Operationalizing CBME in The Medical College of Wisconsin APP Critical Fellowship

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Introduction: The Clinical Problem

The Medical College of Wisconsin's (MCW) Advanced Practice Provider (APP) Critical Care Fellowship is an intensive one-year program designed to train novice APPs in all areas of critical care. The program utilizes some aspects of competency based medical education (CBME) to assess and guide trainee progress (*e.g.,* core competencies and phase progression), however the ground level utilization was inconsistent, and trainee intra-rotation phase progression often stagnated. The purpose of this process improvement project was to determine the issues and barriers surrounding the poor utilization of the competency-based assessment tools developed by MCW's APP Critical Care Fellowship, as well as to begin the incremental changes necessary to operationalize these systems, such that they may be utilized to guide fellow development and phase progression within the core intensive care unit (ICU) rotations.

Background: CBME and the MCW APP Critical Care Fellowship

CBME is a widely accepted training strategy that focuses on attaining proficiency in specific medical competencies, rather than tracking time in a specified area. In this framework, competencies are the measurable skills and abilities that make up a discipline (ten Cate, 2017). Training in this manner allows for the targeting of clinically relevant outcomes and permits individualized training trajectories as students achieve proficiency at different rates. However, as evidenced by the multistage implementation required within the ACGME and CanMEDS systems, operationalizing CBME beyond a theoretical framework can be difficult and requires both competency formation (*i.e.,* determining the skills and abilities to target) and relevant timely assessment (Caverzagie et al., 2015; Karpinski & Frank, 2021).

Prior to this process improvement project, formal trainee assessment within MCW's Critical Care Fellowship took place quarterly. Preceptors who worked with a trainee within that quarter for more than 40 hours were instructed to fill out an online assessment form. The form

utilized a list of 11 core ICU competencies (Table 1) as an assessment tool. Fellows were rated as either deficient, phase 1 (early trainee), phase 2 (advanced trainee), phase 3 (goal at end of onboarding), or phase 4 (exceeds expectations). Each of these phases included a description of the traits embodied by the learner within that stage to assist in assigning competence level (Figure 1).

Another expectation of preceptors laid out in the APP Critical Care Fellowship Handbook was informal intra-rotation feedback during each ICU rotation. However, the structure and goal of this feedback was left to the individual preceptor. Thus, feedback and, by extension, intra-rotation progression through the four phases varied widely between the different ICUs. Resources were available to guide this feedback (Figure 2), but utilization rates and preceptor knowledge of these resources was not known. For full assessment documents see Appendix 1.

The MCW APP Critical Care Fellowship's implementation of competency based assessment is incomplete. As described above, the program has developed and implemented 11 core ICU competencies as well as a system of phased progressions to work through them. However, the system lacked both a means of capturing relevant timely assessment, an element essential to the operationalization of the ACGME and CanMED systems, and a shared understanding that fellows should be progressing from phase 1/2 to phase 3/4 within each rotation. Without these components, the 11 core ICU competencies remain a largely theoretical framework and progression through them (*i.e.,* phase progression) occurs inconsistently and is not reliably based upon trainee competence (see Karpinski & Frank, 2021). This can lead to trainees spending large amounts of each rotation operating outside a zone of constructive friction. Working within a zone constructive friction means the trainee is operating at the edge of their skill level, which has long been thought to be the optimal zone for self-motivated

independent learning (Groot et al., 2020; ten Cate et al., 2004; Vermunt & Verloop, 1999). Importantly, a fully operationalized CBME system naturally pushes trainees to operate within this zone by allowing them to progress toward autonomy as they gain competence.

Table 1. Evaluated ICU core competencies.

Develop an assessment and diagnosis
Develop a management plan
Document a clinical encounter
Oral presentation
Clinical knowledge and application to patient care
Performs procedures
Communication with patients and families
Collaborate as a member of the inter-professional healthcare team
Clinical Judgement and progressive responsibility
Professionalism
Personal and professional development

Figure 1. Quarterly phase assessment tool.

