Perioperative Data Warehousing

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Disclosures
None

Legacy AIMS

$picis

Dräger
Roadblock

IT Resources

Limited Staff

High-latency

Data Storage & Reporting

Oracle DB

Microsoft SQL

Every 5 minutes

Roadblock

Data Access

Where is the data stored?

Who can access the data?
Data Storage & Access

Cerner Production Database
Oracle DB

Jackson Data Warehouse
Microsoft SQL

Perioperative Data Warehouse

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Roadblock
Complex Structures, Limited Context

5,864 Tables
98 Anesthesia Tables
"Clinical Events" Table
5 billion+ Rows

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Customizability
Two Sides of the Coin

VS. Generalizability

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Overcoming the Roadblocks

Our Process
Finding Meaning
Database Exploration

No universal data dictionary
Differences between systems → Data "plumbing"
Building the Warehouse

Data extraction/ transformation scripts

Real Examples

Automatic ACGME Resident Case Logging
Background

Resident Case Logs

ACGME Requirements

Some Examples:
- < 3 months old: 5 patients
  Intracerebral: 20 cases
  Vascular, Major Vessels: 20 cases

Resident Case Log System

Current System

Manual Case Logs

Delayed Reporting

Unreported Cases

Redundant Clerical Work
Percentage of Residents **Underreporting** Cases By Rotation

![Percentage of Residents Underreporting Cases By Rotation](image)

**Cumulative 37%**

**25**

**Timeframe of Resident Case Logs**

![Timeframe of Resident Case Logs](image)

**29% cases are logged after a month**

**26**

**Back End**

![Back End](image)

**27**
Real Example

Feedback on PONV Prevention

≥3 Risk Factors

>60% Risk

Administer ≥2 antiemetic agents

Baseline Data

Average Compliance
Dear Dr. Anesthesiologist,

This is a confidential report of your individual performance on a quality measure of PONV prevention. It measures whether high-risk patients undergoing general anesthesia received at least two antiemetics intraoperatively to prevent postoperative nausea and vomiting (PONV). The report is based on 16 weeks of data (1/1/2018-4/22/2018). The objective of this report is to provide individualized feedback to our providers on their practice habits.

Your Performance
At least two antiemetics were administered intraoperatively to 17 patients out of 46 qualifying cases of general anesthesia with inhaled agents in which the patient had at least 3 risk factors for PONV (female gender, nonsmoking status, and use of postoperative opioids). This places you in the 48th percentile of providers.
Rescue Antiemetic Administration

Low-risk

0-1 Risk Factors

7% 7%

P = 0.784

Medium-risk

1 Risk Factor

20% 12%

P = 0.006

High-risk

2 Risk Factors

26% 15%

P < 0.001

Overcoming Roadblocks

Establish Clear Data Governance

Leadership Buy-In + Personnel Allocation

Find the Meaning in the Data

Questions