Trainee Assessment & Competency

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- Robert Sedlack  Mayo Clinic
- Walt Coyle  San Diego
- Kathryn Walsh  Toronto
- Adam Haycock  UK NHS
- John Anderson  UK NHS
- Roland Valore  UK NHS
Competence

“The minimum level of skill, knowledge and/or expertise, derived through training and experience, required to safely and proficiently perform a task or procedure”

Skills acquisition

- Performance
- Time
- Expertise
- Competence

Haycock, A
Skills acquisition

- Performance
- Time

Expertise
- Competence

Safely perform independently
Skills acquisition

![Graph showing the acquisition of skills over time with stages of performance, competence, and expertise.]

- **Performance**
  - Safely perform independently
  - Minimum standard?

- **Time**

- **Expertise**
- **Competence**

Haycock, A
Skills acquisition

- **Performance**
  - Minimum standard?
  - Safely perform independently
  - Average?

- **Time**
  - Expertise
  - Competence

Haycock, A
Skills acquisition

- Performance
- Time
- Expertise
- Competence

Haycock, A
Skills acquisition

- Detection
- Intubation
- Therapy

Performance vs. Time

Expertise

Competence

Haycock, A
Problems with Competence Assessment Prior to 2010

- **Subjective** - No standardized assessment
- **Standards favored number driven endpoints**
  (Cecal intubation rate, Polyp detection rate)
- **Skill & improvement not continually monitored**
- Thus, competence assessment varied from teacher-to-teacher and place-to-place
## Skills measurement

<table>
<thead>
<tr>
<th></th>
<th>Direct Measure</th>
<th>Surrogate Measure</th>
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<td>CIR</td>
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<tr>
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<td>PDR</td>
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<td>ADR</td>
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Haycock, A
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Haycock, A
Granularity and Specificity in Assessment & Feedback

- Estimate of Systematic variability among assessors: (leniency/stringency) = 11.04 % of variation
- Task deconstruction enhances conscious competence of trainer & fellow
- Reduces bias, Enhances corrections

*Gupta, Anderson et al. Gastrointest Endosc 2011;73:132-39*
2010-Present: Developments in Competence Assessment

- Broadening the definition of competence to include Cognitive, Motor skills, Attitudinal skills
- Development of standardized assessments for colonoscopy skills (e.g. MCSAT & ACE, DOPS)
- Realistic guidelines for procedural numbers
- Uniform standards for all specialties
Modern Multi-parameter Assessment tools

MCSAT - Colon
ACE – EGD, Colon
GAGES – EGD, Colon
GiECAT – Colon
GiECATKIDS – peds Colon
DOPS - OGD, colon/flexi, ERCP, EUS, PEG, GI bleeds, dilatation/stenting, pediatrics, polypectomy
Mayo Colonoscopy Skills Assessment Tool (MCSAT)
(Sedlack, Mayo)

• 3 year prospective study
• Performance data on all fellows

14 Survey Items:

6 - Core Motor Skills
- Scope advancement
- Cecal Intubation
- Therapy Application
- Mucosal Visualization
- Loop Reduction
- Depth of Intubation

6 - Core Cognitive skills
- Indication
- Pain Management
- Sedation
- Landmark Recognition
- Pathology Identification
- Tool Selection

2 - Overall Motor and Cognitive competence
Learning Curves for 5 Core Motor Skills on MCSAT

1- Novice, 2-Intermediate, 3-Advanced, 4-Competent

- 41 fellows, 6635 Colonoscopies
Overall Motor and Cognitive Skill Curves on MCSAT

1- Novice, 2-Intermediate, 3-Advanced, 4-Competent
Learning Curve – Cecal Intubation Rates

The graph above illustrates the percentage of cecal intubations over the number of procedures performed. Initially, the rate is low, but it increases significantly as the number of procedures performed grows. The chart shows a steady improvement in intubation rates, with a notable increase around 100 procedures, followed by a plateau. The data points are represented with error bars, indicating variability in the intubation rates. The graph highlights the importance of experience in achieving higher success rates in cecal intubation.
Percent of Fellows Meeting Competency Criteria
Prospective Use of the MCSAT For Fellows Experience