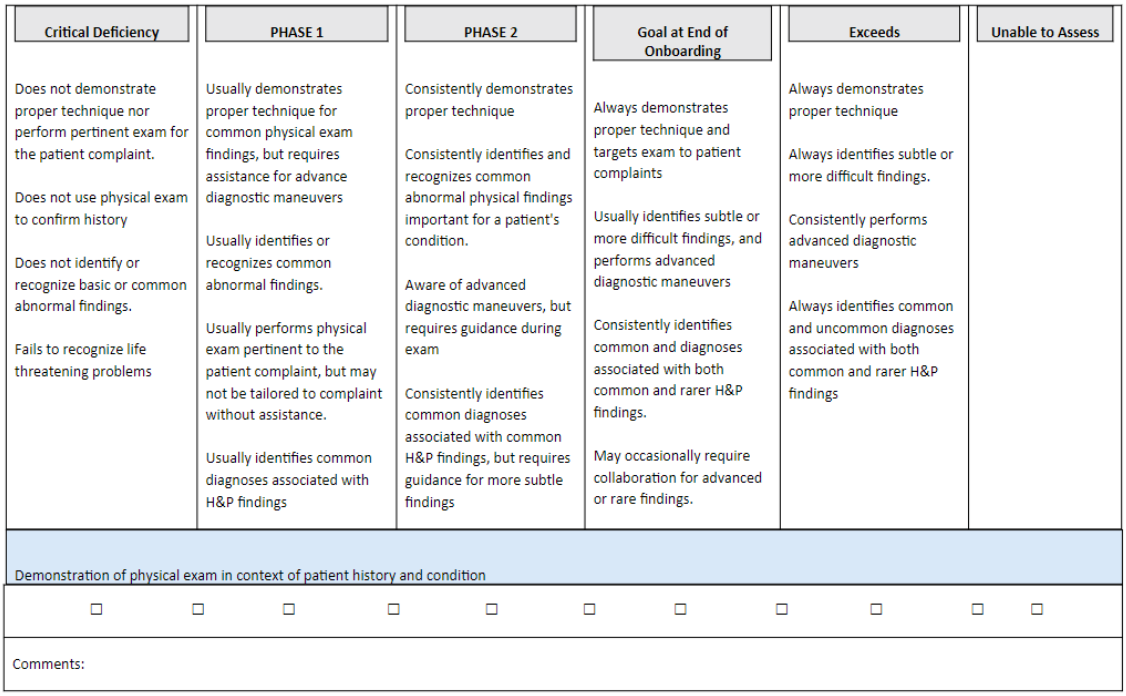


Figure 2. Preceptor guide.

	First week during each rotation the Preceptor:	Phase One		Phase Two		Phase Three	
		Preceptor	Learner	Preceptor	Learner	Preceptor	Learner
Documentation	-Share note templates and review structure (have it available for review in in pre work D2L) -Discuss how to write cohesive notes with pertinent positives and negatives, including identifying diagnoses, treatments, and plan/ anticipatory thinking for each rotation -Review all notes	-Review templates with the learner -Review all notes prior to signing for accuracy and pertinent info -Assist with time management of documentation -Review how to update problem list -Review how to add and remove patients to list -Provide daily feedback	-Observe and ask questions - Adapt documentation strategies in each clinical rotation -Be open to constructive feedback - Apply learnings for documentation, presentations, and specialty diagnosis.	-Review notes frequently throughout rotation for accuracy -Discuss critical care billing - Continue to develop time management to complete accurate and timely documentation.	-Take initiative to complete documentation in a timely manner -Ask questions to clarify what should be in the note. -Identify active problems, resolved problems, and chronic diagnosis within the note.	-Be available for reference with pertinent documentation -Review understanding of critical care billing time -During this phase be present as a resource that allows the learner an environment of independent practice and confidence building -Be observant and available for the learner, education on any inaccurate documentation	-Document accurate notes in a timely manner -Ask questions to clarify what should be in the note. - Clarify with preceptor when questions arise.

Objectives:

Phase 1: Fellow perspective

Objective 1: Understand the current fellow's impressions of their ability to achieve competency phase progression and increased autonomy during the five core ICU rotations.

Objective 2: Gather fellow's thoughts on the implementation of and barriers to a more structured intra-rotation feedback system.

Phase 2: Preceptor perspective

Objective 1: Understand the preceptor's perspective of the fellow assessment system as well as preceptor thoughts on intra-rotation phase progression of individual fellows.

Objective 2: Assess utilization rates of existing fellowship OneDrive resources and understanding of fellowship goals and design.

