The challenge of assessing learners in the clinical setting

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McGill

The University of Tokyo
Goals of today’s lecture:

After this presentation, you will be able to discuss the principles of assessment in the clinical setting, and ...

- Outline why we must evaluate (the goals of assessment),
- Propose who should be evaluated & who should assess,
- List the aspects of clinical competence or performance that should be considered,
- Describe new / commonly-used assessment methods, with advantages and limitation, and
- Discuss whether accurate evaluation makes a difference.
Learner assessment in the clinical setting

- Goals of evaluation,
- Who is assessed & who does it,
- What is evaluated,
- How it is done,
- Effectiveness of assessment
Setting the stage - ‘assessment cases’ -
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<td>Overall clinical mark</td>
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Comments ________________________________________________________________________________________

Name of evaluator _________________ Date ________________
Signature_________________ Attending staff O Resident O Other O
Student signature_________ Comment _________________________
Exam mark _____ OSCE mark ____ Clinical mark ____ Overall _____
<table>
<thead>
<tr>
<th>Student name</th>
<th>Rotation</th>
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**Comments**

I was not aware of these problems before I received this final evaluation

No Feedback

**Name of evaluator**

**Date**

**Signature**

Attending staff O  Resident O  Other O

Student signature

Comment ____________________________________________________________________________
<table>
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<th>Student name</th>
<th>Rotation</th>
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<table>
<thead>
<tr>
<th>Clinical reasoning</th>
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<td>Self direction</td>
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<td>Responsibility</td>
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Comments____________________________________________________________________________________
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Name of evaluator ________________ Date__________________
Signature________________________ Attending staff  O  Resident O  Other O
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**Definition of scale**

- Poor, Borderline, Average, Good, Outstanding
- vs. below, meets, above expectations ...
- vs. Fail, Fair, Good, Very good, Excellent
- vs. specific descriptors

**Norm-referenced vs criterion referenced?**
<table>
<thead>
<tr>
<th>Criteria</th>
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<td>Data collection</td>
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<td>Teamwork</td>
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<td>Attendance &amp; reliability</td>
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<td>Motivation</td>
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<td>Overall</td>
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Comments: hard worker, nice person, comes in early. Offers to take more patients, neat written notes.

Easygoing evaluator: Trouble with knowledge & problem-solving.
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<td>X</td>
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</tbody>
</table>

Comments: 'Just the facts' assessor: trouble with non-cognitive competencies

Not applicable / could not judge
<table>
<thead>
<tr>
<th>Student name</th>
<th>Rotation</th>
<th>Dates</th>
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<td>Overall assessment</td>
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Comments: **not much chance to observe, but should do well**

Name of evaluator: __________________ Date: __________

Signature: __________________ Attending staff O Resident O Other O

Note: 'Thoughtless rater'
Learner assessment in the clinical setting

- Goals of evaluation – why evaluate?
- Who is assessed & who does it,
- What is evaluated,
- How it is done,
- Effectiveness of assessment
Why evaluate?

Judgment ➔ consequences
Why evaluate?

- **Learner:**
  - formative
  - summative

- **Teacher:**
  - learning objectives achieved

- **Program planner:**
  - curriculum
  - institutional change

- **Society:**
  - protect the public
Formative | Summative
---|---
Guide learning | Provide judgment

A > > > > > > > > B

F F F F S
<table>
<thead>
<tr>
<th>Formative</th>
<th>Summative</th>
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</thead>
<tbody>
<tr>
<td>Guide learning</td>
<td>Student promotion</td>
</tr>
<tr>
<td>reinforce motivation</td>
<td>Access to advanced training</td>
</tr>
<tr>
<td>set higher standards</td>
<td>Judgment re competence or fitness to practice</td>
</tr>
<tr>
<td>Provide reassurance</td>
<td>Professional self-regulation &amp; accountability</td>
</tr>
<tr>
<td>Promote self-reflection</td>
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<tr>
<td>Foster habits of life-long learning</td>
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<tr>
<td>Different methods</td>
<td>Formative</td>
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<td>-------------------</td>
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</tr>
<tr>
<td>Provide feedback to drive learning</td>
<td>More psychometric rigor (essential for ‘high stakes exams’)</td>
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</table>
Learner assessment in the clinical setting

- Goals of evaluation,
- Who is assessed & who does it,
- What is evaluated,
- How it is done,
- Effectiveness of assessment
Who is assessed?

