When the Going Gets Tough: Improving Outcomes of Colonoscopy

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Faculty Disclosures

– Mead-Johnson
– Perrigo
– Norgine
– Medtronic

Objectives

• Identify core skills required to perform pediatric colonoscopy
• Discuss evidence-based estimates of procedural volume required to achieve competence
• Review basic and advanced measures which may help during “difficult colonoscopy”
• Recognize the value of implementing CQA/CQI to improving procedural outcomes
Colonoscopy

- A common and established endoscopic procedure for the diagnosis and treatment of many large bowel disorders
- Often perceived by patients as inconvenient and painful
- Recognized by physicians to be variably challenging to perform

Witte, Enns, 2007; Bourque, Rex, 2012

A “typical” colon is rarely configured like this...

Rather more often something like this!
### Indications for Pediatric Colonoscopy

<table>
<thead>
<tr>
<th>Procedure Type</th>
<th>Clinical Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic</td>
<td>Abdominal pain (clinically significant)</td>
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<tr>
<td></td>
<td>Anemia (unexplained)</td>
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<tr>
<td></td>
<td>Diarrhea (chronic, clinically significant with weight loss, fever, anemia)</td>
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<td></td>
<td>Failure to thrive (weight loss)</td>
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<td></td>
<td>Hereditary hemochromatosis</td>
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<tr>
<td></td>
<td>Lower GI tract lesions seen on imaging studies?</td>
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<tr>
<td></td>
<td>Polyposis syndrome (diagnosis and surveillance)</td>
</tr>
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<td></td>
<td>Rejection of intestinal transplant</td>
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<tr>
<td>Therapeutic</td>
<td>Dilatation of strictures</td>
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<td></td>
<td>Foreign body removal</td>
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<tr>
<td></td>
<td>Lower GI bleeding control</td>
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<td></td>
<td>Polypectomy</td>
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</table>
Core Skills for Pediatric Colonoscopy

• Gastrointestinal Endoscopy Competency Assessment Tool for pediatric colonoscopy (GiECATKIDS)
• Developed by Catharine M. Walsh, MD, PhEd
• Via a Delphi method
  – >40 pediatric gastroenterologists from across North America
  – Heterogeneous group with broad expertise
  – 5 rounds of surveys (~76% participants all 5!)

Walsh, GIE, 2014; Walsh, 2014, JPGN; Walsh, JPGN, 2014

Core Skills for Pediatric Colonoscopy

• 3 main competency domains
  – Technical (psychomotor skill)
  – Cognitive (knowledge)
  – Integrative (judgment, clinical reasoning)
GiECATKIDS Global Rating Scale

<table>
<thead>
<tr>
<th>Global Rating Item</th>
<th>Definition</th>
<th>Consensus Score</th>
<th>Board of Maint (50% IB)</th>
<th>Record of Consensus (10% IB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Technical (2)</td>
<td>Demonstrates ability to communicate for evaluation and engagement, and findings are recorded on a chart.</td>
<td>4.9 (5.3)</td>
<td>68.4%</td>
<td></td>
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<tr>
<td>2. Strategies for Safe Achievement</td>
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<td></td>
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<tr>
<td>3. Visualization of Monitored Procedure (Technical)</td>
<td>Monitors and/or detects abnormal patient response, and takes appropriate action to improve patient outcomes.</td>
<td>4.7 (5.0)</td>
<td>61.6%</td>
<td></td>
</tr>
<tr>
<td>4. Procedure Completion (Technical)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Knowledge of Procedure (Educational)</td>
<td>Demonstrates general knowledge of the procedures, and takes necessary action to improve patient outcomes.</td>
<td>4.7 (4.8)</td>
<td>69.8%</td>
<td></td>
</tr>
<tr>
<td>6. Communication and Management of Risk (Technical and Educative)</td>
<td></td>
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<td></td>
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<tr>
<td>7. Patient Safety</td>
<td></td>
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</tbody>
</table>

Walsh, 2014, JPGN

GiECATKIDS GRS Likert Scale

1. Unable to achieve tasks despite significant verbal and/or hands-on guidance
2. Achieves some of the tasks but requires significant verbal and/or hands-on guidance
3. Achieves most of the tasks independently, with minimal verbal and/or manual guidance
4. Competent for independent performance of all tasks without the need for any guidance
5. Highly skilled advanced performance of all tasks

