Surgical Teams: How to implement, develop and get support

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Dedicated Spine Teams: Lessons Learned

Disclosures up to date in program
Developing Dedicated Spine Teams: Lessons Learned

The idea; the motivation

POSNA 2012 QSV Special Session

- Peter Laussen, CICU, Boston
- Marshall Carlson, President, Hendricks Motorsports (NASCAR)
- Tom Henricks, NASA Shuttle Commander
- Dan Hyman, Chief Quality Officer, Denver
Developing Dedicated Spine Teams: Lessons Learned

The idea; the motivation

Wow. That’s amazing. I wonder what it would be like to have a spine OR team that was like a NASA or NASCAR team.
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The idea; the motivation

An OR team like a NASCAR team

- Everyone knows their role
- Everyone has done their job 1000s of times
- Each coordinates perfectly with other crew members
- Each person take pride in the success of The Team
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The idea; the motivation

• Dedicated Teams in other CHOP OR units (separate Cardiac, Fetal units)

• We made the case for Spine
  – Failed in past
  – Maybe now is the time
    • Need to use OR time better
    • Focus on the value aspect
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The Challenges
Developing Dedicated Spine Teams: Lessons Learned

The challenges

- Big training center with rotating personnel
- Staffing shortages, turnover
- Administration who like the “job description with legs” philosophy
- Anesthesia: “we are general anesthesia”
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The challenges

Administrators Hate Dedicated Teams

- Employees gain specialized skills (and lose some general skills)
- Employees gain (too much) loyalty to the Team
- Some Teams might be more fun, or easier, or finish earlier
- Managers lose flexibility for cross-coverage (maternity leave, illness, departures)

Administrators like nurses and anesthesiologists who are interchangeable jacks-of-all-trades
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The challenges

**Anesthesia Hates Dedicated Teams**

- “We are Pediatric Anesthesiologists—that is already specialized”
- “We have to cover MRI, satellites, take call, etc”
- “Board runner needs flexibility”
- “We need to be able to plug in our Fellows and CRNA’s wherever the heck we want”
- “Teams are more fun for our docs, but it’s not fair to those who are not chosen”

Administrators like nurses and anesthesiologists who are interchangeable jacks-of-all-trades
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The challenges

• No good data for DSTs in literature
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The challenges

• No good data for DSTs in literature
• Concurrent surgery
  – Successful at other centers
  – We weren’t allowed
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The challenges

• No good data for DSTs in literature
• Concurrent surgery
  – Successful at other centers
  – We weren’t allowed
• Our need
  – 2 PSFs, back-to-back, in 1 OR room
  – Sustainable practices
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A trial with friends, then engaging Pro’s
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A trial with friends, and lessons learned

- Some friends and I were excited to do “secret trial”
- Summer 2014—tried a few 2x PSF/day
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A trial with friends, and lessons learned

- Some friends and I were excited to do “secret trial”
- Summer 2014—tried a few 2x PSF/day
- Needed lots of special, unsustainable strategies
- The amateur attempt worked but unsustainable; but we needed pro’s
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Engaging some pro’s

- CHOP Office of Clinical Quality Improvement (OCQI)
- OCQI funded “improvement advisor” to launch us
- Observations
- Group meetings
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Standardization and Training
Developing Dedicated Spine Teams: Lessons Learned

Standardization and Training

• Created a Dedicated Spine Team
• Standardized work
• Late afternoon training meetings; walk-throughs
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Standardization and Training

Spring of 2015

- Standardized spine anesthesia
- Simulations to eliminate inefficiencies
- Standardized process:
  - Positioning
  - Prep & draping
  - Imaging
  - Patient wake-up
  - Transport
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Standardization and Training

This is what an “improvement advisors” sees when she watches and analyzes a PSF
A Developing Dedicated Spine Teams: Lessons Learned

Standardization and Training

The way to save time: The whole team works in parallel like NASCAR pit crew
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Standardization and Training

Case Description

• What is “Spine deformity PSF”?  
  - T4-12 50°—2.5hr. Easy to standardize  
  - T2-pelvis with VCR in obese patient who had heart transplant—all day  
• Need a system to communicate “what we are doing tomorrow”  
• Really, only the surgeon knows

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard Fusion</th>
<th>Complex Fusion</th>
<th>Complex Patient and Complex Fusion</th>
<th>Other Spine Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I</td>
<td>PSF &lt; 12 no osteotomies and BMI &lt; 25, no medical issues that impact case length</td>
<td>PSF &gt; 12 and/or osteotomies and/or BMI &gt; 25 and no medical issues that impact case length</td>
<td>CP, SMA or other NM fusions to L5 or pelvis</td>
<td>MAGEC, VEPTR or OR revisions, expansions, or graduation fusions</td>
</tr>
<tr>
<td>Category II</td>
<td>Standard set-up (ET tube placement, 2 NS, arterial line)</td>
<td>Standard set-up (ET tube placement, 2 NS, arterial line)</td>
<td>Airway, lines...etc. complex</td>
<td>Airway, lines...etc. complex</td>
</tr>
<tr>
<td>Category III</td>
<td>No central line needed</td>
<td>No central line needed</td>
<td>Central line often needed</td>
<td>Central line often needed</td>
</tr>
<tr>
<td>Category IV</td>
<td>Anesthesia ready time usually 7:45-8a</td>
<td>Anesthesia ready time usually 7:45-8a</td>
<td>Possible transesophageal echo</td>
<td>Possible transesophageal echo</td>
</tr>
<tr>
<td>OR Considerations</td>
<td>Standard</td>
<td>Standard</td>
<td>Variation: Implants, monitoring, set up and personnel</td>
<td>Variable</td>
</tr>
</tbody>
</table>

