The Operative Entrustability Assessment: 
Going Beyond the NAS Milestones 

Carisa M. Cooney, MPH; Damon S. Cooney, MD, PhD; Branko Bojovic, MD; Richard Redett, MD; Scott D. Lifchez, MD
• No disclosures
Background
Background

• Evolution of ACGME training requirements:
  – Shifting from Passive -> Active measures of competence
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  – Shifting from *Passive* -> *Active* measures of competence
    • 6 *Core Competencies* (1999)
    • *Next Accreditation System (NAS) & Milestones* (2009)
Background

• Evolution of ACGME training requirements:
  – Shifting from Passive -> Active measures of competence
  • 6 Core Competencies (1999)
  • Next Accreditation System (NAS) & Milestones (2009)
    – PRS Milestone Roll-Out (2014)
Background

• ACGME Case Log - 1º Assessment
  – Signed off by Program Director
  – Passive account of operative experience
Objective

• To create a comprehensive, robust electronic resource
  – Facilitate training program compliance with
    • NAS Milestones
    • ACGME-mandated changes
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• To create a comprehensive, robust electronic resource
  – Facilitate training program compliance with
    • NAS Milestones
    • ACGME-mandated changes
  – Improve real-time operative feedback
  – Potential to assess every case, every time
  – Data transparency for residents
    • Self-monitoring
Methods
Methods

• 2013-2014 - Designed & piloted web-based tool: *Comprehensive Observations of Resident Evolution (CORE)*
  – Implemented at Johns Hopkins & University of Maryland
  – Nov. 2014 - Used CORE to complete Clinical Competency Committee (CCC) Review
Methods

• Comprehensive Observations of Resident Evolution (CORE)
  1. Operative Entrustability Assessment (OEA)
  2. Data Dashboard
  3. MileMarker
Methods: CORE

1. Operative Entrustability Assessment (OEA)
   – Rapid assessment of resident OR performance
   – Completed after each surgery
Methods: CORE

PRS Residency Learning Portfolio

Resident Self-Evaluation
Instructions: Based on your performance for the case indicated above, which of the following choices best describes the level of supervision you feel you need to be able to perform your next case of this type?

Resident Self-Evaluation *

- **Level 1 - Demonstrative Guidance:** The attending will need to perform the entire surgery with the resident assisting and observing.
- **Level 2 - Physical Guidance:** The attending will be able to position the resident as the operator and the attending as the assistant to perform the surgery. The resident can be led motion by motion through the surgery.
- **Level 3 - Verbal Guidance:** The attending will be able to discuss the case with or instruct the resident as the operator, but the resident will be able to mark and perform the surgery with the attending verbally assisting, advising, and correcting as necessary.
- **Level 4 - Supervisory Guidance:** The attending will need to be present for the case to provide guidance if needed or requested; the resident will be able to perform the entire surgery or may lead a more junior resident through the surgery.
- **Level 5 - Consultatory Guidance:** The resident would be capable of performing the operation alone (without the attending in the room). The attending would not need to be scrubbed for large portions of the procedure but might be needed to address a resident question or problem by phone should one arise.

Attending to Review *

- Ready for attending to evaluate, hide resident self-evaluation
- Save my progress and resume later

[Attending Click Here to Evaluate Resident]
Methods: CORE

PRS Residency Learning Portfolio

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Instructors: Based on your performance for the case indicated above, which of the following choices best describes the level of supervision you feel you need to be able to perform your next case of this type?

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Attending to Review *

- [ ] Ready for attending to evaluate, hide resident self-evaluation
- [ ] Save my progress and resume later

[Attending Click Here to Evaluate Resident]
Methods: CORE

PRS Residency Learning Portfolio

Instructions: Based on the Resident’s performance for the case indicated on the previous page, which of the following choices best describes the level of supervision you feel the trainee needs to be able to perform his/her next case of this type?

Please review the procedure and resident information and then click continue to evaluate.

Assign this case to a Milestone:

- Congenital Anomalies
- Maxillofacial Trauma
- Head & Neck
- Facial Aesthetics
- Breast Reconstruction
- Non-Cancer Breast Surgery
- Reconstruction of Trunk-Perineum
- Cosmetic Trunk and Lower Extremity
- Upper Extremity Trauma
- Non-Trauma Hand
- Lower Extremity
- Tissue Transfer
- Surgical Care
- Wound Care

Attending Evaluation *

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Provider Number *

Submit
2. **Data Dashboard** - Graphical summaries of resident progress by
   - Case
   - Milestone
   - CPT code
### Methods: CORE