Walsh, GFE, 2014; Walsh, 2014, JPGN; Walsh, JPGN, 2014

GiECATKIDS Checklist Items
(1=Y, 0=not done/N)

- Pre-procedure
  - Technical (1)
    - i.e. Item 5: Checks that equipment is functioning
  - Cognitive (n=3)
    - i.e. Item 1: Reviews and obtains patient history
  - Integrative (2)
    - i.e. Item 2: Takes action in response (i.e. SBE prophylaxis)

- Procedure
  - Technical (6); Cognitive (3); Integrative (3)

- Post-procedure
  - Integrative (2)
    - i.e. Item 18: Educates patient/caregivers about findings and makes follow-up plan
GiECAT KIDS Scores vs. Procedural Experience

Number of Previous Colonoscopies Performed

Total GiECAT KIDS Score

"My problems seem small to you because you’re so darn big!"

ORIGINAL ARTICLE
Clinical Endoscopy

Training to competency in colonoscopy: assessing and defining competency standards

Robert C. Neitzke, MD, MPE

Background: How to define competency in colonoscopy, how to assess it, and how much training is required are questions that experts in endoscopy have grappled with since the advent of the procedure.

Objectives: To describe methods to assess core endoscopy skills in trainees and learning curves for these parameters and to define competency thresholds for these skills.


Setting: Mayo Clinic, Rochester, Minnesota.
Automaticity /ˌɔːtəməˈtɪsɪtɪ/

- The ability to do things without occupying the mind with low-level details required, allowing it to become an automatic response pattern or habit.
- Usually the result of learning, repetition, and practice.

Magnetic endoscopic imaging to measure colonoscopic progress

Nerup, GIE, 2015
Challenge Presented by Colonoscopy

- Can be “difficult” even for experienced colonoscopists
- Definition of “difficult” is subjective
  - Varies across endoscopists
  - Generally involves challenges in completing the intended procedure (i.e. reaching the cecum, intubating the terminal ileum, etc)
- May be measured
  - Duration of time required
  - Amount of physical exertion required
  - Discomfort of the patient

Witte, Enns, 2007; Bourque, Rex, 2012

A “difficult” colon

- Assumed to be rooted in embryology
  - Variations in rotation and fixation during gestation
- Begins when embryo is 10mm long
  - Elongation of the intestinal tube
  - Separation of the yolk stalk
  - Stepwise herniation of the duodenojejunal loop into the umbilical cord
- May be “a done deal” when the embryo is 40mm long
  - Counterclockwise rotation around the SMA allows packaging of the intestine back into the peritoneum
  - Fusing of mesenteries to fix the colon in place

Gershman, Thiomson, 2012
Results if rotation is “normal”

- Two zones of full fixation
  - Ascending and descending colon
- Two areas of partial fixation
  - Cecum and rectum
- Ligamentous attachments
  - Splenic flexure (phrenocolic ligament)
  - Hepatic flexure (hepatorenal ligament)
- Independent mesenteries
  - Sigmoid and transverse colons

Basic and Ideal Colonoscopy Maneuvers

- Important to follow luminal “hints”
- Use torque steering
- Rarely use right/left dials

Waye, 2001; Witte, Enns, 2007; Houttuys, Rex.
Be able to identify landmarks...

Optimal positioning for colonoscopy

- Left lateral side
- Common to reposition patients during procedures to allow successful completion

Waye, 2001; Witte, Enns, 2007; Bourque, Rex

Inspection and Intubation

- Important before exam
  - Inspect perianal area
  - Perform digital exam
  - Helps with tip insertion (several options)
Insertion Techniques

• Key to successful, “easy” colonoscopy
• Involves navigating through the rectum and sigmoid
• Sigmoid colon
  – Not as long in children as in adults
  – Also with relatively short mesentery – with less stretching
• Prone to looping
  – Studies suggest loops occur in >90% of all colonoscopies (adult and pediatric)

Waye, 2001; Bourque, Rex, 2012; Gershman, Thomson, 2012

Looping During Colonoscopy

• Causes pain
• Impedes further intubation
• Can place patient at risk
• Push with a loop = bigger loop
  – Always tends to form

There is only one way to remove a loop: Pull back scope!!

