

There's an "APP" for That: Modern Software to Track and Analyze EPAs in the Context of and Throughout the Medical Education Continuum (Board: 11)

Scott Helf¹, Johmarx Patton², Stephen Miller³, Maria Danzie³, Emmanuel Katsaros¹, Gerald Thrush¹

¹Western University of Health Sciences/COMP; ²University of Michigan Medical School,

³Alabama College of Osteopathic Medicine



Abstract

When it comes to recording, tracking, analyzing, and providing a platform for advisors, deans, and students to reflect on student competency and EPA development, staff and faculty at WesternU/COMP (COMP) and University of Michigan (UMMS) will be ready. Over the past decade COMP has developed a holistic student tracking and advising software which automatically integrates data from existing internal and external systems, formerly known as the Academic Progress Portal (APP), renamed ProgressIQ. ProgressIQ is engineered to accommodate increasing levels of abstraction as medical education best practices evolve and advance. UMMS has developed a Student Performance Record (SPR) that provides learners and administrators with the data they need to track progress toward competency. As they have and will continue to do so for student didactic, licensing board, learning outcomes, and longitudinal theme performance, these universities will be ready for the new challenges that EPAs bring.

COMP – Early Implementation of EPAs

As COMP plans to implement evaluations of EPAs as part of the curriculum, a crosswalk was developed to determine the educational experiences that can be used to evaluate various EPAs. The crosswalk will serve as a guide and curriculum map for academic administrators, clerkship directors and for other core faculty to determine appropriate educational activities, assessments and outcome measurements for our students. The crosswalk is also an acknowledgment that not all educational experiences are ideal to evaluate all EPAs.

Core Competency	Description	COMLEX CE	COMLEX PE	EM Eval	CC Eval	Sub-Eval	OSCE	ACLS	Journal Club	Case Present	ECM VI	OMM	M&M/QI
Gather History, Perform Physical													
OPP1	Mind - Body - Psychosocial Connection					X	X					X	X
OPP3	OPP Exam					X	X						
MK3	Physician Interventions					X	X		X				
PC1	Gather accurate data		X			X	X						
ICS1	Establish and maintain physician-patient relationship		X			X	X						X
ICS2	Conduct patient-centered interview		X			X	X						
P7	Cultural Competency					X	X						
Differential Diagnosis													
OPP4	Diagnose clinical conditions and plan patient care		X			X					X	X	X
MK1	Articulate biomedical/epidemiological/clinical science	X				X	X				X		
MK2	Apply current best practices					X	X			X			X
PC2	Differential diagnosis		X			X					X		
Recommend and interpret diagnostic/screening tests													
MK3	Physician Interventions					X	X		X				
PC1	Gather accurate data		X			X	X						
PC4	Patient-Centered, Evidence-Based Plan		X			X	X						
PC5	Health promotion and disease prevention					X						X	
PBL4	Evaluate medical information					X			X				
SB4	Effective strategies for assessing patients					X				X	X		
Enter and discuss orders and prescriptions													
OPP6	Communicate and document treatment details		X			X				X			X
PC6	Ethics					X	X						

Figure 1. Sample crosswalk of WesternU/COMP EPAs.

COMP Technology

COMP uses ProgressIQ, which tracks institutional, program, and course learning outcomes, as well as national board subject area performance for individual students, and their respective class cohorts, throughout the preclinical years. ProgressIQ has a highly flexible data architecture, and is ready to track EPAs once implemented in the curriculum.

The screenshot shows the ProgressIQ interface. At the top, it says "You are logged in as [user] Logout". Below that is the "Student Snapshot" section for a student named "2603e_08f9c". It lists student ID, preferred name, email, current class, and admission date. To the right is a table of "Overall BOARDS Outcomes" with columns for the outcome name, percentage, and number of students.

Overall BOARDS Outcomes	(%)	(%)	(N)
BLO 01-OPP	95	83.89	588
BLO 02-Behavioral Science	99	92.42	214
BLO 03-Biochemistry	96	81.76	199
BLO 04-Biostats_Epidemiology	94	83.25	48
BLO 05-Cardiovascular System	96	82.76	348
BLO 06-Gastrointestinal System	91	77.51	207
BLO 07-Gen Princpls of hith Dis	93	87.42	187
BLO 08-Genetics	97	89.78	48
BLO 09-Gross Anatomy	94	80.7	412
BLO 10-Hematoptc Lymph	99	87.92	73

Figure 2. Screenshot of running COMP boards outcomes for a student on ProgressIQ.

U of Michigan – EPA Assessment in Practice

The University of Michigan Medical School (UMMS), has adapted and expanded upon the ACGME competencies (Patient Care, Medical Knowledge, Practice-Based Learning and Improvement, Systems Based Practice, Professionalism, and Interpersonal Skills and Communication) to develop 8 competency domains and 40 competencies that are tracked over a medical student's academic career. Students are assessed on a 9 point scale in the competency domains.

UMMS has developed a Student Performance Record (SPR), designed to provide competency and other data to our competency committees. The data and the visualizations provided in the SPR are aligned with where our curriculum is headed—ensuring that we begin to move away from time-based and norm-based promotions of our prior curriculum and begin to embrace competency-based education. We are able to highlight and drill down into areas for development and notable strengths of our students and to visualize growth curves for each student as they collect data from faculty and other preceptors on their competencies over time.

