Core principles of assessment in competency-based medical education
Introductions

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Disclosures

• Jocelyn Lockyer: no disclosure
• Eric Holmboe: editor of Practical Guide to the Evaluation of Clinical Competence
• Claire Touchie: clinical trials for HIV care with multiple companies
• We are members of the International Competency Based Medical Education Collaborators
Acknowledgement

Objectives

By the end of the presentation, participants will have

• Critiqued and provided feedback on a set of principles for assessment within CBME.

• Identified enablers and barriers to transforming assessment approaches in their program/setting.

• Determined next steps towards optimizing assessment procedures and processes in their program/setting.
Background—Sept 2013

• Royal College brings together an international group of 30 people to discuss CBME
  —Goal: Re-conceptualize and update CBME from the vision presented in the 2010 (#8) Medical Teacher series on CBME
  —Outcomes
    • Charter for CBME [Carraccio et al. Acad Med 2016]
    • Entrustment decision making [Ten Cate et al., Acad Med 2016]
    • World Summit on CBME, Barcelona, 2016
CBME is based on 4 definitions

- CBME = An approach to designing medical training that is focused on outcomes in the form of the abilities of graduates
- Competency = An observable ability of a health care professional that develops through stages of expertise from novice clinician to master clinician.

CBME is based on 4 definitions

• Entrustable professional activity = An essential task of a discipline (profession, specialty, subspecialty) that an individual can be trusted to perform without direct supervision in a given care context, once sufficient competence has been demonstrated.

• Milestone = a defined, observable marker of an individual’s ability along a developmental continuum.

ICBME collaborators, Towards a Shared Language, Medical Teacher, in press
Not unique to medicine

• Primary, secondary education, post secondary education
  — Institutional (and teacher) accountabilities
  — Movement to observable, transparent and measurable outcomes

• Health professions education
  — Accountability to profession, employer, and society
  — Need to be more explicit about the abilities of professionals within their own discipline as well as their ability to function in workplaces that demand inter- and intra-professional collaboration and integrated practices.
Core concept

• Intertwining of
  —Assessment for learning
    • Is the learner progressing? Are they ready to progress to next level?
  —Assessment of learning
    • Did the learner make progress against targeted outcomes and criterion-referenced standards?
“Whenever assessment becomes a goal in itself, it is trivialized and will ultimately be abandoned. Assessment has utility insofar as it succeeds in driving learning, is integrated in a routine and ultimately comes to be regarded as indispensable to the learning practice.”

When considering assessments “for learning” VS “of learning”, what are the implications of these approaches from two different stakeholder perspective?

- Learners
- Public/patients
### For learning—with and by learner

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Miller Pyramid; Nyquist (2014); Hawkins & Holmboe (2008)
Of learning

• Moved away from Medical Expert knowledge and skills into CanMEDS, ACGME core competencies, Good Medical Practice

• Recognize current health care system expectations
  — Patient care aligned with best practices in precision medicine
  — Teamwork
  — Patient safety
  — Population care
If you were designing an assessment system *de novo* for residents, what principles would you keep in mind?
Core principles for a CBME program...

1. Timely ongoing assessments, with comprehensive periodic reviews to ensure continued progress

2. Best use of multiple assessors and assessments to enable the right assessment to be made at the right time for the right purpose, while avoiding assessor fatigue

3. Mechanisms to synthesize data collected through group processes to reach judgments about competence

4. Faculty development for all assessors, who, as observers of trainees in the workplace, are the true measurement instrument

5. Optimized relationships between the givers and receivers of formative feedback to enhance the incorporation of feedback into practice.
What is required for your program to ensure you...

1. Adopt multiple methods of assessment?
2. Involve multiple assessors in assessment and feedback?
3. Select and train assessors for assessment work?
4. Re-conceptualize psychometrics?
5. Adopt group processes to reach critical decisions about individual competence?
Multiple methods

• Collection of data that is purposeful with structured and unstructured measures
• Quantitative and qualitative data to add meaning and trustworthiness
• Multiple methods to compensate for shortcomings of any one technique

Van der Vleuten, 1996; 2010; 2012; Shuwirth & Ash 2013
Multiple assessors

- Fairness
- Compensation for biases, halo effects, leniency
- Rater judgement issues
- Provides multiple ‘biopsies’

Regehr et al 1998; Gingerich et al., 2022;
Govaerts et al 2011; Yeates 2012
Assessor selection & training

• Goal of assuring...
  — Knowledge of competencies being assessed
  — Understanding of the observational and recording tasks that assessor needs to do

• Newer techniques for training
  — Behavioral observation training
    • Observation processes and improvement of observation
  — Performance dimension training
    • Learning and applying behavioral criteria and standards for competencies
  — Frame of reference training
    • Alignment of assessor judgements with a common criterion-based frame of reference to make accurate distinctions between levels of performance

• Recognition that training needs to be...
  — Integrated training (not one-off)
  — Deliberate
  — Practiced

Kogan et al., 2014; Govaerts et al., 2011, 2013; Ponnameruma 2013; Holmboe et al., 2004, 2008; Kogan et al., 2014; Lievens 2001; Kogan & Holmboe 2013; Berondon et al., 2013
Performance Dimension Training

1. Identify specific dimensions of a competency in behavioral terms
2. Discuss the criteria and qualifications required for each dimension of that competency
3. Develop a SHARED MENTAL MODEL
4. Achieve evidence-based standardization and calibration
Performance Dimension Exercise

- Identify important components of information transfer (counseling) including starting a medication
  - “Content”: What should be discussed or done?
  - “Process”: How should it be discussed or done?
- Make certain that components are described behaviorally
Psychometrics

• Good assessment programs will be characterized by attention to
  — Validity/coherence
  — Reproducibility/consistency (reliability)
  — Equivalence
  — Feasibility
  — Acceptability
  — Educational effect
  — Catalytic effect

Norcini et al, Med Teacher, 2011
• Optimal assessment of individual requires
  — Accumulation of evidence that, on basis of methods/tools, supports the decisions to be made
  — Determine judgements to be made re competencies, EPA’s, milestones considering
    • Evidence that will support the judgement?
    • Data that needs to be collected using appropriate sampling with multiple methods?
    • Ability and development of faculty members who can use tools to assess learners and provide them with feedback on their performance

Kane 2013
Group Process

• Wisdom of crowds recognizes that no combination of assessors and assessment methods can measure ‘all things’
• Synthesis needed
• Deficiencies often identified only in group evaluations

Surowiecki, 2005; Schwind et al., 2004; Hemer et al., 2000
Are there other principles?

- Multiple methods
- Multiple assessors
- Selection and training of assessors
- Re-conceptualized psychometrics
- Group processes to reach critical decisions about competence.
In the next 10 minutes

Think of your own setting and the assessments in your program

• Which principles do you attain?
• Which principles are problematic?
• What are the enablers and barriers to transforming assessment approaches?
What do you see as the next steps towards optimizing assessment procedures and processes?
Practice Points

• CBME relies on a program of assessment that includes multiple methods and multiple assessors and is embedded within an effective educational system.

• Assessment for learning plays a prominent role in CBME, since formative feedback is an essential element of developing competence.

• Faculty development to create a shared mental model of required learner behavior and expected levels of performance is foundational to CBME.

• Variance in assessor rating is not all attributable to error; some variance reflects a different lens through which an assessor sees a learner.

• The assessment instrument is primarily the individuals who conduct the assessment, rather than the tools and forms they use. As such, individuals using assessment tools and forms need training.
Questions...?
THANK YOU

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