events
~\$7.2 million dollars of cost avoided

Using Current Data:

If all hospitals reached Guardrails® Suite Usage Goal of 95%:

Potential Additional Severe Harms Avoided by Increased Usage

193 Additional potential Preventable Adverse Drug Events
~\$1.6 million dollars of additional potential cost avoided

Strategies to Increase Guardrails® Usage

- Compliance Rounds
- Communication
 - Review process/ structure
 - “Good Catches”
 - Key Performance Indicators

Share your success stories...