**Operative Entrustability Assessment**

- **Case Dashboard**
- **Average Per Milestone**
- **Average Per CPT Code**

**Table of Cases**

<table>
<thead>
<tr>
<th>Case Date</th>
<th>Attending</th>
<th>Resident</th>
<th>NAS Milestone</th>
<th>CPT</th>
<th>Resident Self-Assessment</th>
<th>Attending’s Assessment</th>
<th>Average Assessment</th>
<th>PGY Level</th>
<th>Patient Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/17/2014</td>
<td>Cooney, Damon</td>
<td>Head &amp; Neck</td>
<td>15756</td>
<td>5</td>
<td>5</td>
<td>3.43</td>
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<td>PG-6</td>
<td>,</td>
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<tr>
<td>11/07/2014</td>
<td>Cooney, Damon</td>
<td>Upper Extremity Trauma</td>
<td>64787</td>
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<td>5</td>
<td>4.0</td>
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<tr>
<td>10/31/2014</td>
<td>Cooney, Damon</td>
<td>Wound Care</td>
<td>97605</td>
<td>5</td>
<td>5</td>
<td>5.0</td>
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<td>PG-2</td>
<td>,</td>
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<tr>
<td>10/31/2014</td>
<td>Cooney, Damon</td>
<td>Non-Trauma Hand</td>
<td>11730</td>
<td>5</td>
<td>5</td>
<td>5.0</td>
<td>PG-6</td>
<td>,</td>
<td></td>
</tr>
<tr>
<td>10/23/2014</td>
<td>Cooney, Damon</td>
<td>Wound Care</td>
<td>11046</td>
<td>3</td>
<td>5</td>
<td>5.0</td>
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<td>PG-2</td>
<td>,</td>
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<tr>
<td>5/28/2014</td>
<td>Cooney, Damon</td>
<td>Reconstruction of Trunk-Perineum</td>
<td>15734</td>
<td>5</td>
<td>5</td>
<td>4.23</td>
<td>PG-5</td>
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<tr>
<td>3/28/2014</td>
<td>Cooney, Damon</td>
<td>Non-Trauma Hand</td>
<td>26951</td>
<td>5</td>
<td>5</td>
<td>4.25</td>
<td>PG-5</td>
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<td></td>
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</table>
### Methods: CORE

#### Operative Entrustability Assessment

<table>
<thead>
<tr>
<th>Case Dashboard</th>
<th>Average Per Milestone</th>
<th>Average Per CPT Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending:</td>
<td>Resident:</td>
<td>PGY Level:</td>
</tr>
<tr>
<td>All Attendings</td>
<td></td>
<td>PG-Y</td>
</tr>
</tbody>
</table>

**Average Attending Assessments by Milestone**

- **Cosmetic Trunk and Lower Extremity**: 18.0
- **Surgical Care**: 13.0
- **Non-Cancer Breast Surgery**: 16.0
- **Tissue Transfer**: 16.0
- **Breast Reconstruction**: 336.0
- **Head & Neck**: 100.0
- **Lower Extremity**: 74.0
- **Reconstruction of Trunk**: 180.0
- **Maxillofacial Trauma**: 68.0
- **Upper Extremity Trauma**: 95.0
- **Wound Care**: 34.0
- **Non-Trauma Hand**: 252.0

![Graph showing average attending assessments by milestone](image-url)

- **Legend**:
  - Standard deviation
  - Average for all residents
  - (Selected Resident's) average
  - (Selected Attending's) average given assessment

### Notes
- The image refers to the assessment of operative entrustability, focusing on various milestones and presenting data for different procedures.
- The graph highlights the average ratings for each milestone, with specific emphasis on the Non-Trauma Hand assessment.
### Average Attending Assessments per CPT Code

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>26125</td>
<td>RELEASE PALM CONTRACTUR 0.0</td>
<td></td>
</tr>
<tr>
<td>26510</td>
<td>THUMB TENDON TRANSFER - 1.0</td>
<td></td>
</tr>
<tr>
<td>14040</td>
<td>TIS TRNFR F/I/C/IM/MA/G 5.0</td>
<td></td>
</tr>
<tr>
<td>25111</td>
<td>REMOVE WRIST TENDON LE 15.0</td>
<td></td>
</tr>
<tr>
<td>64721</td>
<td>CARPAL TUNNEL SURGERY - 7.0</td>
<td></td>
</tr>
<tr>
<td>13271</td>
<td>SIGN SUB GRAFT TRNKARW 2.0</td>
<td></td>
</tr>
<tr>
<td>14541</td>
<td>TIS TRNFR F/I/C/IM/MA/G 11.0</td>
<td></td>
</tr>
<tr>
<td>24305</td>
<td>ARM TENDON LENGTHENING 1.0</td>
<td></td>
</tr>
<tr>
<td>64716</td>
<td>REVISE ULNAR NERVE AT E 31.0</td>
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</tr>
</tbody>
</table>
Methods: CORE

Operative Entrustability Assessment

Case Dashboard  Average Per Milestone  Average Per CPT Code

Average Attending Assessments per CPT Code

- 26123 RELEASE PALM CONTRACTUR 0.0
- 26510 THUMB TENDON TRANSFER - 1.0

Rating

CORE PG Rating:
0 1 2 3 4 5
Methods: CORE

3. **MileMarker©** - Electronic Milestones tracker
   - Compliments OEA & Dashboard
   - Embedded data to facilitate CCC rating
### Methods: CORE