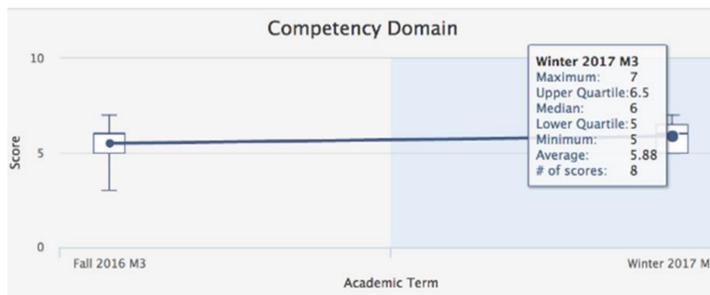


Figure 3a. Medical Knowledge domain for an individual student. Assessment of this competency domain in the M3 Fall and Winter semesters.



Figure 3b. Medical Knowledge domain for an individual student, including the strength and development areas, within this competency domain.

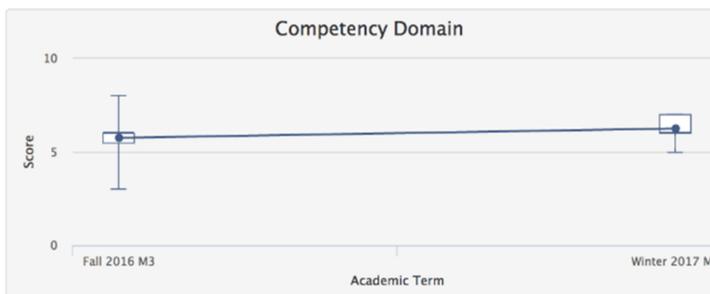


Figure 4a. Patient Care domain for an individual student. Assessment of this competency domain in the M3 Fall and Winter semesters.

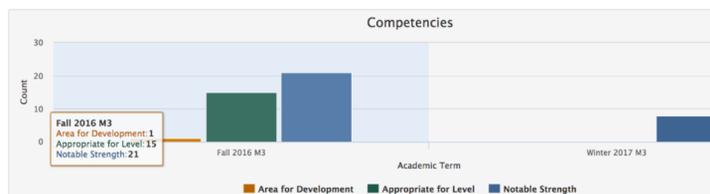


Figure 4b. Patient Care domain for an individual student, including the strength and development areas within this competency domain.

Next step: The immediate next step is to improve the functionality and views of the SPR to realize our Learner Portfolio that will provide these competency-based views to all users.

The Future

UMMS, COMP, and Alabama College of Osteopathic Medicine (ACOM) envision the use of business intelligence and visualization analytics to fully realize the potential insights gained by tracking EPAs throughout the competency-based medical education continuum. COMP is collaborating with ACOM, who uses E*Value to tie learning activities to EPAs. The two colleges are experimenting with piping this data into ProgressIQ for transformation, and then to Microsoft Power BI as a potential business intelligence and visualization analytics engine.



Figure 5. Prototype schema of student rotations performance data mapped to EPAs in E*Value, feeding into ProgressIQ, where it is transformed for visualization and analysis in Microsoft Power BI.



Figure 6. An individual student's performance on a specific EPA is visualized chronologically for each clinical rotation. The graph is interactive, e.g., if a user clicks on one of the bars, representing a specific rotation, then the display changes to "drill down" into all EPAs for that rotation, as seen in Figure 7, below.

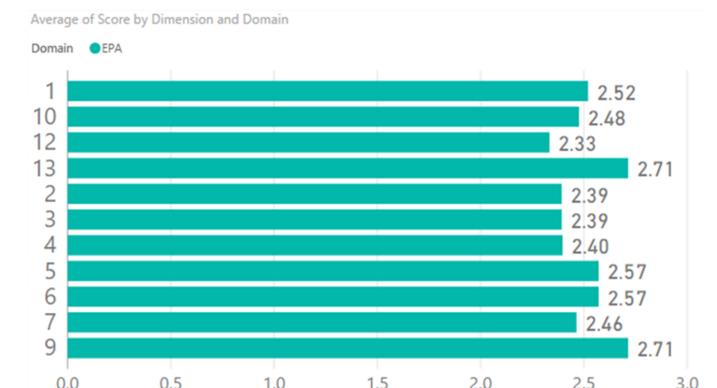


Figure 7. An individual student's performance on each EPA in a given rotation, as driven by the interactive graph in Figure 6, above. The user can interact with both graphs to slice, dice, and roll up data visually. E.g., the investigator user can track individual or aggregate EPAs over time on a per student, per cohort, per rotation, or per site/preceptor basis.

Conclusion

COMP has technology poised to effectively track EPAs, and is working toward implementing a competency-based curriculum. In contrast, UMMS is further along development of curriculum based on competencies, and has created technology to track aspects of student development based on EPAs. ACOM has technology in place to tie EPAs to student activities. Significant work remains for COMP, UMMS, and ACOM to implement wholly competency-based curricula, supported by technology that automatically tracks and visually represents student progress based on EPAs, milestones, and competencies.

Contact Us

- Scott Helf, DO, MSIT: shelf@westernu.edu
- Johmarx Patton, MD, MHI: jepatton@umich.edu
- Stephen Miller, DO, MPH: smiller@acomedu.org
- Maria Danzie: mdanzie@acomedu.org
- Emmanuel (Mike) Katsaros, DO: ekatsaros@westernu.edu
- Gerald Thrush, PhD: gthrush@westernu.edu