Association between workplace-based assessments and learner self-assessment of entrustment

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Purpose: Optimal implementation of a Core EPA-based curriculum requires direct observation using workplace-based assessments (WBA) coupled with a longitudinal coaching relationship between learners and faculty.1,2 Throughout the curriculum, students should be actively engaged and considered an active participant in the entrustment decision.3 As part of our involvement with the AAMC Core EPA pilot, we implemented both a WBA using the Ottawa Clinic Assessment Tool (OCAT) 4 and a coaching program for our medical students. We measured the association between WBAs collected during the clinical clerkships and student self-assessment of entrustment during their first coaching meetings.

Methods: In the 2018-2019 academic year, all clerkship-level students were assigned an EPA coach. Each coach supervised 10 learners. All clerkships incorporated a mobile-friendly WBA program using a modified OCAT scale for the Core EPAs. For each clerkship, students were required to request assessments of 4-9 EPAs. After the first 4-6 months of their clerkships, students were required to review data obtained from their WBAs and render a summative entrustment decision (ready or not yet ready) for each of the EPAs. Students then met with their EPA coach to review their entrustment decisions. Students could modify their entrustment decision based on discussions with their coach. The final decision reached by the coach/learner pair was not associated with advancement decisions and was used only for the student to articulate his/her learning needs. Descriptive statistics and t-tests were used to illustrate characteristics and compare data between those who rated themselves as ready or not yet ready.

Results: A total of 6690 WBAs were completed among 201 students (Mean = 33/student). Most WBAs were completed for Core EPA 1: history and physical (1931, 29%) and EPA 6: oral presentation (1810, 27%). More than three-quarters of students rated themselves as ready for entrustment in EPA 9: interprofessional collaboration (94%), EPA 5: documentation (88%), EPA 1 (88%), and EPA 6 (80%). By comparison, less than one-quarter rated themselves as ready in EPA 12: procedures (7%), EPA 4: orders and prescriptions (17%), EPA 10: urgent/emergent care (22%) and EPA 11: informed consent (25%). Mean number of completed WBAs was greater for EPAs in which students rated themselves as ready than those in which they rated as not yet ready (Mean = 3.9 vs 1.1, P <.001). Mean OCAT scores were also higher for EPAs in which students rated themselves as ready (Mean = 3.54 vs. 3.48, P = .02). However, for EPAs in which students received no WBA, 27% of students selected ready for entrustment. There was minimal difference in ratings of ready if students received as few as 1 WBA (70% ready) vs. 5 WBA (72% ready). However, students who received >10 WBAs for any EPA rated themselves as ready 87% of the time.

Discussion: These findings suggest that student self-ratings of readiness for entrustment are associated with completion of, and data resulting from WBAs. However, it is unclear from this data whether students are making informed decisions regarding readiness for entrustment following
WBAs or whether they are seeking WBAs for activities in which they feel most confident. In
addition, it is concerning that a small but significant proportion of students rated themselves as
ready for entrustment without any data.

**Significance:** Previous studies have suggested that learner self-assessment is not correlated with
assessed competence, however our data shows an association between self-assessment and
WBAs obtained to facilitate entrustment decisions. Further studies are needed to examine the
reasons for this association. However, since learners should play a critical role in the ultimate
entrustment decisions, it is at least reassuring to observe an association between self-assessment
and observations in the workplace.
Incorporation of the Ottawa Clinical Assessment Tool Scale (OCAT) to Measure Entrustability in Clinical Clerkships

Innovation Highlights

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Purpose: Assessment of the Core Entrustable Professional Activities for entering residency (Core EPAs) requires direct observation to render ad hoc entrustment decisions. Two entrustability scales have been proposed to collect data in the context of workplace-based assessments (WBAs). One of these, the Ottawa Clinic Assessment Tool (OCAT), has demonstrated validity evidence when used in surgery and internal medicine residency programs. To date, the OCAT has not been assessed in undergraduate medical education programs. In this report, we describe the feasibility and descriptive data resulting from incorporation of the OCAT using a mobile-friendly WBA instrument across our core clerkships.