<table>
<thead>
<tr>
<th>MileMarker</th>
<th>reviewer ID</th>
<th>review type</th>
<th>review period start</th>
<th>review period stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>MileMarker</td>
<td>Damon Cooney</td>
<td>CCC</td>
<td>06/01/2014</td>
<td>10/31/2014</td>
</tr>
</tbody>
</table>

#### Resident Milestones

<table>
<thead>
<tr>
<th>resident</th>
<th>milestone</th>
<th>Surgical Care Patient Care</th>
<th>PGY</th>
<th>PG-5</th>
</tr>
</thead>
</table>

1. Performs history and physical examination of the surgical patient and employs algorithms such as advanced trauma life support (ATLS) and advanced cardiac life support (ACLS).
2. Manages several uncomplicated patients, with assistance.
3. Independently performs basic techniques in the care of the surgical patient, e.g., nasogastric [NG] tube placement, urethral catheterization, knot tying.

1. Performs surgical consultations, with assistance.
2. Independently performs routine procedures (e.g., incision and drainage, central line placement, chest tube placement, biopsy, wound closures and laceration repair).
3. Recognizes exceptions and describes three or more solutions.

1. Manages a surgical patient with single system disease with assistance.
2. Independently manages multiple patients and surgical consultations.
3. Recognizes exceptions and describes three or more solutions.

1. Independently manages a surgical patient with multiple system diseases; manages a surgical patient with one or more life threatening conditions with consultation.
2. Manages a surgical service.
3. Applies known solutions in novel ways: anticipates and has a plan for potential problems.

1. Teaches and supervises other learners who manage patients.
2. Develops and employs simulation for teaching and assessment of surgical skills.
Results

- January-October 31, 2014
  - 1,298 OEAs were completed (JHH)
  - 21 residents
  - 38% of Residents reported more immediate feedback -> operative performance
Results

• The Operative Entrustability Assessment (OEA)
  – Demonstrates construct validity
  – Distinguishes between novice & experienced residents
Results

**Average OEA Score by PGY Level for CPT Code 19357**
(n=121)

**19357**: BREAST RECONSTRUCTION, IMMEDIATE OR DELAYED, WITH TISSUE EXPANDER, INCLUDING SUBSEQUENT EXPANSION
Results

Average OEA Score by PGY Level for CPT Code 19380 (n=91)

<table>
<thead>
<tr>
<th>PG-1 (n=1)</th>
<th>PG-2 (n=27)</th>
<th>PG-3 (n=3)</th>
<th>PG-4 (n=15)</th>
<th>PG-5 (n=28)</th>
<th>PG-6 (n=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4.5</td>
<td>5</td>
<td>5.5</td>
</tr>
</tbody>
</table>

**19380**: REVISION OF RECONSTRUCTED BREAST
Results

Average OEA Score by PGY Level for CPT Code 19364 (n=82)

19364: BREAST RECONSTRUCTION WITH FREE FLAP
Results

Average OEA Score by PGY Level for CPT Code 15734 (n=98)

15734: MUSCLE, MYOCUTANEOUS, OR FASCIOCUTANEOUS FLAP; TRUNK
Results

- Nov. 2014 - Clinical Competency Committee Review:
  - First NAS Review -> 87% shorter*
    - Avg. time per resident: 11.5 min. (vs. 60 min.)
    - Time savings (every 6 months):
      - 8 surgeons -> assess 24 residents
      - 36.8 hours vs. 192 hours
    - Billable time saved (every 6 months):
      - $272,000

*compared with pilot test site reports
Summary

CORE

- OEA, Data Dashboard, & MileMarker
  - Facilitate Plastic Surgery training & ACGME documentation compliance
  - Longitudinal electronic tracking of Milestone progress
  - Constitutes significant time-savings to Faculty, transparency to trainees
  - Data-driven approach to surgical training & assessment
Summary

CORE

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Limitations

• “One more thing”
  – Communicating with ACGME re: integration with Case Log

• Requires some training to implement
  – Relatively easy
  – Provide incentives to residents, faculty

• Raters may use scoring system inappropriately
  – Educate raters, provide text anchors
Afterword

• **As of March 31, 2015:**
  – 2,200 OEAs were completed
  – Additional funding awarded
    • Expand platform for use by other programs
      – Trial roll-out: June 2015
      – Expansion: January 2016
Acknowledgements

Grant Support

2013-2015:

*Residency Redesign Grant* - $95,000
Johns Hopkins Institute for Excellence in Education

Mar.-Dec. 2015:

*Maryland Innovation Initiative Grant* - $150,000
Maryland Technology Development Corporation (TEDCO)
Acknowledgements

- W. P. Andrew Lee, MD
- Sheri Slezak, MD
- **Clinical Competency Committee Members:**
  - Richard Redett, MD
  - Scott Lifchez, MD
  - Damon Cooney, MD, PhD
  - Branko Bojovic, MD
  - Gedge Rosson, MD
  - Amir Dorafshar, MBChBS
  - Steve Bonawitz, MD
  - Leigh Ann Price, MD
- Kristin Hook, Program Coordinator