

Supplemental Digital Appendix 1
Clerkship Grading Characteristics of Participating Institutions in 2018

Institution	School #1	School #2	School #3	School #4	School #5	School #6
Required core clerkships^a	FM, IM, Long PC, OBGYN, Peds, Psych, Surg	Anes, FM, IM, Neuro, OBGYN, Peds, Psych, Surg	EM, FM, IM, MSK Neuro, OBGYN, Peds, Psych, Surg/Anes (combined), Rural	FM, IM, OBGYN, Peds, Psych, Surg	FM, IM (I&II), Neuro, OBGYN, Peds, Psych, Surg (I&II),	FM, IM, Neuro, OBGYN, Peds, Psych, Surg
Clerkships with tiered grades	All except Long PC	All	All except EM, MSK	All	All	All
Grading schema for tiered grades	Honors Pass Fail	Honors Pass Fail	Honors High pass Pass Pass w/ remediation Fail	Honors High pass Pass Fail	Honors High pass Pass Fail	Outstanding Good Satisfactorily Unsatisfactory Fail
Cap on number of Honors/High Pass/etc.	No cap: criterion-based grading	Yes, less than or equal to 45% honors	Honors to top 30%, High Pass=Next 30%	No cap: criterion-based grading	Honors to Top 20%, High Pass to next 75-80%	No cap: criterion-based grading
All students work with residents	Yes	Yes	No	No	Yes	Yes
Medical knowledge exam used in grade determination	Yes	All except Anes.	Yes	Yes	All except Surg.	Yes
Final grade assigned by	Clerkship grading committee	Clerkship grading committee	Clerkship grading committee	Clerkship Directors, except IM w/ Clerkship grading committee	Clerkship director	Clerkship director

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^aAnes, Anesthesia; EM, Emergency Medicine; FM, Family Medicine; IM, Internal Medicine; Long PC, Longitudinal Primary Care; MSK, Musculoskeletal; Neuro, Neurology; OBGYN, Obstetrics and Gynecology; Peds, Pediatrics; Psych, Psychiatry; Surg, Surgery;

Supplemental Digital Appendix 2

Survey Instrument

Clerkship Grading Study: Medical Students' Perceptions of Clerkship Evaluation and Grading

Thank you for participating in our multi-institution research study on medical students' perspectives on third year clerkship evaluation and grading. This study should take you between 10-15 minutes to complete. You may stop the survey at any time. The survey is anonymous, and no one will be able to link your answers back to you. **After completing the survey, you will receive a link to a separate site to submit your email address to receive a \$10 Amazon gift card.**

Please carefully read the following instructions:

Answer the following questions when thinking about your third year as a WHOLE. When we say 'students' we are interested in your own experiences as well as what you have observed with your peers. If you are unsure of an answer please make the best estimate from what you have seen and heard from peers. 'Evaluations' refer to the written comments and scores completed by supervising residents and attendings. 'Grades' refer to the final grade received in a core clerkship (honors, high pass, pass, fail).

Q1 Written clerkship evaluations from supervising physicians are fair.

Q2 Before beginning a clerkship, students understand the expectations on which their performance will be evaluated.

Q3 After completing a clerkship, students understand the things on which supervisors have evaluated them.

Q4 The in-person feedback from supervisors is similar to their written evaluations of students.

Q5 Overall, final clerkship grades are fair.

Q6 Students understand how their final grade for a clerkship is determined.

Q7 Final clerkship grades reflect student performance based on clearly-defined criteria.

Q8 Final clerkship grades reflect student performance compared to other students.

Q9 Students can successfully appeal a grade they feel is unfair.

Q10 Grade inflation is a problem at my school.

Q105 Have you been evaluated by resident physicians during third year?

Resident Physicians:

Q11 Residents understand the scoring scale for evaluating students.

Q12 Residents observe students multiple times before evaluating them.

Q13 Residents typically know students well enough to evaluate them accurately.

Q14 Residents regularly evaluate students on skills that the resident did not observe.

Attending physicians:

Q15 Attendings understand the scoring scale for evaluating students.

Q16 Attendings observe students multiple times before evaluating them.

Q17 Attendings regularly evaluate students on skills that the attending did not observe.

Q18 Attendings typically know students well enough to evaluate them accurately.

Q19 In general, underrepresented minority (URM) students receive lower evaluations than non-URM students.

Q20 In general, women students receive lower evaluations than men.

Q21 In general, LGBTQI students receive lower evaluations than other students.