Methods: In the 2017-2018 academic year, the internal medicine clerkship at our institution piloted the development of a WBA instrument using the OCAT scale. We modified and incorporated the instrument across all eight of our required clerkships during the 2018-2019 academic year. The resulting instrument consisted of four items: descriptor of the encounter, complexity rating, modified version of the OCAT, and comments. We adjusted the OCAT to a 4-point scale (1- I had to through 4- I needed to be in room just in case), dropping the highest level (5- "I did not need to be there") because our steering committee believed that suggesting "I did not need to be there" would be inappropriate at the student level. Each clerkship director identified 4-9 EPAs which could be assessed in their clerkship and specified a minimum number of WBAs students needed to request throughout the academic year. We assessed the outcome of this initiative by tracking the number of WBAs rendered and mean OCAT performance ratings.

Results: To date, 14,767 WBAs have been requested and 7189 WBAs have been completed (49% completion rate) among 238 students (Mean completion = 30/student). Most WBAs were completed for EPA 1: history and physical (29%) and EPA 6: oral presentation (27%). No students received WBAs for EPAs 8: handover, 10: urgent/emergent care, or 12: procedures. Mean OCAT ratings were 3.51 (SD = 0.61) across all EPAs with data. Excluding EPA 4: orders and prescriptions, the range for OCAT ratings was similar across EPAs (3.46-3.67). EPA 4 had the lowest mean OCAT rating of those with any data (Mean = 3.03, SD =0.9). This difference was statistically significant (P<.05). A weak positive correlation was found between the time in the academic year and OCAT score (R2 = 0.11).

Discussion: The volume of WBAs completed supports the feasibility of this instrument in the clerkship setting. However, two EPAs made up more than half the WBAs while several were not assessed at all. This finding suggests insufficient opportunities for observation of some EPAs in a traditional clerkship structure and/or reluctance of students and/or preceptors to complete WBAs on some EPAs. The relatively high mean across Core EPAs outside of EPA 4 was lower than what has been observed in residents, which may suggest discrimination ability between level of training. However, the modest correlation between timing and rating raises concern regarding the OCAT scale. Namely, it is unclear whether students actually performed at that level or whether faculty
lacked sufficient rater training in using the scale.

**Significance:** We plan to continue using WBAs as a component of entrustment decision-making but will make several modifications based on our findings. First, will use both the OCAT and a supervisory scale3 to allow for head-to-head comparisons of the two scales. Second, we plan on using the 5-point OCAT scale. Additionally, we will develop a more robust rater training program for WBAs. We suggest a multi-site evaluation of the OCAT scale to determine its validity when used for ad hoc medical student entrustment decisions in the workplace.
Systematically Integrating an Entrustable Professional Activities Framework into OSCEs

Innovation Highlights

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Purpose: Efforts are being initiated by many medical schools to integrate Entrustable Professional Activities (EPAs) into existing curricular and assessment frameworks (1). Explicit recommendations have not been provided for best practices for EPA assessment. Objective Structured Clinical Examinations (OSCEs) are commonly utilized to assess clinical skills competency (2). The Medical University of South Carolinas (MUSC) OSCEs are created and overseen by content experts within each clinical department, which presents a challenge when centrally implementing a new framework. Therefore, MUSC implemented a quality improvement project to employ a systematic process to develop a map of skills assessed in our OSCEs viewed through an EPA framework, to determine which EPAs faculty deemed most important to assess in the clerkship OSCEs, and to standardize communication skills assessment to complement the EPA framework.

Methods: To identify which EPAs were most important to assess in MUSC’s clerkship OSCE framework, a retreat was conducted with MUSC’s Clinical Science Planning and Evaluation Curriculum (CSPEC) Committee, which voted on EPA prioritization. A Clinical Skills Assessment Task Force was developed including teaching faculty, clinicians, administration, and senior students that had already completed and passed MUSC’s final clinical skills exam and met monthly during Academic Year 2017-2018. The Task Force created a detailed map of all OSCE items by EPA category identifying clinical skills and EPAs that were underrepresented, overrepresented, represented appropriately, or missing in the OSCE framework. Using the map, the OSCEs were revised to contain the appropriate distribution of EPAs throughout the clerkship year as directed by the curriculum committee. The Task Force also developed a Communication Assessment Framework utilizing the OSCE items, the Kalamazoo Framework (3), and published Step 2 CS Guidelines (4) to complement the EPAs.