Methods:

Phase 1: Fellow perspective

An informal meeting was scheduled with each current fellow (n = 5) to discuss their subjective feelings about phase-progression within the ICU rotations. These conversations were followed up by a survey designed to understand how fellows felt about preceptor feedback methods and the implementation of a structured intra-rotation feedback system (Table 2).

Phase 2: Preceptor perspective

The lead preceptors (n = 10) were sent a survey to gauge fellowship understanding and OneDrive ICU fellowship resource utilization (Table 3). This survey was followed by a formal in-person meeting to discuss the survey findings and the direction of future engagement in the fellowship. The fellowship directors were involved with this process and multiple informal conversations and meetings were held prior to the preceptor meeting, which helped guide survey questions and discussions.

Outcomes:

Phase 1: Fellow perspective

The central theme discovered during the initial one on one meetings was a desire for a sense of progression within the core ICU rotations. Fellows noted that they often felt increasingly comfortable managing patients as they spent more time in the units, but that there was no method of reliably translating that feeling into increased independent patient management during certain rotations (*i.e.,* lack of competency phase progression).

The survey results provided additional nuance to this theme as well possible explanations. One proposed contributing factor noted by four of the five surveyed fellows was the

Table 2. Fellow questionnaire.

What is your preferred precepting method and how has this changed as you've progressed? (*e.g.,* hands on with close supervision, hands-off but available, totally hands off...etc.)
In line with the above, what does good precepting look like to you and what is bad? (Describe behaviors of successful precepting and unsuccessful)
What is your preferred method of feedback? (*i.e.,* how do you like it presented, do you like it written vs verbal... etc.)
What has been your personal method of eliciting valuable feedback from your preceptors?
In instances where you have had greater autonomy (less co-management), how did this come about? (Did you ask for it, did the preceptor expect it, was it just how the unit worked? etc.)
Do you feel like a structural change would be helpful for the ICU rotations? (*i.e.,* is formalizing the feedback/progression something that you want/would have wanted as you were going through?)
In line with the above, do you feel like it would be helpful to have explicit goals/expectations for the initial ICU rotations that would be known to both the fellow and the preceptors? (*i.e.,* proficient patient presentations, note writing and personal goals outlined prior to the rotation). Further, do you think letting the preceptors know that the expectation is progressive independence would be helpful/useful to you, or was it something that was already done (as outlined in the attached sheet)?
Finally, for those who have completed this: How did you feel during your intensive (and where was it)? Did you feel safe and was there enough support/help if needed? Did you feel like you could have done those weeks safely earlier in the fellowship?

Table 3. APP lead questionnaire.

As a rotation lead, if asked are you able to describe and assess the learning goals for the fellow to achieve by conclusion of the rotation?
As a rotation lead, if asked are you able to describe and assess the personal learning goals of the fellow?
What are strategies you used that enhanced your understanding and assessment of the fellowship goals?
What top 3 knowledge, behaviors and attitudes most often lead to meeting or exceeding rotation goals, clinical and professional expectations, or individualized fellow goals?
What 3 knowledge, behaviors and attitudes are barriers to fellows meeting or exceeding rotation goals, clinical and professional competencies, or individualized fellow goals?
What approach or strategies have you used to precept a fellow that is not meeting rotation goals, clinical and professional competencies, or individualized goals?
What would help you as a rotation lead to approach the situation when a fellow is not meeting rotation goals, clinical and professional competencies, or individualized goals?

In the past year, what are the barriers for precepting a fellow on your rotation?
What are proposed solutions to reduce barriers for precepting a fellow on your rotation?
Please indicate if you used the following resources and found them helpful/no helpful
Do you have ideas on how you would like to more meaningfully engage with the program?

theme of preceptor inconsistency. Broadly, the fellows noted that some preceptors were willing to act in the resource role (available for questions, but not dictating care) after several weeks on the unit, while others were unwilling to give up control regardless of time spent. It was felt that these inconsistencies in precepting methods resulted from both unit culture (some units were more willing to allow fellows to practice) and the number of different preceptors a fellow worked with. This second factor was reiterated by 3 of the 5 fellows in their survey responses and informal follow-up conversations with these fellows indicated that most felt the optimal number of preceptors was two. Their reasoning was that when more than two preceptors were utilized per rotation the fellows had to restart their trust formation each week, which limited their ability to progress.