Category 1

Category 2

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Official launch, then scaling it up
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Official launch

- 1 surgeon, small group of anesthesia/nursing
- Data collection
- Regular meeting to review data, solve problems
Scaling it up

Phase 1 vs. Phase 2

• Phase 1
  – Single surgeon
  – 4 anesthesiologists (standardized protocol)
  – Small group: RNs, CRNAs, techs

• Phase 2: scaling up
  – 2 surgeons (later, a 3rd)
  – 12 anesthesiologists (standardized protocol)
  – Expanded group: RNs, CRNAs, techs
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Results

(the data)
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Results

• Category 1 cases: more efficient by 111.4 mins (29.7%)
• Category 2 cases: more efficient by 76.9 mins (18.5%)
• Average decrease in OR time was 22.0 (+/-4) mins/per level fused for Category 1 cases

Dedicated Teams saved 1-2 hours per PSF
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Results

Financial analysis

• Cost/min OR time

• Category 1 cases: cost reduction
  >$8900 (p<0.001)

• Category 2 cases: cost reduction
  >$6000 (p<0.001)
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Results

Phase 1

– Cat. 1 cases more efficient by 104.8 mins (p<0.001)
– Cat. 2 cases by 75.8 mins (p<0.001)

Phase 2 (project scaled)

– Efficiency persisted
– All 4 time epochs sig. shorter for Dedicated Teams p<0.01

The scaling worked
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Results

Multivariable linear regression

- BMI, number of level fused
- Number of osteotomies, surgeon
- Type of team (Dedicated or Casual)

- Utilizing a Dedicated Team 91.5 minutes (p< 0.001)
- Increasing BMI: 3 more min
- Osteotomies: 15mins

The biggest impact on OR mins: A Dedicated Team

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Results

Safety

- Impossible to prove "safer"
- 0/78 adverse events for Dedicated Team
- 4/89 adverse events for Casual Team
  - 2 NM changes, full return
  - UPROR: 1 superficial SSI
  - UPROR: 1 dislodged screw cap

Dedicated Team: No adverse events
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Sustaining
Developing Dedicated Spine Teams: Lessons Learned

Sustaining

• Harder than initiating
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Sustaining

• Harder than initiating
• New team members (trainees, MDs, RNs) need to be carefully oriented

New arrivals at a huge teaching hospital (and not just July 1)
Sustaining

• Harder than initiating
• New team members (trainees, MDs, RNs) need to be carefully oriented
• Memory is limited for OR management—reminders/updates
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Sustaining

You need enduring materials

• Surgical protocol shared with incoming trainees
• Spine anesthesia protocol on hospital intranet

DST Surgical protocol for Trainees
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Sustaining

Culture, culture, culture

- Team-building never ends
- Share the results
- Constantly remind the team
  - Their work is special
  - The results are great
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Sustaining

Culture, culture, culture

- Connect what happened in OR to happy patients post-op (stories)
- Happy hours for team-building
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7 lessons learned (to date)
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Summary of lessons learned (to date)

1. Use the wisdom from other Team Sports (NASA, NASCAR, etc) to create your vision
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Summary of lessons learned (to date)

2. Find a compelling reason

- You probably can’t prove it’s “safer”
- They won’t care it’s about professional satisfaction for OR staff
- So make it about money and time saved (value)
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Summary of lessons learned (to date)

3. Find a way to spread the results (OR Town Halls, QSV displays at hospital, etc)
Summary of lessons learned (to date)

4. Easy in a sandbox, hard on a beach

• Sandbox
  – Small, private entrepreneurial setting
  – Nimble decision-making and change agency
  – Shared expertise
Developing Dedicated Spine Teams: Lessons Learned

Summary of lessons learned (to date)

4. Easy in a sandbox, hard on a beach

• Sandbox
  – Small, private entrepreneurial setting
  – Nimble decision-making and change agency
  – Shared expertise

• Beach
  – Sprawling academic medical center
  – Many competing interests
  – Dilute leadership with limited understanding
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Summary of lessons learned (to date)

4. Easy in a sandbox, hard on a beach

- You should **involve experts** (improvement advisors) if available
- You must **standardize** (but MDs will resist because “their way is best”)
- You must have **enduring materials**
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Summary of lessons learned (to date)

5. You must update regularly as conditions, techniques and personnel change
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Summary of lessons learned (to date)

6. Memory is limited for OR management—reminders/updates
Developing Dedicated Spine Teams: Lessons Learned

Summary of lessons learned (to date)

7. Culture, culture, culture: team-building never ends
Thank You