Results: The CSPEC Committee recommended that OSCE assessments during the clerkship year prioritize assessment of EPAs including, Gathering a history and physical (EPA 1), Prioritize a differential diagnosis (EPA 2), Recommend and interpret screening tests (EPA 3), Document a clinical encounter (EPA 5), and Recognizing Urgent Care (EPA 10). The map of OSCE items highlighted that history items were overrepresented compared to prioritizing a differential diagnosis, recommending and interpreting common diagnostic and screening tests, and identifying patients needing urgent or emergent care. Based on task force recommendations, the Office of Assessment, Evaluation, and Quality Improvement worked with each clerkship to ensure that scoring rubrics weighted EPA categories more appropriately to represent the importance of all skills regardless of the number of OSCE items included in the assessment checklist for a given EPA category. Based on the new communication framework, 10 essential standardized communication items are now included in all revised OSCEs and a bank of communication items is available to be added by clerkship as appropriate.

Discussion: The systematic quality improvement process outlined allowed our school to create a detailed map of OSCE items, map each item to priority EPAs, and ensure that clinical skill assessment during the clerkship year includes an appropriate distribution across EPA categories. Ultimately, this quality improvement process enhances our ability to identify each students strengths and areas for improvement.
Significance: This report provides an example of a systematic process for integrating an EPA framework with an existing clinical skills assessment framework.
Feasibility of Workplace-Based Assessments for Entrustable Professional Activities in Clerkships: A Pilot Study

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Purpose: The AAMC has delineated 13 Entrustable Professional Activities (EPAs) for entering residency, activities that medical students should be able to perform under indirect supervision at the start of residency. Herbert Wertheim College of Medicine (HWCOM) is one of ten schools convened by the AAMC to pilot the EPAs and develop best practices for implementation.

Methods: During the 2017-2018 academic year, HWCOM developed workplace-based assessments (WBAs) for EPAs 1 (history and physical), 6 (oral presentation), 9 (interprofessional teamwork) and 11 (informed consent). Students voluntarily solicited faculty to complete these WBAs at the point of care during the seven core third year clerkships (family medicine-8 weeks, internal medicine-8 weeks, neurology-4 weeks, obstetrics and gynecology-6 weeks, pediatrics-6 weeks, psychiatry-6 weeks, surgery-8 weeks). WBAs were formatted as Qualtrics surveys on iPads given to HWCOM students at the start of their third year of medical school. Students were educated about the EPAs at the start of the academic year, and then encouraged to solicit assessments during individual clerkship orientations. Faculty development was provided using a variety of methods. The HWCOM added EPAs 2 (differential diagnosis), 3 (diagnostic and screening tests), and 7 (evidence-based medicine) for the academic year 2018-2019 and students were required to submit completed WBAs for each clerkship; these WBAs were formative rather than summative.

Results: During the 2017-2018 pilot year, 519 WBAs were completed across all clerkships, including EPA 6 (253), EPA 1 (199), EPA 9 (39), and EPA 11 (28). A total of 143 (28%) assessments were completed during pediatrics, 125 (24%) during the family medicine, 99 (19%) during psychiatry, 81 (16%) during internal medicine, 38 (7%) during obstetrics and gynecology, 20 (4%) during surgery, 13 (3%) during neurology. During the first half of the 2018-2019 academic year, students obtained 2398 WBAs, including EPA 1 (546), EPA 2 (479), EPA 3 (303), EPA 6 (576), EPA 7 (145), EPA 9 (267), and EPA 11 (82).

Discussion: The Based on our pilot data, assessing EPAs using WBAs is feasible. However, it may be easier on some clerkships than others, with fewer assessments being completed on the surgery and neurology clerkships and more being completed on pediatrics and family medicine. Students obtained more assessments for EPAs 1 (history and physical) and 6 (oral presentation), tasks that are performed more often. Students obtained fewer assessments for EPA 9 (interprofessional collaboration) and EPA 11 (informed consent). This may be because these were not required and students and faculty may not perceive opportunities for these practices in day to
day work. When WBAs were required by clerkships, for formative feedback, as they were for the 2018-2019 academic year, the number of completed WBAs increased.

