



CAS 2018



# The Lay of the Land





# Objectives

- Describe some issues (as I see them) over the last 12 months
- Examine the value of change
- Explore the value of resilience

# Conflicts & Warnings





the lie of the land



All

Videos

News

Images

Shopping

More

Settings

Tools

About 443,000,000 results (0.64 seconds)

## Dictionary

Enter a word, e.g. 'pie'



# the lay (lie) of the land

phrase of land

1. the way in which the features or characteristics of an area present themselves.



Translations, word origin, and more definitions

Feedback





|                  |               |           |                |         |           |
|------------------|---------------|-----------|----------------|---------|-----------|
| ANAESTHETIST     | S. Srinivasan | ASSISTANT | T. Brown - R4. | SURGEON | Wolinska. |
| OPERATION        | anoplasty.    |           |                |         |           |
| ANAESTHETIC TIME |               | 2030.     | TO             |         |           |



***Epic***



# Epic

2017  
HYPERSPACE®

You are responsible for respecting patient privacy. Access to the patient information in this system is only permitted for patient care purposes and/or for the performance of your work duties. Access to information in this system is audited, and inappropriate access may result in disciplinary action. By continuing you agree to comply with these terms of use and your organization's privacy policies and requirements.







Hyperspace - SK ANESTHESIA - Production

Epic

Patient Station

Snapboard

Personalize

SlicerDicer

PrintLog Out

Anesthesia Provider Dashboard

Exclude Message Types: Not set

My Performance

My Open Records (Previous and Current Month) Just now

The data source returned no results.

Report: My Open Anesthesia Records - Previous and Current Month Report

In Basket Glance<sup>5</sup> Just now

You have no messages in your In Basket.

My Records (Previous and Current Month) Just now

Click to run the report

Report: My Anesthesia records - Previous and Current Month

My Metrics

McDonnell, Conor Gerard, MD

Dec 17

Average Record Completion Time Limited Access

Dec 17

Records Signed Within 3 Days Limited Access

Dec 17

Postprocedure Note Compliance Limited Access

Dec 17

Jan

Feb

Mar

Apr

May

> Average Record Completion Time Limited Access

> Records Signed Within 3 Days Limited Access

> Postprocedure Note Compliance Limited Access

Comparative Performance

ASA Scores (Previous and Current Month) Just now

Report completed: Fri 8/6 10:17 AM

| ASA        | # My Records | % my Records | # My Emergent | # Records | % Records |
|------------|--------------|--------------|---------------|-----------|-----------|
| 1          | 2            | 33.33%       | 0             | 83        | 23.06%    |
| 2          | 3            | 50.00%       | 1             | 75        | 20.83%    |
| 3          | 1            | 16.67%       | 0             | 106       | 29.44%    |
| 4          | 0            | 0.00%        | 0             | 32        | 8.89%     |
| [No Value] | 0            | 0.00%        | 0             | 64        | 17.78%    |

My Ready Time (Previous and Current Month) Just now

| Location           | Avg Ready Time (MIN) |
|--------------------|----------------------|
| SK 4C              | 9.60                 |
| Other Records      | 9.60                 |
| My Records         | -                    |
| SK 8C              | 2.33                 |
| Other Records      | 1.50                 |
| My Records         | 4.00                 |
| SK IGT OR LOCATION | 13.00                |

My Anesthesia Recovery Time (Previous and Current Month) Just now

Report completed: Fri 8/6 10:17 AM

| Location | Avg Recovery Time (min) |
|----------|-------------------------|
| SK 8C    | -                       |
| SK OR    | 70.75                   |
| Average  | 70.75                   |

Favorites and Subscribed Reports<sup>5</sup> Just now

Post-live Survey

CONOR MCDONNELL010:20 AM2018-06-08



Epic

Patient Station

Snapboard

Personalize

SlicerDicer

Reports

My Reports

My Favorite Reports

Open results immediately

Folders

QI Conor Daily

Anesthesia CPR Documented Last 12 Months - Non-Car...  
Viewed - 211 results

Anesthesia Critical Events and Escalation of Postop Disp...  
Viewed - 219 results

