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- The purpose of this poster presentation to examine the relationship between the development of a fmCASES mid-clerkship examination and performance on the final fmCASES exam. More specifically, the mid-clerkship examination has been developed using a progress testing framework to serve as formative assessment to help guide learner preparation for the final exam and to identify students at-risk of failing the Family Medicine Clerkship

- Upon an annual review of the family medicine clerkship, the department's medical student education division noticed students in the first rotation of third-year clerkships were much more likely to fail the fmCASES final exam than those completing their Family Medicine Clerkship (FMC) later in the academic year (Figure 1.1).

Average Exam Score

Month	Average Exam Score
June	75.62
July*	73.69
August	75.18
Sept*	75.34
Oct	77.12
Nov*	76.4
Dec	77.94
Jan*	76.50
Feb	79.52
Mar*	78.60
Apr	81.54
May*	80.58

Month

*Denotes FM Clership after vacation/elective

- In addition, the division had received informal student feedback that students felt unprepared for the fmCASES final exam as other clerkships primarily used NMBE exams. As a result, we developed a mid-clerkship examination with the goals of helping prep learners for the final exam and to reduce the number of students failing the fmCASES final exam.

- As a pilot program launched with the final 4-month clerkship block of 2013-2014, students were given the opportunity to complete a 25-question mid-clerkship examination using questions from the fmCASES test question bank.
 - Within a specified time-frame within the clerkship, students accessed a secured site within the institution's course management system to complete the exam.
 - Within 24 hours of completing the mid-clerkship examination, students were e-mailed their results and given guidance on which fmCASES to review based upon their incorrect responses.
 - A unique feature of this curricular intervention is the learner feedback component. In a method similar to progress testing, students are given an individualized report about their strengths and weaknesses with the course material (Figure 1.2).

Michael-

Thank you for completing the FMCases Practice Exam. Your score for the practice exam was 18/25 (72%). As a reminder, students in this rotation need a score of 63% or higher to pass the FM final exam. For comparison purposes, the average score for your rotation was 16.8 (63.8%). The average score for the 8th rotation in the 2015-2016 academic year was 17.2 (69.0%). The average gain between the practice and final exams was +7.30%. Based upon your incorrect responses, we recommend that you review the following cases:

- Case #4
- Case #7
- Case #8
- Case #17
- Case #23
- Case #24
- Case #30

To help with your preparation of the final exam, below is a document connecting the above mentioned cases to specific topics. Should you have any questions or concerns, please do not hesitate to contact us.

- Throughout the 2014-2015 academic year, data was collected on all third-year medical students completing the Family Medicine Clerkship. More specifically, information was collected that included whether or not the student completed the fmCASES mid-clerkship examination, the student's score on the mid-clerkship exam, the student's score on the final examination, and the percentage change between the mid-clerkship and final exam score. As such, the primary data sources were the mid-clerkship and final exam scores. Other data included gender and timing of rotation. Results were analyzed using SPSS.

Reference:
Wrigley, W., van der Vleuten, C.P., Freeman, A., & Muijtjens, A. (2012). A systemic framework for the progress test: Strengths, constraints, and issues. *Medical Teaching*, 34(9), 683-697.

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- Initial results completed at the end of the 2014-2015 academic year found the following results:

	FMCases Practice Exam Score (25)	Percentage Correct	FMCases Final Exam Score (90)	Percentage Correct
Range	6-25	24-100%	44-85	48.89%-94.44%
Highest Score	25	100%	85	94.44%
Lowest Score	6	24%	44	48.89%
Block Average	16.88	67.54%	69.49	77.21%
# of Failing scores	93		17	

- 90.2% of all students completed the mid-clerkship exam (284 completed, 31 did not complete)
- | Practice Test
Performance | fmcASES Final
Performance | Gain between
Practice Test and
Final |
|------------------------------|------------------------------|--|
| 100% | 100% | 0% |
| 90-99% | 90% | 0% |
| 80-89% | 80% | 0% |
| 70-79% | 70% | 0% |
| 60-69% | 60% | 0% |
| 50-59% | 50% | 0% |
| 40-49% | 40% | 0% |
| 30-39% | 30% | 0% |
| 20-29% | 20% | 0% |
| 10-19% | 10% | 0% |
| 0-9% | 0% | 0% |

	Practice Test Percentage Correct	fmCAGES Final Percentage Correct	Gain between Practice/Final	
Range	21-100%	48.89-94.44%		
Highest Score	100%	94.44%	40.00%	Greatest % Change
Lowest Score	24%	48.89%	-21.11%	Lowest % Change
Block Average	67.54%	77.21%	10.06%	Rotation Average
# of Failing scores			20.78%	Average % Change of Failed Practice Exams

- The average gain for all students between the mid-clerkship and final exam was +10.06 percentage points. The average gain for students failing the practice exam (n=93) was +20.78 percentage points.
- Of the 284 students who took the mid-clerkship and final exam, 223 had positive gains, 52 had negative gains, and 5 students had no-change. The average positive gain was +13.77% while the average negative gain was -6.17%.
- The difference between the practice and final exam scores (gain) is highly significant, $p < .0001$.

Figure 1.3. 2014-15 AY Average Final Exam Score

Month	Average Exam Score
June	70.2
July*	71.17
August	74.92
Sept*	78.41
Oct	74.21
Nov*	77.29
Dec	80.86
Jan*	80.35
Feb	80.51
Mar*	81.59
Apr	78.75
May*	77.72

- Overall, the implementation of a mid-clerkship practice exam was considered successful. The practice exam had helped to reduce failures in the first block rotation (Figure 1.3). In addition, student feedback from course evaluations suggested that the practice exam was helpful in preparing for the final exam.
- Although the IU School of Medicine eliminated block scheduling with the 2015-2016 academic year, the mid-clerkship exam continues to be used today with the primary purpose of getting students acquainted with the format of the fmCASES exam and prepare for the final exam. In addition, a manuscript is currently in development examining the mid-clerkship exam over a two-year period (2014-2016).

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Apr	78.75
May*	77.72