**Significance:** Challenges included the need to provide students with iPads, the ongoing necessity of faculty and student education regarding the EPAs, and the non-required nature of student involvement. The voluntary, formative nature of the pilot led to completion of variable numbers of WBAs between clerkships and specific EPAs. Based on this pilot, during the 2018-2019 academic year, our students are required to obtain 1-2 assessment surveys for each EPA on each clerkship; the ratings on the assessments continue to be formative, without any impact on clerkship grades. Exploration of the validity of the assessment data is ongoing through the piloting of entrustment committees.
Entrustment in Clinical Medicine - a longitudinal competency-based course throughout
the primary clerkship year

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**Purpose:** To create a longitudinal experience for primary clerkship medical students grounded in competency based assessment and skill attainment.

**Methods:** The University of Kentucky College of Medicine (UKCOM) moved to an entrustable professional activity (EPA) based evaluation system in 2016, asking clinical preceptors to fill out evaluations linked to EPAs. During this time, summative assessment for clinical skills occurred with a cumulative OSCE at the end of the primary clerkship year. This OSCE measured EPAs but was not tied to a course, thus had no clear mechanism for formative feedback, making remediation challenging. To allow for earlier identification and remediation of students and to ensure entrustment at graduation, we needed a more systematic assessment of competency throughout the year. Based on the AAMCs Core Entrustable Professional Activities for Entering Residency Guide and current literature, we developed a list of skills and competencies deemed important to teach and assess in the primary clinical year. Through a series of focus groups with faculty and students, we created a longitudinal 5-week course during the clerkship year beginning 2018-19. This novel course begins and ends the core clerkship year and is interspersed between clerkship blocks one week at a time. The teaching methods are a mixture of lecture, small group discussion, and workshops. The assessment methods are weekly OSCEs, task-trainer simulations, portfolio assignments, presentations, and exams. Each student is assigned a Clinical Coach who serves as a small group facilitator and skills coach. This faculty member reviews each students performance on OSCEs and gives feedback immediately after the OSCE, allowing the student ample time for improvement during their subsequent clerkship and prior to the next course OSCE. The Clinical Coaches also assess the students ability to perform procedures of a physician in a simulated setting allowing practice until mastery of the skills. When clinical skills deficiencies have been identified, these coaches provide remediation. Noting the challenges students have adjusting to the clinical setting, the first week of the course is focused on interviewing, physical exam and documentation skills.

**Results:** During the 2017-2018 pilot year, 519 WBAs were completed across all clerkships, including EPA 6 (253), EPA 1 (199), EPA 9 (39), and EPA 11 (28). A total of 143 (28%) assessments were completed during pediatrics, 125 (24%) during the family medicine, 99 (19%) We compared clinical evaluations from the first block of the year (without the new course) to the first block of this year (with the new course), student performance has improved in all EPA domains, scale 1-4 with 4 being performs independently. See Table I.

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<th>N=137</th>
<th>Mean 2018-19 (SD)</th>
<th>N=147</th>
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<td>2 Prioritized Differential</td>
<td>3.02 (0.2)</td>
<td>3.13 (0.19)</td>
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<td>3 Diagnostic Plan</td>
<td>2.98 (0.21)</td>
<td>3.14 (0.21)</td>
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<td>4 Treatment Plan</td>
<td>3.05 (0.22)</td>
<td>3.18 (0.22)</td>
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<td>5 Documentation</td>
<td>3.34 (0.26)</td>
<td>3.44 (0.24)</td>
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<td>6 Oral Presentation</td>
<td>3.23 (0.22)</td>
<td>3.37 (0.23)</td>
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TABLE I. Clinical Evaluations Block 1, 2017-2018 vs. 2018-2019
Discussion: The AAMC has made it clear that entrustment is essential to ensuring a student is ready to graduate and begin internship. With this comes the challenge of individual assessment as well as formative feedback and remediation. Supporting the effectiveness of the course, student performance in their clinical clerkships during the first block has improved. We believe that creating a longitudinal course with a focus on EPAs and the longitudinal relationship with a faculty member as a Clinical Coach will continue to allow us to more accurately assess each student's individual attainment of the required skills and allow for early remediation of students who are struggling with specific EPAs.

Significance: We have successfully introduced a longitudinal, competency-based course woven throughout the clerkship year with a structure that allows for ongoing assessment, formative feedback, and remediation. We suspect many schools are facing similar challenges and might benefit from this approach.