Anesthesia Patients Receiving Naloxone Within 24 Hours...  
Ready to run

QI Conor Weekly

Anesthesia First SpO2 in PACU <90% Last 12 Months  
Ready to run

Anesthesia Highest PACU Pain Scores Last 12 Months  
Ready to run

Anesthesia Unexpected Hospital Admissions Last 12 Mo...  
Ready to run

QI Conor Monthly

Anesthesia First PACU Pain Scores Last 12 Months  
Viewed - 219 results

Anesthesia Patients with 20% Change in NIBP Last 12 M...  
Ready to run

Anesthesia Temperature Management Last 12 Months  
Ready to run

Create a new folder

Recent Results

Saved Results (0)

Report

Status

Finished At

Anesthesia CPR Documented Last 12 Months - Non-Cardiac  
Valid until 08/06/2018 1:43 PM

Viewed  
211 results

08/06/2018 9:43 AM

Anesthesia First PACU Pain Scores Last 12 Months  
Valid until 08/06/2018 1:31 PM

Viewed  
219 results

08/06/2018 9:31 AM

Anesthesia Unexpected ICU Admissions Last 12 Months  
Valid until 08/06/2018 12:35 PM

Viewed  
219 results

08/06/2018 8:35 AM

Anesthesia Critical Events and Escalation of Postop Disposition Last 12 Months  
Valid until 08/06/2018 12:32 PM

Viewed  
219 results

08/06/2018 8:32 AM

Anesthesia Strabismus Compliance Last 12 Months  
Valid until 08/06/2018 12:09 PM

Viewed  
2 results

08/06/2018 8:09 AM

Show: ☐ Expired ☐ Scheduled

CONOR MCDONNELL

9:44 AM  
2018-06-08



 Filters
  Options
  Pre
  Intra
  Post
  Orders
  Procedures
  Epidural
  Close Encounter

### Search Summary

**Search Summary**  
Find Patients in Registries

From ①

Registry:

ANESTHESIA RECORD REGISTRY

Detail **By Month** By Case Classification By ASA By Surgical Service By Provider by Day/Time

### CPR by Month

Grouped by: Anesthesia Month

# of Records

% of Records With CPR

Grand Total

211

0 %

Jun 2018

211

0 %



## Anesthesia CPR Documented Last 12 Months - Non-Cardiac [3753159] as of Fri 8/6/2018 9:43 AM

Filters Options Pre Intra Post Orders Procedures Epidural Close Encounter

## Search Summary

Find Patients in Registries

From

Registry:

ANESTHESIA RECORD REGISTRY

Detail By Month By Case Classification By ASA By Surgical Service By Provider by Day/Time

## CPR by ASA

Grouped by: Anesthesia Month, ASA Score

|             | # of Records | % with CPR |
|-------------|--------------|------------|
| Grand Total | 211          | 0 %        |
| Jun 2018    | 211          | 0 %        |
| 1           | 60           | 0 %        |
| 2           | 48           | 0 %        |
| 3           | 83           | 0 %        |
| 4           | 20           | 0 %        |



## Anesthesia CPR Documented Last 12 Months - Non-Cardiac [3753159] as of Fri 8/6/2018 9:43 AM

Filters Options Pre Intra Post Orders Procedures Epidural Close Encounter

## Search Summary

Find Patients in Registries

From

Registry:

ANESTHESIA RECORD REGISTRY

Detail By Month By Case Classification By ASA By Surgical Service By Provider by Day/Time

## CPR by Case Day/Time

Grouped by: Anesthesia Month, Case Time Category


|                 | # of Records | % with CPR |
|-----------------|--------------|------------|
| Grand Total     | 211          | 0 %        |
| Jun 2018        | 211          | 0 %        |
| Weekday 7am-7pm | 105          | 0 %        |
| Weekday 7pm-7am | 84           | 0 %        |
| Weekend         | 21           | 0 %        |
| [No Value]      | 1            | 0 %        |