Waye, 2001; Bourque, Rex, 2012; Gershman, Thomson, 2012
Pulling the Scope Back…

- Removes loops
- Changes vector forces from loop to straight
- Decreases patient discomfort
- Keeps patient safe
- Removes tip from contact with mucosa
- Pleats colon on shaft of scope

Main Types Loops in the Sigmoid colon:
N and alpha

N loop of the sigmoid

- Most common configuration
- Iatrogenic
- Should be shortened in descending colon
Alpha loop of the sigmoid

- Shortened in transverse colon

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Sigmoid Loops

- May also be mitigated using manual pressure

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Manual compression of abdomen

- Only needs to be applied for short periods of the procedure (15 seconds/application)
- Shortens procedure time
- Minimize the angle of turns in the colon
- Prevents looping
- May help to prevent perforation

Waye, 2001; Bourque, Rex, 2012
Applying pressure at the sigmoid/transverse colon

Applying pressure at the sigmoid/hepatic flexure

Transverse colon – Gamma loop
Proximal transverse colon

Hepatic flexure

Cecum
Intubating the Terminal Ileum
• Number 1 Tip: Practice makes perfect!

Tricks to the Trade
• Inflate as little as possible
• Push as little as possible
• Pull back often
• Loop and deloop continuously
• Use torque steering
• Use luminal hints
• Focus on safety and comfort

got competence?
Maintenance of Certification (MOC)

- 4 Modules
  - Colonoscopy
  - Upper Endoscopy
  - Failure to Thrive
  - Informed Consent

Resources will provide registrants with ALL that is needed to engage in self-directed Quality Improvement (QI) activities and to receive 40 MOC Part IV credits per cycle to maintain American Board of Pediatrics Maintenance of Certification (MOC)

To register go to: members.naspghan.org/MOCI

For more information please email: naspghanmoc@ucsd.edu

Only $250. Register TODAY!

IQ=E and Measuring Quality

- Initial Round of 58 participants (Oct 2014)
  - Completed first of three required data entry steps for the colonoscopy Module

Colonoscopy – Data Entry 1

| 1. Average compliance with documentation requirements across reported 10 charts | 91.3% |
| 2. Average total colonoscopy time | 35.7 minutes |
| 3. Average total time to the cecum | 20.9 minutes |
| 4. Average % successful terminal ileum intubation among cases in which terminal ileum intubation was the goal | 91.8% |
| 5. Average % colonoscopies performed that resulted in change in clinical management | 68.0% |

NASPghan, 2014
Data Drive Changes in Practice

- Identifying where deficiencies are occurring can be critical
  - Ensuring quality assurance
  - Prioritizing targets for quality improvement
- Examples of possible areas for QA/QI
  - Documentation
  - Preps
  - Time to cecum
  - Ileal intubation rates

Quality of Endoscopy Documentation

- Data shows tremendous variation in reporting among endoscopists
  - 438,000 procedures (2004-2006) from the Clinical Outcomes Research Initiative (CORI) *
- Data from pediatrics shows same pattern!
  - 21,800 pediatric procedures from PEDS-CORI network:**
  - Similar variation in documentation

*Lieberman, 2009; **Thakkar, 2013
Preps

- Use documentation to identify adequacy of your institutional bowel prep
- No FDA approved pediatric preps

Improving Procedure Times

- Focus
- Transparency
- Simulation
  - Emphasize “games”
- Practice
Ileal Intubation Success

• Focus, practice
• Extra training
  – i.e. ESPGHAN Endoscopy Summer School
• New techniques

Conclusions

• Core skills required to perform pediatric colonoscopy
  – Technical, cognitive and integrative
• Possible to measure
• Should seem improvement over time
• Variation in how many procedures to achieve competence
  – Clear that this is more than 100-150 generally performed during fellowship
Conclusions

• Difficult colonoscopy should be seen as a colonoscopist issue, rather than a “patient problem”
• A number of basic measures and advanced techniques which can be learned
• Excellent and successful colonoscopy
  – Timely
  – Efficient
  – Safe
  – Comfortable

Conclusions

• Continuous career goal should be to become/maintain automaticity for the skills needed to perform the procedure
  – Unconsciously competent

• May be value to implementing CQA/CQI at the individual, as well as the unit level
  – Can be used to identify targets for improvement
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