Quality, Safety, Value in My Early Onset Scoliosis Practice

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Disclosures

• Consultant – Biogen, Inc.
QSV in EOS
Definition

• QI is the framework to systematically improve care.
• Processes have characteristics that can be measured, analyzed, improved, and controlled.
How is QI different than research?

<table>
<thead>
<tr>
<th></th>
<th>Measurement for Research</th>
<th>Measurement for Learning and Process Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>To discover new knowledge</td>
<td>To bring new knowledge into daily practice</td>
</tr>
<tr>
<td><strong>Tests</strong></td>
<td>One large blind test</td>
<td>Many sequential, observable tests</td>
</tr>
<tr>
<td><strong>Biases</strong></td>
<td>Control for as many biases as possible</td>
<td>Stabilize the biases from test to test</td>
</tr>
<tr>
<td><strong>Data</strong></td>
<td>Gather as much data as possible, just in case</td>
<td>Gather just enough data to learn and complete another cycle</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>Can take long periods of time to obtain results</td>
<td>Small tests of significant changes accelerate the rate of improvement</td>
</tr>
</tbody>
</table>
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Some Challenges for Research

“it takes 17 years, on average, …for 14 % of research …to translate into practice”

Evaline A. Alessandrini, MD, MSCE


Courtesy of Jim McCarthy, MD
Frustrations

• Buy-in from Ancillary services – Nutrition, PT, anesthesia
• Turn Over Time
• Pulmonology Collaboration- PFTs
• Kid with exposed hardware for past 3 weeks
• Lost to follow-up/ not lengthened
• Remembering What I Told Parents About the Plan
• Casting- Reinventing the Wheel Every Time
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Spine Surgeon’s Definition

I'm sorry I offended you by asking you to do your job.

your ecards
someecards.com
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What It looks like

- Usually target one issue
- Can be quantified
- Can be altered
- Has real metrics for change
- Can be tracked longitudinally
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Trust The Process

• I Decide Which Problem to Fix
  • Make things better for patients or for me

• A Squadron of Middle Managers with laptops and Clip Boards
  • One of them can get you data!

• Meeting-palooza
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CHOP Improvement Framework

**Define**
- Question to be answered: What are we trying to accomplish, and by when? How will we measure success?
- Activities: Validate background & problem, Define project success & timeframe, Establish project governance
- Tollgate: Accept Charter

**Diagnose**
- Question to be answered: What do we need to learn so that we can narrow our focus to a critical few drivers?
- Activities: Create Data Collection Plan, Collect & validate data, Analyze data, Recommend changes to test
- Tollgate: Review recommended changes

**Test and Implement**
- Question to be answered: What changes should we make that will result in an improvement?
- Activities: Create Change Summary, Test and implement changes, Evaluate effectiveness of changes
- Tollgate: Evaluate Changes

**Sustain**
- Question to be answered: How do we ensure that the changes are sustained? And do we need to spread to any other areas?
- Activities: Hardcode changes into operations, Confirm process ownership for moving into operations, Identify any opportunities for spread
- Tollgate: Project completed or rechartered for spread
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My Problem – OR Efficiency

• OR won’t let me book more than 3 lengthening surgeries in a day

• “Our metrics show that the cases may go longer than you think, Dr. Cahill”
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It's on!

<table>
<thead>
<tr>
<th>What are we trying to accomplish?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is the problem to be addressed?</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>What are the expected outcomes?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increase the average number of expansions performed per day to 4</td>
</tr>
<tr>
<td>• Reduce variability of procedure scheduling</td>
</tr>
<tr>
<td>• Standardize Anesthesia protocols</td>
</tr>
<tr>
<td>• Develop VEPTR surgery classification system</td>
</tr>
</tbody>
</table>
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Team Roles and Goals

Improvement Advisor:
• Project facilitator who coaches the team in effectively using the CHOP Improvement Framework to define and meet project goals

Data Analyst:
• The data analyst partners with the QI team and Improvement Advisor to identify the necessary and available data in order to understand the problem or improvement idea.