CONOR MCDONNELL 9:44 AM 2018-06-08





**Search Summary**  
Find Patients in Registries  
From 

Registry:  
ANESTHESIA RECORD REGISTRY

Detail **By Month** By Anesthesiologist By Patient Class By Surgical Service

Grouped by: Anesthesia Month

|             | # of Records | Pain Score > 6/10 |
|-------------|--------------|-------------------|
| Grand Total | 220          | 15.79 %           |
| Jun 2018    | 220          | 15.79 %           |



## Anesthesia Patients With Highest PACU Pain Score &gt; 6/10 Last 12 Months [3753283] as of Fri 8/6/2018 9:55 AM

Filters Options Pre Intra Post Orders Procedures Epidural Close Encounter

## Search Summary

Find Patients in Registries

From

Registry:

ANESTHESIA RECORD REGISTRY

Detail By Month By Anesthesiologist By Patient Class By Surgical Service

## Total Records by Patient Class

Grouped by: Anesthesia Month, Patient Class

|                              | # of Records | Pain Score > 6/10 |
|------------------------------|--------------|-------------------|
| Grand Total                  | 220          | 15.79 %           |
| Jun 2018                     | 220          | 15.79 %           |
| Inpatient Acute              | 115          | 18.75 %           |
| Outpatient Ambulatory Care   | 54           | 0 %               |
| Outpatient Emergency         | 1            | 0 %               |
| Outpatient Surgical Day Care | 48           | 0 %               |
| Surgical Admit               | 2            | 0 %               |



☒ Open results immediately

## My Reports



Library

Anesthesia U...

Anesthesia C...

[+ Create a new folder](#)

Saved Results (0)

## Report

Status

Finished At ▼

Valid until 08/06/2018 1:43 PM

Viewed  
211 results

08/06/2018 9:31 AM

★ Anesthesia First PACU Pain Scores Last 12 Months

Viewed  
219 results

[illegible]

### ★ Anesthesia Unexpected ICU Admissions Last 12 Months

Viewed  
219 results

08/06/2018 8:35 AM

### ★ Anesthesia Critical Events and Escalation of Postop Disposition Last 12 Months

Viewed  
219 results

08/06/2018 8:32 AM

★ Anesthesia Strabismus Compliance Last 12 Months

Viewed  
2 results

08/06/2018 8:09 AM

Valid until 08/06/2018 12:09 PM

2 results

08/08/2018 8:09 AM

 Customize

Show: ☐ Expired ☐ Scheduled



Anesthesia Strabismus Compliance Last 12 Months [3752049] as of Fri 8/6/2018 8:09 AM






Filters Options Pre Intra Post Orders Procedures Epidural Close Encounter

Search Summary

Find Patients in Registries

From Registry: ANESTHESIA RECORD REGISTRY

| Detail | By Month         | By ASA     | By Provider     |                              |                 |                 |           |                 |                               |                    |                  |                      |                     |                 |  |    |  |  |
|--------|------------------|------------|-----------------|------------------------------|-----------------|-----------------|-----------|-----------------|-------------------------------|--------------------|------------------|----------------------|---------------------|-----------------|--|---|--|--|
|        | Age At Encounter | Episode ID | Anesthesia Date | Responsible Anesthesiologist | Anesthesia Type | Add-on/Elective | ASA Score | Complication(s) | Complication Phase(s) of Care | Case Time Cat      | Surgical Service | Acetaminophen in Pre | Dexamethasone in Of | Ketorolac in OR |  |   |  |  |
|        | 1.87             |            |                 |                              | General         | Elective        | 1         |                 |                               | Weekday<br>7am-7pm | Ophthalmology    | 1                    |                     | 1               |  |   |  |  |
|        | 7                |            |                 |                              | General         | Elective        | 1         |                 |                               | Weekday<br>7am-7pm | Ophthalmology    | 1                    |                     | 1               |  |   |  |  |