Finally, the fellows were asked how they felt about the creation of a formalized feedback system. The intervention was generally welcomed, with one fellow stating, "…formal feedback and progress would be helpful because it sets expectations on both sides, and it provides a tangible means of seeing progression (or stagnation) throughout different rotations and throughout the program." However, it was also noted by a fellow that implementing a more formalized system of assessment and feedback would require a larger upfront time commitment for the preceptors. This is an important consideration because the preceptor involvement in the fellowship is entirely voluntary.

Phase 2: Preceptor perspectives

The pre-meeting survey response rate was quite low ($n = 4$). However, the available response data indicated a high degree of perceived fellowship understanding and very low OneDrive resource utilization rates. These resources included documents describing the phase onboarding tools and a preceptor learner guide (Figure 3), which outlined the characteristics of preceptors and fellows within each phase.

The meeting itself reflected these findings, with multiple leads endorsing a desire for a reorientation to the fellowship resources. Interestingly, the preceptors also stated that they felt they had a good awareness and understanding of the fellows' individual goals, which conflicted with impressions gleaned from the fellows themselves. In contrast, both parties agreed there was a need for better preceptor-fellow pair consistency. The preceptors noted that the variability of preceptor-fellow pairs made goal directed feedback and progression challenging. The preceptors felt that this inconsistency had contributions from recent increases in intensive care APP turnover and, by extension, preceptor turn over, secondary to COVID-related burnout. In fact, all but two of the unit leads had been in the role for less than 3 months, with only a single lead in the role for more than a year.

Discussion:

The aforementioned discussions highlighted two of the principal correctable barriers to fellow intra-rotation progression: preceptor unfamiliarity with fellowship resources/goals and high preceptor-to-fellow ratios. However, these were not the only barriers noted over the course of the year. Another important barrier to this type of change – and one that is more difficult to correct – is a fundamental lack of clinical educational experience within the APP population. Unlike medicine, which has refined a robust integrated post-graduate training network (*i.e.,*

residency and fellowship), APPs have generally depended on informal, assumed apprenticeships for their initial post-graduate training. APP Fellowship and formal onboarding are newer phenomena and there is not only an institutional lack of experience with these types of programs, but also an individual APP lack of experience in dealing with these types of learners. Unsurprisingly, this can lead to poor mentorship and is a difficult barrier to overcome in the short term. However, APP fellowships may in fact be a key part of the solution to this clinical education deficiency. This is because APP fellowships, in contrast to staff onboarding, can provide a consistent, repeatable, and controlled opportunity for staff APPs to practice their clinical education and mentoring skills at the post-graduate level. Without a fellowship, these clinical teaching opportunities tend to occur sporadically with new APP hires or as residents initially transition onto a service. However, if the staff APPs, who have very little mentoring or clinical education experience themselves, are not given guidance on how to assess and interact with post-graduate learners, these teaching opportunities will have less value. Thus, process changes and improvements made within the APP fellowships also provide an opportunity for targeted growth in the field of general APP clinical education across MCW.

Implementation of a Solution:

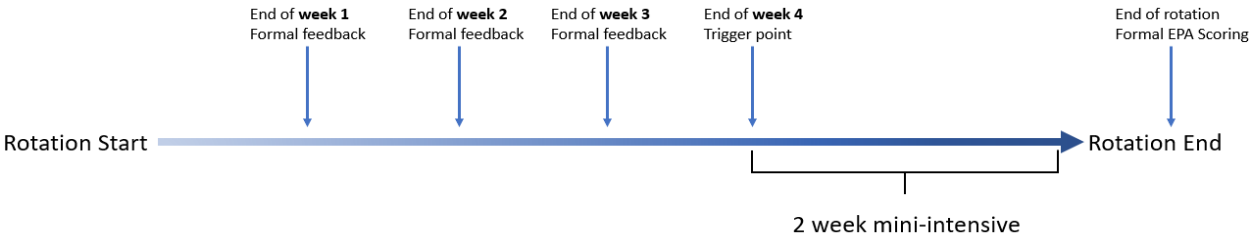
After completion of the subjective data gathering, a final meeting was scheduled with the fellowship leadership to discuss next steps. It was decided, given both resource and time constraints related to COVID-19 present on all units, that changes would need to occur incrementally. The initial changes will start with the new cohort beginning 4/1/22, with a focus on improving the use of existing resources and reiterating fellow intra-rotation goals (Table 4). Additionally, two future interventions are also planned. First, the Office of Advanced Practice Providers has plans to begin a lecture series on clinical education for interested APPs beginning