10-20% of fellows provided supplemental experience
Assessment of Competency in Endoscopy (ACE): generalizable competency benchmarks for colonoscopy

- Update MCSAT – Validated & generalized to multiple centers

- **ACE tool:** 4 point grading scale for Motor & Cognitive Skills:

**Motor Skills (8):**
- Use of air, water, suction
- Steering technique
- Fine tip control
- Loop reduction techniques
- Depth of independ. advance
- Visualization of mucosa
- Ability to apply Rx tools
- Overall Motor Skills

**Cognitive Skills (8):**
- Lumen identification
- Knowledge of indication, hx
- Mgt. of discomfort
- Pathology ID & Interpretation
- Identifying pathology location
- Polyp Detection
- Knowledge - therapeutic tools
- Overall Cognitive Skills

Sedlack, Coyle. GIE 2016;83:516-523
Assessment of Competency in Endoscopy:

Average Competence by Experience

Cecal Intubation by Experience

Sedlack, Coyle. GIE 2016;83:516-523
Assessment of Competency in Endoscopy:

Procedure Time by Experience

Polyp Detection, Miss Rate by Experience

Sedlack, Coyle. GIE 2016;83:516-523
Gastrointestinal Endoscopy Competency Assessment Tool (GiECAT)

• Prospective, Multicenter Validation Study
  – Checklist – 19 items in 5 domains
  – Global Rating Scale - 7 items
• 61 Endoscopists (GI & Gen Surg) → 116 Colonoscopies
• Dual raters, Dual Procedures, Non-blinded

Results:
High or Excellent:
- Inter-rater reliability
- Retest reliability
- Discriminative validity between novice → exp’d
- Concurrent validity

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* Walsh et al. (Toronto), GIE 2015.81:1417-1424
DOPS
Directly Observed Procedure Score

<table>
<thead>
<tr>
<th>Date of procedure</th>
<th>Membership no. (e.g. GMC/NMC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trainee name</td>
<td></td>
</tr>
<tr>
<td>Assessor name</td>
<td></td>
</tr>
</tbody>
</table>

Outline of case

<table>
<thead>
<tr>
<th>Difficulty of case</th>
<th>Easy</th>
<th>Moderate</th>
<th>Complicated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please tick appropriate box</td>
<td></td>
<td></td>
<td></td>
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Complete DOPS form by ticking box to indicate whether trainee is competent for independent practice

Not competent for independent practice

Competent for independent practice

Pre-procedure

<table>
<thead>
<tr>
<th>Indication</th>
<th>Risk</th>
<th>Confirms consent</th>
<th>Preparation</th>
<th>Equipment check</th>
<th>Sedation</th>
<th>Monitoring</th>
<th>Comments</th>
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</thead>
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Management of findings

<table>
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<tr>
<th>Recognition</th>
<th>Management</th>
<th>Complications</th>
<th>Comments</th>
<th>Post-procedure</th>
<th>Report writing</th>
<th>Management plan</th>
<th>Comments</th>
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The form includes additional sections and columns, but the main focus is on the structure and purpose of the DOPS. The form is designed to assess the competence of trainees in specific areas related to colonoscopy and sigmoidoscopy.

Date last update

Haycock, A
DOPyS
Direct Observation of Polypectomy Skills

- 33 criteria
- Skills
- ‘Live’
- ‘Video’

Assessment/pre-polypectomy
Stalked polyps
Sessile polyps/EMR
Post-polypectomy

Haycock, A
Summary

• Well validated competency assessment tools have been established
• Multifactorial: Knowledge, Skills, Attitudes
• Application reduces reliance on subjective assessments
• Serial ‘formative’ application enables individualized training schedules
• Determination of Competence via Serial Formative vs. Summative Assessments