A few aims:
• Help organize multidisciplinary QI team
• Assist in scoping project
• Assist in choosing and achieving outcomes
• Set up control process for sustaining improvement
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Big Data

• Average about 13 expansion only surgeries a month

Data From Jan 2015 to 2018
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Proc Start to Proc Close

<table>
<thead>
<tr>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Standard Deviation</td>
</tr>
</tbody>
</table>
QSV in EOS
In Room to Anesthesia Ready

<table>
<thead>
<tr>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Standard Deviation</td>
</tr>
</tbody>
</table>
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OR Efficiency Interventions

• Two distinct VEPTR expansion slots
  • syndromic/neuromuscular
  • idiopathic/congenital

• Anesthesia & Ortho: standardization of processes
  • Standardized protocols by type of case (syndromic/neuromuscular)
    • Trach vs non trach
    • Setup/positioning
    • For patients admitted same day/patients admitted day before

• Schedule
  • Specific VEPTR expansion days
  • IV Vanco scheduled as first or last case
  • Inpatient surgeries scheduled as first case
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Doesn’t Have to Be So Formalized

• Desire for Process Improvement

• Implementation of Standardization

• Useful for issues that don’t leave Ortho
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Standardized Documentation

• Decided to streamline the notes among TIS providers
  • Facilitate modularity among APPs and scribes
  • Ensure good data capture
    • Clinical care/surveillance
    • Research

• 1 QI officer assembled notes

• 2 meetings with surgeons to decide on parameters to capture
Using the EHR to Improve Care, Monitor, and Manage Patients Before and After Surgery

Columns built to give data on each patient

<table>
<thead>
<tr>
<th>Patient</th>
<th>MRN</th>
<th>DOB</th>
<th>Post Op Dest from Case</th>
<th>Difficult Airway</th>
<th>Difficult Access</th>
<th>Surgery Category</th>
<th>Past Wound Concern Date</th>
<th>Past I&amp;D</th>
<th>MDRO</th>
<th>Allergies?</th>
<th>Red Man Syndrome</th>
<th>Vancomycin</th>
<th>PFT Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICU [902]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Neur muscular</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Med/Surg Bed [956]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Syndromic</td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Med/Surg Bed [956]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Congenital</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>MRSA</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>PICU [902]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Congenital</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>MRSA</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Med/Surg Bed [956]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sydromic</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td></td>
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<td></td>
<td>Neur muscular</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

Orange - Alerts that Patient is within 90 days of a prior surgery and has called with a **wound concern**

Reports to allow **quick access** to pertinent information about a selected patient
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## Team Communication

### CTIS Report – 11/12/2019

**Today’s Surgeries**

<table>
<thead>
<tr>
<th>Name</th>
<th>MRN:</th>
<th>Surgery Date:</th>
<th>Surgeon:</th>
<th>Surgery:</th>
<th>Previous Infections/Wounds:</th>
<th>Comments:</th>
<th>Preop Antibiotics:</th>
<th>Dispo postop:</th>
<th>Neuromonitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>11/12/2019</td>
<td>Cahill</td>
<td>Removal of mager rods, conversion to psf</td>
<td>none</td>
<td>none</td>
<td>4 1/5</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

### Inpatient

<table>
<thead>
<tr>
<th>Name:</th>
<th>MRN:</th>
<th>Admission date:</th>
<th>Admission reason:</th>
<th>Surgeon:</th>
<th>Surgery Date:</th>
<th>Surgery:</th>
<th>Comments:</th>
<th>Last seen:</th>
<th>Room:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>11/02/2019</td>
<td>wound</td>
<td>Anari</td>
<td>11/08/2019</td>
<td>Left veptr removal, right veptr revision</td>
<td></td>
<td>11/12/2019</td>
<td>W0M61-1</td>
</tr>
</tbody>
</table>

### Inpatient CTIS consults

<table>
<thead>
<tr>
<th>Name:</th>
<th>MRN:</th>
<th>Date of consult:</th>
<th>Reason for admission:</th>
<th>Surgeon:</th>
<th>Last seen:</th>
<th>Plan:</th>
<th>Room:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>11/8/2019</td>
<td>omphalocoe</td>
<td>Cahill</td>
<td></td>
<td>MRI entire spine</td>
<td></td>
</tr>
</tbody>
</table>
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## Team Communication