summer 2022. This series came about in part due to the conversations and interest generated by this project, however it was not an initial goal. At this time there is a tentative plan for 5 to 6 live zoom lectures spread throughout the year, which will provide a first step towards improving MCW's APP clinical education acumen. Second, initial outlines of an intra-rotation assessment system have been created (Figure 3). Provisional plans are to complete weekly assessments utilizing a series of basic entrustable professional activities (EPAs), culminating in an entrustment decision at week 4-5 to finish the rotation as a mini-intensive (working without direct preceptor oversight). While this has been outlined, there remains a need for further input from preceptors and program staff to create an appropriate EPA list and definitive plan for implementation.

Table 4. Adopted changes for APP fellowship.

Immediate: Start: 4/1/22
• Reorient APP leads and preceptors to fellowship resources
• Improve the pre-rotation scheduling email:
○ Attach Preceptor Guide and Competency-Phase Sheet with instructions that they be utilized to guide feedback
○ Emphasize importance of low preceptor to fellow ratios when possible
○ Include language supporting fellow phase progression and underscore that fellows are working towards utilizing the preceptor as a resource, not perpetual co-management
Future:
• Formalized Intra-rotation assessment
• APP educator lecture series

Figure 3. Formalized intra-rotation assessment.



Conclusion:

The creation and maintenance of a critical care fellowship at a large academic medical center is a significant undertaking. It requires maintaining relationships with physicians and APPs not only in each ICU and ancillary service that fellows rotate in, but also with non-clinical areas of medicine like credentialling and human resources. With so many stakeholders involved, making even small changes in the system can be challenging. This project originally set out to improve the intra-rotation phase progression of fellows by creating a simple formalized intra-rotation assessment system. However, after collecting data to understand the issue on the ground, it became clear that even a small structural change would be difficult without first correcting the existing issues.

The critical care fellowship at MCW has been in place for 6 years, in which time numerous resources were created and improvements were implemented. Yet, the utilization of these resources had not been assessed until this project. By first reorienting the preceptors to the available resources as well as creating an improved initial scheduling email to remind them of the goals of the fellows during their rotation, a more solid foundation is laid for a future overhaul of intra-rotation assessment. Moreover, the creation of an intra-rotation assessment system should be a joint effort between the fellowship and the individual units. This will not only inherently create a higher investment in the change process, but also lead to a better result because no one understands the skills and abilities (*i.e.,* EPAs) required to work on a specific unit as well the APPs working there every day.

References

Caverzagie, K. J., Cooney, T. G., Hemmer, P. A., & Berkowitz, L. (2015). The Development of Entrustable Professional Activities for Internal Medicine Residency Training: A Report From the Education Redesign Committee of the Alliance for Academic Internal Medicine. *Academic Medicine*, *90*(4), 479–484. https://doi.org/10.1097/ACM.0000000000000564

Groot, F., Jonker, G., Rinia, M., ten Cate, O., & Hoff, R. G. (2020). Simulation at the Frontier of the Zone of Proximal Development: A Test in Acute Care for Inexperienced Learners. *Academic Medicine*, *95*(7), 1098–1105. https://doi.org/10.1097/ACM.0000000000003265

Karpinski, J., & Frank, J. R. (2021). The Role of EPAs in Creating a National System of Time-Variable Competency-Based Medical Education. *Academic Medicine*, *96*(7S), S36. https://doi.org/10.1097/ACM.0000000000004087

ten Cate, O. (2017). Competency-Based Postgraduate Medical Education: Past, Present and Future. *GMS Journal for Medical Education*, *34*(5), Doc69. https://doi.org/10.3205/zma001146

ten Cate, O., Snell, L., Mann, K., & Vermunt, J. (2004). Orienting Teaching Toward the Learning Process. *Academic Medicine*, *79*(3), 219–228.

Vermunt, J. D., & Verloop, N. (1999). Congruence and friction between learning and teaching. *Learning and Instruction*, *9*(3), 257–280. https://doi.org/10.1016/S0959-4752(98)00028-0