NBME® subject examinations provide medical schools with a tool for measuring examinees' understanding of the clinical sciences. Items on this examination were written and reviewed by national test committees. Prior to publication, test forms are reviewed by a panel of course directors from this discipline. Although these examinations are designed to be broadly appropriate as part of overall examinee assessment, course objectives vary across schools, and the congruence between subject examination content and course objectives should be considered when interpreting test scores and determining grading standards. Specifically, subject examination scores should not be used alone, but rather in conjunction with other indicators of examinee performance in determination of grades.

Subject Examination Scores

The subject examination score is an equated percent correct score that represents mastery of the content domain assessed by the examination. It is calculated as the percentage of items in the total content domain that would be answered correctly based on an examinee's proficiency level. The subject examination scores are equated across test administrations and are statistically adjusted for variations in test form difficulty. Consequently, these scores can be used to compare and track school and examinee performance over time.

The subject examination scores are placed on a classic percent correct metric (0 – 100%) to facilitate interpretation and use. This scale can easily be incorporated into local assessments and grading schemes and provides a useful tool for comparing the scores of your examinees with those of a large, nationally representative group taking the examination as an end-of-course or end-of-clerkship examination.

Precision of Scores

Measurement error is present on all tests, and the standard error of measurement (SEM) provides an index of the (im)precision of scores. The SEM indicates how far an examinee's score on the examination might stray from his/her "true" proficiency level across repeated testing using different sets of items covering the same content. Using the SEM, it is possible to calculate a score interval that will encompass about two thirds of the observed scores for a given true score by adding and subtracting the SEM from that score. For this examination, the SEM is approximately 4 points. If an examinee's true proficiency on the examination is 75, the score he/she achieved on the examination will usually (two times out of three) fall between 71 and 79 (75 - 4 and 75 + 4).

Score and Performance Feedback

Summary information on the examinee group tested, examination purpose and number of items scored is provided on each page of the feedback. The _Roster of Equated Percent Correct Scores_ reports a total test equated percent correct score for each examinee. Reported scores also appear in a comma separated text file that can be downloaded. An _Examinee Performance Profile,_ which graphically displays content areas of strength and weakness, is provided for each examinee.

If there were at least 2 examinees, _Equated Percent Correct Score Descriptive Statistics_ for reported scores are provided along with a _Frequency Distribution_ of the total test equated percent correct score. If there were at least 5 examinees for a single form administration, a detailed _Content Area Item Analysis Report_ summarizing the general content of each item on the exam along with group item performance is provided. Content area item descriptors and group item performance also appear in a file that can be downloaded. If there were at least 5 examinees for a single form administration or 10 examinees for a multiple form administration, a _Summary Content Area Item Analysis Report_ is provided.

If examinees were tested at your school in the previous academic year, a _Year-End Report_ is provided. The report summarizes the performance of first-time takers and is posted annually in November to the _NBME Services Portal (NSP)._

Grading Guidelines

Grading guidelines for this exam have been developed by a nationally representative group of clerkship directors to assist schools and institutions in setting fair and valid passing and honors standards for students taking this exam. An abbreviated summary of the grading guidelines is provided and the full study with a list of participating schools is reported on NSP.

Norms

Total academic year norms are provided to aid in the interpretation of examinee performance. The norms reflect the performance of first-time taker examinees who took a form as an end-of-course or end-of-clerkship examination across an entire academic year. The two most recent sets of norms that have been developed for this examination are provided for your convenience and are reported on the equated percent correct score scale. Norms will be updated in November to reflect the most recent academic year of data. Norms can also be found on NSP.

The NBME conducted webcast standard setting studies for the Emergency Medicine Subject Examination with medical school faculty. For each study, medical school faculty who were past or present clerkship directors (100% for 2015 and 88% for 2019) in Emergency Medicine participated as expert judges in webcast sessions that utilized the internet and conference calling to train participants in the standard setting procedure. Judges reviewed the content and rated the difficulty of each item on a current form of the examination. The study employed both a Modified Angoff content-based procedure and the Hofstee Compromise standard setting method. These two procedures together provide proposed passing standards that are based on an in-depth item-by-item analysis of the examination content, as well as a more global analysis of the content. The results were summarized and the proposed standards were expressed as the proportion of the content required for a candidate to pass and to receive honors status. Table 1 provides a summary of the medical school faculty who served as expert judges and their school information for each of the webcast studies conducted by the NBME.