### Upcoming surgeries

<table>
<thead>
<tr>
<th>Name</th>
<th>MRN</th>
<th>Surgery Date</th>
<th>Surgeon</th>
<th>Surgery</th>
<th>Comments</th>
<th>Last appointment</th>
<th>Dispo postop</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>11/14/2019</td>
<td>Cahill</td>
<td>Insertion of b/l magec rods with veprh hooks, pelvic attachments</td>
<td></td>
<td>10/30/2019</td>
<td>PICU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11/14/2019</td>
<td>Cahill</td>
<td>Right pelvic hook revision</td>
<td></td>
<td>09/11/2019</td>
<td>PICU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11/15/2019</td>
<td>Anari</td>
<td>Bilateral rib to pelvis veprh expansion</td>
<td></td>
<td>11/11/2019</td>
<td>4 E/S</td>
</tr>
</tbody>
</table>

### Wound Watch

<table>
<thead>
<tr>
<th>Name</th>
<th>MRN</th>
<th>Last Surgery</th>
<th>Date of concern</th>
<th>Surgeon</th>
<th>Incision</th>
<th>Symptoms</th>
<th>Last photo obtained</th>
<th>Last contact with family</th>
<th>Plan</th>
</tr>
</thead>
</table>

### CTIS referrals

<table>
<thead>
<tr>
<th>Name</th>
<th>MRN</th>
<th>Surgeon</th>
<th>Diagnosis</th>
<th>Location</th>
<th>Age</th>
<th>Respiratory status</th>
<th>Admission date</th>
<th>Surgery date</th>
<th>Plan</th>
</tr>
</thead>
</table>
Wound Surveillance Project: Goals

- Consistent way of communicating a VEPTR patient’s incision sites across the organization

- Standardize documentation using a CTIS Incision Site Schematic for all skin & wound issues possibly related to a VEPTR procedure

- Improve Parental Involvement in Post-op Care
VETPR LDA created in flowsheet

Properties of surgical wound remain unchanged. Once the LDA is created, the nurse will have the ISS to the right of flowsheet for reference. (Can hide if they choose.)
VEPTR post-op PFE

Post-Surgery:

vein migration venous leakage venous occlusion venous obstruction

When can I remove my child’s dressing?

Your child will have 2 dressings:

1. Primary dressing: This is the dressing that is placed to the site and directly on the surgical incision. The dressing will usually be removed 5-7 days after your child’s surgery if they have not fallen off by 7 days, it is ok to remove them.

2. Secondary dressing: This is the surrounding dressing on the back of the primary dressing. The dressing stays for longer. This should be removed 7-10 days after your child’s surgery.

If the incision has not healed or is causing any concern, please call the VEPTR phone line (215) 590-1000 or visit your child’s home health agency.

How to Care for the Primary Dressing:

1. Always check the area before touching the dressing.
2. Gently remove the dressing.
3. Always check the bandage after removing the dressing.
4. If applicable, change the dressing.

Do not remove any dressings over the incision unless your child is bleeding, draining, or redness. If this occurs, please call the VEPTR phone line (215) 590-1000 or visit your child’s home health agency.

If the dressings need to be removed, you may do so by:

1. Gently roll the dressing to remove the dressing.
2. Gently remove the dressing from the incision.
3. Gently press the incision with sterile gauze to stop any bleeding.
4. If applicable, change the dressing.

If there is any bleeding, please call the VEPTR phone line (215) 590-1000 or visit your child’s home health agency.

How do I care for my child’s incision?

Check the incisions daily, once the original bandages are removed. Look at the incisions daily and do any of the following:

- Check the incision for:
  - Openness
  - Infection
  - Swelling
  - Drainage
  - Secretions

- Check the incision for:
  - Redness
  - Swelling
  - Tissue loss

- Keep the incision clean and dry.

If you have questions or concerns about your child’s incision, please call:

VEPTR phone: 215-590-1000 (Monday through Friday 8am – 5pm)
215-590-1000 (Evenings, nights and weekends)
Standardizing VEPTR Incision Site Documentation
Project Dates: October 2016- March 2017

Leads: Robert Campbell, MD and Diane Hartman, RN
IA/DA Team: Eileen Ware and Caroline Burlingame

Aims: #1: 80% of VEPTR patient and caregivers will be educated by the Ortho NP team using the new PFE document inclusive of the Incision Site Schematic by February, 2017
      #2: 50% of VEPTR patients and families will recall PFE education and utilize the Incision Site Schematic (ISS) for concerns regarding wounds

Was project aim achieved? Yes

Key Lesson Learned: Investing in the data infrastructure will give the team longevity;
Approval processes to create new tools can take some time (PFE, new VEPTR specific wound LDA)

Data:
Surgical Site Infection Rates Went Down After QI Intervention (Q4 2016 project initiation)