Detail

By MonthBy ASABy Provider

MRN

^2

Add-on/Elective

ASA Score

Complication(s)

Complication Phase(s) of Care

Case Time Cat

Surgical Service

Acetaminophen in Pre

Dexamethasone in Of

Ketorolac in OR

Morphine/Hydromorphone in OR

Ondansentron in OR

Strabismus Compliance (%)

1

|  |  |          |   |  |                    |               |   |  |   |  |   |  |    |
|--|--|----------|---|--|--------------------|---------------|---|--|---|--|---|--|----|
|  |  | Elective | 1 |  | Weekday<br>7am-7pm | Ophthalmology | 1 |  | 1 |  | 1 |  | 20 |
|  |  | Elective | 1 |  | Weekday<br>7am-7pm | Ophthalmology | 1 |  | 1 |  | 1 |  | 20 |



But these are mere teething issues



# What concerns me most days?

- When things go wrong
- When small things cause big problems



It's the little things...



and they don't come much littler than



# Interstitial IVs

a new metric on our Hospital Quality Card

**PIVIE** is now an **SPS HAC**

...and acronyms are the new Skynet

...and IVs seem to be very much on the mind of Epic...



# SickKids Event Report Analyses

In last 18 months – 11 peri-operative PIVIEs of note **reported**

7 intra-op – including 1 compartment syndrome requiring fasciotomy  
(cases ranging from neonatal laparotomies to liver transplants to  
cardiac case with ventricular rupture on sternotomy)

4 post-op – PACU / Ward



# National query on listserv

- Response from 8 sites
- 3 critical events in recent memory requiring fasciotomy



# Some of your responses...

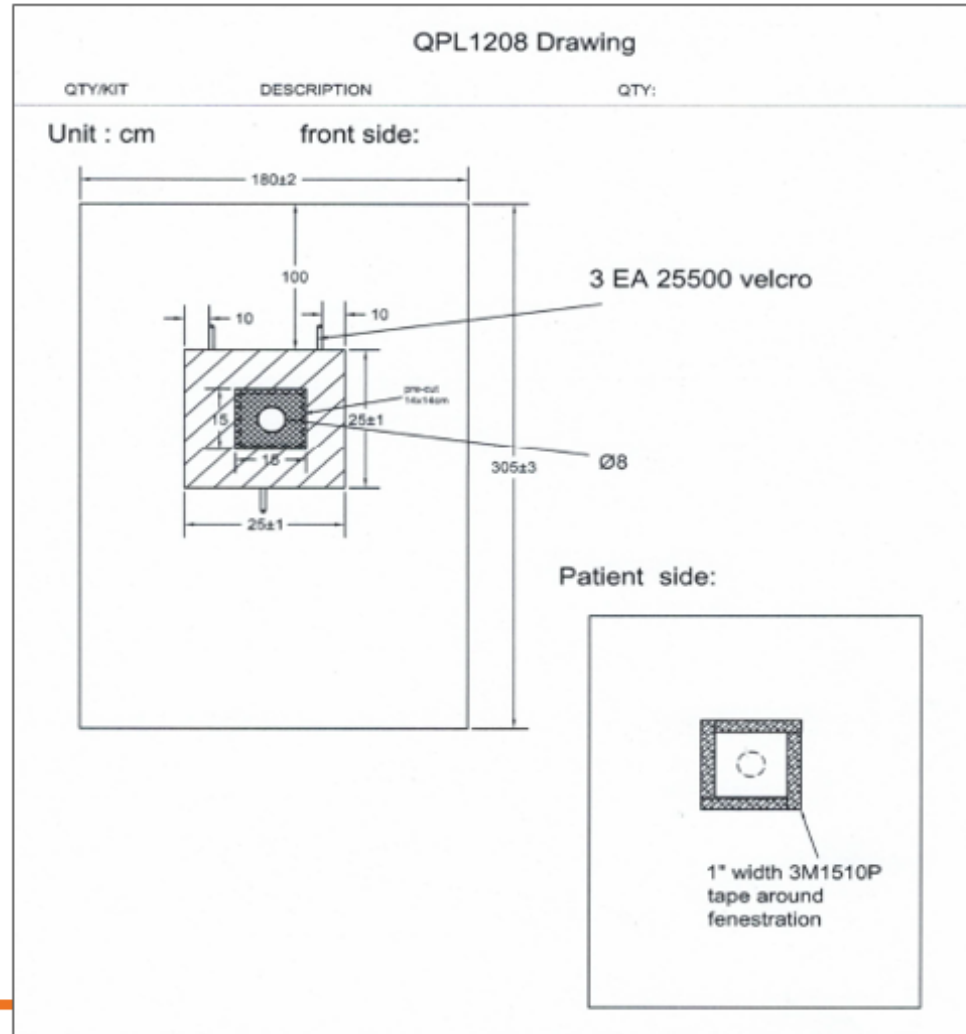
- Hourly checks if surgery > 1 hour (No clear drapes in use, v. compliant surgeons!)
- One site (very TIVA-engaged) keeps IV sites accessible, free-flowing IVs
- Minimize tucking; TLC – touch look compare
- Avoid ‘mummification’
- Awareness & surveillance