- Medical students: pre-clerkship, clerkship, clinical electives
- Residents, clinical fellows
- Physicians in practice
Who should evaluate?

- Clinical teachers or tutors
- Attending physicians
- Residents, fellows
- Clinical service chief
- Other health professionals
- Patients
- Peers
- Self assessments

.... As many as possible
Learner assessment in the clinical setting

- Goals of evaluation,
- Who is assessed & who does it,
- What is evaluated,
- How it is done,
- Effectiveness of assessment
What are we evaluating?

**Clinical competence & performance**

“the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values and reflection in daily practice for the benefit of the individual and the community being served.”

An evolving ‘habit of learning’, driven in part by evaluation

(JAMA)
What are we evaluating?

Clinical competence & performance

- Clinical skills,
- Data collection,
- Problem-solving, diagnostic reasoning
- Management of ambiguity,
- Self-direction,
- Judgment,
- Clinical knowledge and application to practice
- Learning strategies,
- Core competencies,
- Professionalism,
- Attitudes,
- Respect,
- Work habits,
- Teamwork,
- Organizational skills
What are we evaluating?

*Clinical competence & performance*

What standard, level?
- Related to context
- Related to content
- Evolve at varying rates
Learner assessment in the clinical setting

- Goals of evaluation,
- Who is assessed & who does it,
- What is evaluated,
- How it is done – assessment methods
- Effectiveness of assessment
Where and when should we evaluate?

- In clinical setting, with real patients … where possible
  - Supplement & complement based on learning objectives
- Formative and summative
- Ongoing – repeated observations
  - For some competencies, longitudinal through clerkships
‘CARVE’ approach to evaluation

- Cost
- Acceptability
- Reliability
- Validity
- Educational value
Assessment methods

**In-training evaluation:**
- practice based,
- ongoing,
- global,
- multifactorial,
- integrated,
- formative,
- subjective,
- qualitative

**Other assessment tools:**
- away from context,
- single time,
- specific,
- summative,
- objective,
- quantitative
Miller triangle

- In-training
- In-training
- In-training

- does
- shows
- knows how
- knows

- Other
- Other
- Other
Assessment methods for clinical setting

OSCE, observed H&P, oral examination,
MCQ, logs, journals,
portfolios, critical incidents, Mini-CEX,
P-Mex, SP’s, medical records
360° feedback, formalized feedback
PMP’s, SCT’s, key features exam,
SAQ, essays global ratings
simulations, ...?
Global ‘in-training’ assessments

Global summative (sometimes formative) ratings of many aspects of clinical performance on clinical rotations

**Advantages**
- Allows direct observation
- Can have many independent raters
- Quantitative & narrative data
- Many clinical skills & core competencies

**Limitations**
- Subjective
- May be second-hand
- Infrequent observations
- May be based on limited contact e.g. case presentation
- Need to define scale & criteria
<table>
<thead>
<tr>
<th>研修医</th>
<th>研修医として</th>
<th>今後望む</th>
<th>十分な報告が</th>
<th>評価</th>
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<td>2</td>
<td>1</td>
<td>NA</td>
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<tr>
<td>心肺呼吸器の症状についても把握を願う</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>必要な身体診断が正確に行える</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>NA</td>
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<tr>
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<td>3</td>
<td>2</td>
<td>1</td>
<td>NA</td>
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<tr>
<td>患者の家族の変化や変動を把握できることができる</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>NA</td>
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<tr>
<td>抜群の態度</td>
<td>3</td>
<td>2</td>
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<td>週に一回の受診がある</td>
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<td>NA</td>
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<td>時間的に正確である</td>
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<td>合計</td>
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十分な臨床的知識を有する。
自ら研究的に学習し、文献にあたり知識を得ている。はどのようにと言えども、研修者としての姿勢は良い。

努力が必要な職務

研修医の名前 |

評価者の署名 |
This evaluation is a consensus following discussion with the supervising fellow, the nursing staff and key consultants.
The resident’s strengths are xxx xxxx xxxx and xxxx
She has been encouraged to improve xxxx and xxxxxxxx.
The student could work on this by: Xxx xx xxx and xxxxx xx xxxxxxx x.
I have discussed this in detail with the trainee

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<th>Comments</th>
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<th>Date</th>
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<tr>
<th>Signature</th>
<th>Attending staff</th>
<th>Resident</th>
<th>Other</th>
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</table>
Formalized feedback