Q22 In general, introverts receive lower evaluations than extroverts.

Q23 Students receive consistent evaluations from different supervisors.

Q24 My evaluations this year accurately reflect my medical knowledge.

Q25 My evaluations this year accurately reflect my clinical skills.

Q26 My evaluations this year accurately reflect my communication skills.

Q27 My evaluations this year accurately reflect my professionalism.

Q28 My evaluators expected me to do poorly on clerkships because of my race or ethnicity.

Q29 Clerkships may have been easier for people of my race or ethnicity.

Q30 Some people feel I have less medical ability because of my race or ethnicity.

Q31 On clerkships, people of my race or ethnicity often face biased evaluations from others.

Q32 In medical school, I often feel that others look down on me because of my race or ethnicity.

Q33 Clerkship evaluations reward students' improvement during the clerkship.

Q34 Students work harder on their clerkships than they did in the pre-clinical/pre-clerkship years.

Q35 Students work harder in a clerkship when they can earn honors or an 'A' grade versus in a pass/fail clerkship.

Q36 Not getting honors in a specialty makes students less likely to go into that specialty.

Q37 If a student perceives that they will not get honors, their effort toward that clerkship decreases.

Q38 Students think about their clerkship evaluations too much.

Q39 Students think about their final clerkship grade too much.

Q40 In clerkships, trying hard is very important.

Q41 In clerkships, how much you improve is very important.

Q42 In clerkships, really understanding the material is the main goal.

Q43 In clerkships, it's important to understand the work, not just memorize it.

Q44 In clerkships, learning new concepts and skills is very important.

Q45 In clerkships, it's OK to make mistakes as long as you are learning.

Q46 In clerkships, getting good grades is the main goal.

Q47 In clerkships, getting right answers is very important.

Q48 In clerkships, it's important to get high scores on tests.

Q49 In clerkships, showing others that you are not bad at the work is really important.

Q50 In clerkships, it's important that you don't make mistakes in front of everyone.

Q51 In clerkships, it's important not to do worse than other students.

Q52 In clerkships, it's very important not to look dumb.

Q53 In clerkships, one of the main goals is to avoid looking like you can't do the work.

Q54 Supervisors give students in-person feedback prior to completing written evaluations.

Q55 In-person feedback from supervisors provides specific information about how to improve.

Q56 The final written evaluations from supervisors give students specific information about how to improve.

Q57 I am satisfied when I learn in a clerkship regardless of my final grade.

Q58 Attendings give me useful feedback.

Q59 Residents give me useful feedback.

Q60 Knowing they will be graded helps students learn more.

Q61 Clerkship grades negatively affect students' well-being.

Q62 Clerkship grades increase student stress.

Q63 Working with another student in a clerkship increases stress about grades.

Q64 My clerkship evaluations from my supervisors have made me question whether I will be a good doctor.

Q65 My final clerkship grades have made me question whether I will be a good doctor.

Q66 I received the best evaluations in my future specialty.

Q67 Students ask questions to help themselves learn.

Q68 Students asks questions to which they already know the answer.

Q69 Students ask questions to look good.

Q70 Students avoid asking questions that might make them look bad.

Q71 Students feel comfortable asking attendings questions.

Q72 Students feel comfortable asking residents questions.

Q73 Students wish they asked more questions.

Q74 Students receive lower evaluations when they point out their weakness.

Q75 In order to earn better evaluations, students spend less time with patients than they would like.

Q76 In order to earn better evaluations, students avoid working with complicated patients.

Q77 Students on the same team try to outperform each other to get a better evaluation.

Q78 Students on the same team work together to get better evaluations.

Q79 Students ignore poor evaluations.

Q80 Students who are frustrated by evaluations stop reading them as the year goes on.

For each of the following questions, on a scale of 0-10 (0=not important at all, 10=exceptionally important), in your experience, how important is each of the following for determining your final clerkship grade? If you feel that clerkships differ, select the number that best reflects your overall experience during third year.

Q81 Oral Presentations

Q82 Clinical Reasoning Skills

Q83 Improvement over the course of the clerkship

Q84 Rapport with patients and families

Q85 Being liked by the team

Q86 Fund of Knowledge

Q87 Clinical site at which you do your rotation

Q88 Working Hard

Q89 Written Examination

Q90 Observed Structured Clinical Exam (OSCE) or other clinical skills examination

Q91 The particular attendings that you work with

Q92 The particular residents that you work with

Tell us a bit about yourself:

Q93 What is your age?