# One site does have an Intervention Bundle

- Clear Drapes
- Regular site monitoring (timing not specified)
- Reporting of events for analysis
- Protocol for management of interstitial events





Clear drapes are not currently made by any manufacturer

MedLine has developed a custom clear drape for the use in pediatric/neonatal cases in General Surgery





## Cost Analysis

| Drape                      | Cost per Drape | Current Usage per Year | Cost per Year | Cost Difference per Year Using Clear Drapes |
|----------------------------|----------------|------------------------|---------------|---|
| Pediatric Laparotomy Drape | \$6.29         | 500                    | \$3145        | \$5060                                      |
| Neonatal Drape             | \$4.65         | 75                     | \$348.75      | \$882                                       |
| Clear Drape                | \$16.41        |                        |               |   |

Over 10 different types of drapes are currently used in the OR

Not all are replaceable by clear drapes



# National query on listserv

- Response from 8 sites
- 3 critical events in recent memory requiring fasciotomy
- No single solution
- Plan to bring to CAS exec for discussion



# Outcome of local (SK) case analyses

- **System Issues:**

- Difficult access
- Multiple attempts
- Neonates / infants
- IV sites buried out of view
- Placement of BP cuff, 'tucking in'
- Infusion pump settings for pressure alarms
- No OR protocol / policy / shared accountability

- **Cognitive Issues:**

- Identification of at-risk patients
- High index of suspicion
- Early detection



# Outcome of local (SK) case analyses

- **Cognitive Issues:**

- **Identification of at-risk patients**
- **High index of suspicion**
- **Early detection**

- **System Issues:**

- Difficult access
- Multiple attempts
- Neonates / infants
- IV sites buried out of view
- Placement of BP cuff, 'tucking in'
- Infusion pump settings for pressure alarms
- No OR protocol / policy / shared accountability



# Our own Intervention Bundle in development...

## Identify at-risk patients:

- Extremes of age and size
- Known difficult access
- > 3 attempts (esp. in same limb)
- Likelihood of rapid infusion / transfusion
- Pre-existing cannulas with long-dwell time (> 48 hours)
- Prolonged (> 2 hours) surgery where patient is completely covered
- **The presence of three factors prompts a team-discussion prior to proceeding that patient is considered high-risk for PIVIE**



# Bringing the little things to the foreground

## Identify at-risk patients:

- Extremes of age and size
- Known difficult access
- > 3 attempts (esp. in same limb)
- Likelihood of rapid infusion / transfusion
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- Prolonged (> 2 hours) surgery where patient is completely covered
- The presence of three factors prompts a team-discussion prior to proceeding that patient is considered high-risk for PIVIE