Feedback based on clinical performance, often using global rating form as a guide, mandated at mid term of clinical rotation;

Advantages

- Feedback ‘appointment’ is ‘booked’
- Formative – allows time for improvement
- Assesses many aspects of clinical performance

Limitations

- Training in providing feedback may be needed
- Compliance variable (student driven is better)
P-MEX, Mini-CEX (Clinical Evaluation eXercise)

Structured direct observation by attending physician / supervisors with checklist for rating a brief clinical interaction with patient

**Advantages**
- Can provide feedback
- Wide range of clinical issues
- Can assess:
  - Communication skills
  - Clinical skills
  - Professionalism

**Limitations**
- Time consuming
- As yet limited use
- ‘Best’ behaviours rather than ‘normal’
- Need evaluator training
Clinical evaluation exercise example
Script concordance tests

Written assessment clinical reasoning, application of knowledge; given situation + information – degree that new information increases or decreases likelihood of diagnosis

**Advantages**
- Assesses clinical problem solving ability
- Useful for controversial issues
- Avoids cueing
- Computer grading

**Limitations**
- Unknown predictive validity for real-life clinical reasoning
SCT example

A 45 y. o. man with a three-hour history of vertigo is brought to the hospital by his wife.

- You believe he may have multiple sclerosis. Physical exam reveals bi-directional nystagmus. How does this change your assessment?
  
  (-2)----------(-1)----------(0)----------(+1)----------(+2)

- You believe he may be suffering from labyrinthitis. He reveals to you that he also developed diplopia recently. How does this change your assessment?
  
  (-2)----------(-1)----------(0)----------(+1)----------(+2)

- You believe he may have Ménière’s Syndrome. Exam shows no hearing loss. How does this change your assessment?
  
  (-2)----------(-1)----------(0)----------(+1)----------(+2)

Charlin et al
Key features exams

Written exercise for clinical reasoning, application of knowledge focussing on critical decisions & essential steps to resolve problems in clinical scenarios; >1 response may be correct

**Advantages**

- Assesses clinical problem solving ability
- Avoids cueing
- Computer grading
- Reliable; face & content validity

**Limitations**

- Unknown if transfer to real-life reasoning skills
Elements of KF scenarios

- Reason for medical visit
- Symptom
- Sign
- Laboratory investigation results
- Images (radiology, photos)
- Complications of Dx or Rx
- Also ...
- Ethics
- Legal
- Preventive medicine
Key features example
Portfolios

Documentation of & reflection areas of competence; may include (patient documents, papers, patient letters, projects, self & other assessments, reflective essays)

**Advantages**

- Combination of evidence from many sources
- Self-reflection
- Formative >> summative
- Face validity

**Limitations**

- Need mentoring & interpretation – and evaluator training to do this
- Time intensive
- Predictive validity
Learner assessment in the clinical setting

- Goals of evaluation,
- Who is assessed & who does it,
- What is evaluated,
- How it is done,
- Effectiveness of assessment
Is evaluation in clinical setting effective?

- **Learner:**
  - formative: ++++
  - summative: +++

- **Teacher:**
  - learning objectives achieved: ++

- **Program planner:**
  - curriculum: ++
  - institutional change: +

- **Society:**
  - protect the public: +
Assessment / Evaluation:

Does it drive learning?

... 

Can it expand professional horizons?
Assessment in the clinical setting - guidelines

- Ensure evaluation method matches learning objective;
- Assess as many aspects of clinical competence as possible;
- Clarify criteria & standards you want to assess;
- Think ‘formative’ and ‘summative’;
- Use more than one data source, & method;
- Balance complex real-life & focussed simplified;
- Qualitative & quantitative methods are complementary;
- Remember ‘CARVE’;
- Train the evaluators

- Don’t underestimate the power of assessment to drive learning, teaching & curriculum change
Clinical assessment - the future..

- New domains to evaluate >> new methods
  - e.g. teamwork, professionalism, patient safety
- More work on validity and reliability, while maintaining feasibility
- Longitudinal evaluations
- Combined multi-method
- Standards – at what level? (national, school)
In summary …

Learning in the clinical context is an essential part of medical education.

so …

Medical students, interns and residents must be evaluated on their achievements in this setting.

The goals of evaluation must be clear.

Assessment methods should be reliable, valid and feasible.