Q94 Race

Q95 Ethnicity

Q96 Sex assigned at birth

Q97 Current Gender Identity

Q98 Sexual Orientation

Q99 Are you a first generation college student?

Q100 Did you participate in a longitudinal integrated clerkship?

Q101 Of the required core clerkships that you have taken to this point, how many assigned grades (e.g. Honors, high pass, pass, A, etc.)? Please do NOT include pass/fail clerkships.

Q102 In how many core clerkships did you received the highest grade possible (e.g. Honors, A, etc.)? This does NOT include pass/fail clerkships.

Q103 Current Medical School

Q104 Intended Specialty

Q106 *Optional question:* What are your recommendation(s) to maximize the fairness of clerkship grading?

**When students took survey, students answered question 105 after Q10. If they answered 'no' to Q105, they skipped the resident questions, Q11-Q14.

Supplemental Digital Appendix 3

Determinants of Final Clerkship Grade of Students From 6 Medical Schools in 2018

On a scale of zero to ten, students rated how important each factor was in determining their final grade (0 = not important at all and 10 = extremely important).

	Mean (SD)
Being liked	8.68 (1.67)
Particular attendings that you work with	8.65 (1.74)
Particular residents that you work with	8.54 (1.85)
Oral presentations	8.15 (1.73)
Clinical site where you do your rotation	7.98 (2.51)
Clinical reasoning	7.70 (1.77)
Working hard	7.50 (2.20)
Written exam	7.38 (2.41)
Fund of knowledge	7.27 (1.72)
Rapport with patients and families	5.99 (2.65)
Improvement	5.67 (2.66)

Supplemental Digital Appendix 3

Sub-Analyses of Student Demographics, Predictor and Outcome Factors by Self-Identified Gender and Underrepresented in Medicine Status of Students From 6 Medical Schools in 2018

	Male n=294	Female n=357	P-value	Non-UIM n=541	UIM ^a n=106	P-value
Age (mean (SD), unless indicated)	27.7 (3.02)	27.2 (2.94)	.02	27.4 (2.95)	27.6 (3.22)	.65
UIM (%) Female (%)	45 (15.3%)	60 (16.8%)	.62	292 (54.0%)	60 (56.6%)	.62
Lesbian, gay, bisexual, transgender, queer (%)	36 (12.2%)	47 (13.2%)	.70	69 (12.8%)	18 (17.0%)	.26
First generation college student (%)	63 (21.4%)	78 (21.8%)	.96	96 (17.7%)	46 (43.4%)	<.0005
Applying into a more competitive specialty (%) ^b	55 (18.7%)	31 (8.7%)	<.0005	72 (13.3%)	14 (13.2%)	.94
High Honors (%) ^c	47 (16.0%)	65 (18.2%)	.21	96 (17.7%)	15 (14.2%)	.03
Grades are fair	39.5%	49.0%	.01	44.2%	44.3%	.90
Evaluations are accurate	52.7%	69.2%	<.0005	61.4%	60.4%	.97
Students receive useful feedback	61.2%	63.0%	.56	59.7%	71.7%	.03
Evaluations are biased	25.2%	64.4%	<.0005	31.4%	48.1%	.001
Resident evaluation procedures are fair	68.0%	72.3%	.20	71.3%	62.3%	.016
Attending evaluation procedures are fair	43.2%	40.9%	.53	40.5%	45.3%	.66
Clerkship learning environment is mastery-oriented	85.4%	90.2%	.29	87.2%	91.5%	.23
Clerkship learning environment is performance approach-oriented	68.4%	69.5%	.89	69.7%	63.2%	.18
Clerkship learning environment is performance avoid-oriented	81.3%	88.8%	.19	85.0%	86.8%	.59
Student vulnerability to stereotype threat	14.3%	21.0%	.018	10.9%	55.7%	<.0005

^aUnderrepresented in medicine: students who self-identify as African American, Latino/Latina/Hispanic, Native American/Alaskan Native/Native Hawaiian descent.

^bHigh Honors: Student earned a percentage of honors greater than one standard deviation (SD) above the average percentage of honors earned at school

^c A specialty was considered competitive if it met two of the following three criteria using 2018 NRMP data: probability of matching $\leq 90\%$, median Step 1 score of matched applicants ≥ 240 , median Step 2 CK ≥ 250 . Competitive specialties included: dermatology, diagnostic radiology, neurological surgery, ophthalmology, orthopedic surgery, otolaryngology, plastic surgery, radiation oncology and urology