Table 1 – Demographics of Expert Judges and Schools Participating in Emergency Medicine Webcast Studies

Standard Setting Study	Number of Judges	Years of Experience	Number of Schools	Use CDEM Curriculum	Traditional School Curriculum	Integrated School Curriculum	School Clerkship Length
2015	27	1 – 20	26	93%	22%	56%	2 – 4 weeks
2019	24	2 – 20	24	71%	38%	58%	2 – 8 weeks

The data shown below represent a compilation of the opinions of the medical school faculty who participated in each study. The results reported are on the Equated Percent Correct score scale that became effective August 2015. The study results are provided to assist you in setting fair and valid passing and honors standards for this examination.

Table 2 provides a summary of the results for passing scores from the Modified Angoff and Hofstee Compromise procedures. The recommended minimum passing score based on the 2019 Angoff results is a subject exam score of 61, which is higher than the recommended standard in 2015. This score was slightly below the acceptable range of minimum passing scores (63 to 72) computed from the 2019 Hofstee results. The recommended minimum passing score based on the 2019 Hofstee results is a subject exam score of 68, which is higher than the 2015 Hofstee results.

Table 2 – Emergency Medicine Grading Guidelines for Passing (Equated Percent Correct Scores)

Standard Setting Study	Modified Angoff Recommended Passing Score	Hofstee Compromise Range of Acceptable Minimum Passing Scores	Hofstee Compromise Recommended Passing Score
2015	59	54 to 66	62
2019	61	63 to 72	68

Table 3 provides a summary of the Hofstee results for honors. The 2019 study results indicate that the minimum acceptable score for honors should fall between a score of 86 to 92. The range of minimum acceptable Hofstee scores for honors based on the 2019 study is smaller than the range in 2015, but the maximum score is the same.

Table 3 – Emergency Medicine Grading Guidelines for Honors (Equated Percent Correct Scores)

Standard Setting Study	Hofstee Compromise Range of Acceptable Minimum Honors Scores
2015	80 to 92
2019	86 to 92

Interpreting Academic Norms

- Norms are provided to aid in the interpretation of examinee performance.
- They make it possible to compare examinees' scores with the performance of a norm group.
- Norm group characteristics:
  - Examinees from LCME-accredited medical schools who took a form of this examination as an end-of-course or end-of-clerkship examination for the first time during the academic year from mm/dd/yyyy through mm/dd/yyyy.
  - Norms are also provided based on the performance of third year and fourth year takers separately.

Using the Table

- Locate an examinee's score in the column labeled "Equated Percent Correct Score" and note the entry in the adjacent column labeled "Percentile Ranks" for the examinee group of interest. This number indicates the percentage of examinees that scored at or below the examinee's equated percent correct score.

Equated Percent Correct Scores

	Total Group	Third Year	Fourth Year
Number of Examinees	6,218	1,494	4,628
Mean	77.6	77.4	77.7
SD	7.5	8.9	6.9

	Percentile Ranks		
Equated Percent Correct Score	Total Group (n=6,218)	Third Year (n=1,494)	Fourth Year (n=4,628)
100	100	100	100
99	100	100	100
98	100	100	100
97	100	100	100
96	100	100	100
95	100	100	100
94	100	100	100
93	100	100	100
92	99	99	99
91	99	98	99
90	98	97	98
89	97	95	97
88	95	93	96
87	92	89	93
86	89	85	90
85	85	80	86
84	81	75	83
83	77	71	79
82	74	68	75
81	69	64	70
80	64	60	65
79	58	54	59
78	53	49	53
77	48	45	48
76	41	40	40
75	36	37	35
74	31	33	30
73	27	30	26
72	23	27	21
71	19	23	17
70	16	20	14
69	13	17	11
68	11	15	9
67	9	13	7
66	7	12	6
65	6	10	5
64	5	9	4
63	4	8	3
62	4	7	2
61	3	6	2
60	2	5	1
59	2	4	1
58	1	4	1
57	1	3	1
56	1	3	0
55	1	2	0
54 and below	1	2	0