- Need to avoid over-tucking and wrapping; use more arm-boards
- Institute hourly inspection of sites for patients identified at-risk
- In the event of an event, consult Plastic Surgery and engage hospital bundle re: staging, grading and possible treatments
- Shared responsibility, including reporting of PIVIEs in the OR
- Confirmation of success with Ultrasound for difficult access cases
- Orientation item for all new-arrivals (resident, fellow, Staff)



May ultimately become a  
consent issue we discuss with  
parents

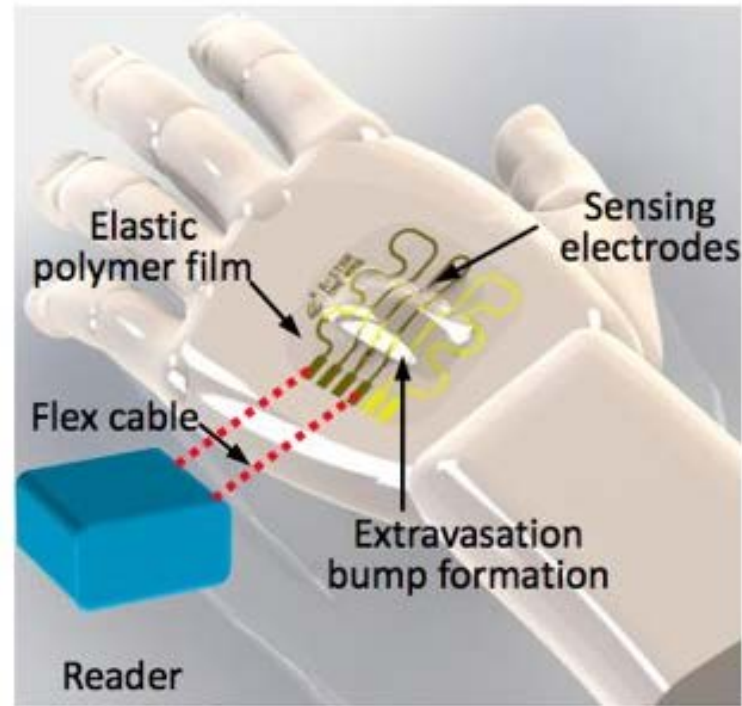


# Wearable Sensor Patch for Early Extravasation Detection

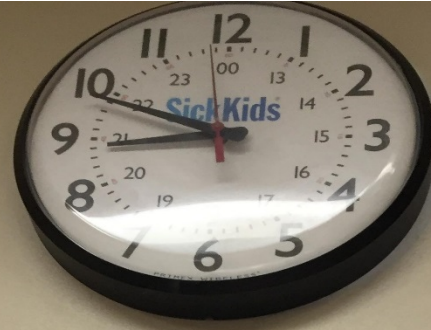
Ming-Yuan Cheng<sup>\*1</sup>, Ramona Damalerio<sup>1</sup>, Ruiqi Lim<sup>1</sup>, Weiguo Chen<sup>1</sup>, Kwan Ling Tan<sup>1</sup>,  
Choon Looi Bong<sup>2</sup> and Swee Kim Tan<sup>2</sup>

<sup>1</sup>Institute of Microelectronics, A\*STAR (Agency for Science, Technology and Research), Singapore

<sup>2</sup>KK Women's & Children's Hospital, Singapore







Check IV Site  
1 HR  
9am ✓ 10 11 12 13



It's the little things...





## Toddler's injury from IV line a severe example of a common problem, expert says

Emmy Gunther, 3, sustained a serious injury to her hand after an intravenous line slipped out of her vein

Andrea Ross - CBC News - Posted: Jan 23, 2018 7:00 AM MT | Last Updated: January 23



...that become big problems





# Next 'big thing' is Peer Support

...but I only have ten minutes

and patients always come first





# Thank you

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# Thank you

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