SUBJECT EXAMINATION PROGRAM
INTERNATIONAL FOUNDATIONS OF MEDICINE®(IFOM®)
BASIC SCIENCE EXAMINATION
SCORE INTERPRETATION GUIDELINES
FOR MEDICAL SCHOOLS & ORGANIZATIONS

NBME®

The NBME® International Foundations of Medicine® (IFOM®) Basic Science Examination (BSE) measures competency in the fundamental sciences relevant to the practice of medicine internationally. The emphasis is on the principles and mechanisms underlying health, disease, and modes of therapy. Test material is designed to measure application of basic science knowledge in a clinical context.

IFOM BSE Scores

The IFOM BSE 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. Scores are placed on a classic percent correct metric (0-100%) to facilitate interpretation and use. This scale can easily be incorporated into grading schemes. IFOM BSE scores are equated across test administrations (statistically adjusted for variations in test form difficulty), so they can be used to compare and track school and examinee performance over time.

The IFOM BSE is administered in both paper-and-pencil and web formats and is offered in Spanish and International English. Caution should be used in the interpretation of scores as the modality and language of the test administration may affect performance for some examinees.

Precision of Scores

Measurement error is present on all tests, and the standard error of measurement (SEM) provides an index of the imprecision of scores. The SEM is approximately 4 points for the IFOM BSE. Using the SEM, it is possible to calculate a score interval that indicates how much a score might vary across repeated testing using different sets of items covering similar content. An interval expected to encompass about two thirds of scores observed on repeated testing may be found by adding and subtracting the SEM from the reported score.

The standard error of difference (SED) in scores is an index used to assess whether the difference between two scores is statistically meaningful. The SED is approximately 5 score points for IFOM BSE. If the scores received by two examinees differ by at least one SED, it is unlikely that the examinees are equal in proficiency, since a difference this large would occur by chance less than 32% of the time.

Interpreting IFOM BSE Scores

The IFOM BSE is used for a variety of purposes by both individuals and institutions. Individuals use IFOM BSE for several purposes, including participation in exchange programs, application for post-graduate training programs and professional positions, and self-assessment relative to international standards. Medical schools use IFOM BSE for formative and summative assessment, curriculum evaluation and international benchmarking. Post-graduate programs use IFOM BSE for selection of graduates for training. Ministries of health/education use IFOM BSE as part of assessment for regional certification.

As implied based on the variety of uses of IFOM BSE, it may be utilized for both high-stakes and low-stakes assessment purposes. The stakes for the examinee taking the IFOM BSE as well as differences in educational level, preparation and motivation may affect performance. These factors should be considered when interpreting performance and when comparing performance based on one use of IFOM BSE to performance based on a different use. These factors should also be considered when interpreting IFOM performance relative to the United States Medical Licensing Examination® (USMLE®) Step 1 performance and the Step 1 minimum passing score. Step 1 is a very high-stakes examination that is taken after intense preparation. While the IFOM BSE score of 77 that corresponds approximately to the Step 1 minimum passing score is useful as a benchmark, stakes and preparation for IFOM BSE examinees may differ substantially and should be taken into consideration when making comparisons.

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International Comparison Group (ICG)

The International Comparison Group (ICG) included 6,042 examinees from Africa (7.6%), the Americas (25.3%), Asia including the Middle East (45.5%), Europe (16.5%) and Oceania (5.1%) who took the IFOM BSE in 2016-2020. The mean score of the IFOM BSE ICG was 48 and the standard deviation was 18 points. As mentioned in the previous section, IFOM BSE is utilized for a variety of assessment purposes and the stakes as well as differences in educational level, preparation and motivation may affect performance. These factors should be considered when interpreting performance relative to the ICG as most ICG examinees tested for formative or summative purposes in a low-stakes context.

Examination Feedback

Each examinee is provided with a Performance Report showing the total test equated percent correct score and a Performance Profile displaying individual strengths and weaknesses for major content areas.

NBME sets a standard of competence for the IFOM BSE that approximates the Step 1 minimum passing score. The IFOM BSE score that best approximates the Step 1 minimum passing score is 77, as can be seen in the "Approximate Correspondence with USMLE Step 1 Performance" section of this Guide. Examinees whose IFOM BSE score is 77 or higher receive a _Certification in Basic Science Knowledge_ along with their score report, in recognition of this achievement.

The IFOM BSE score is not the same as, and cannot be used in place of, a Step 1 score. Examinees wishing to obtain a Step 1 score for any purpose must register for and take the USMLE separately.

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Interpreting 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:
  - International Comparison Group (ICG) examinees who took a form of this examination in a low-stakes context during 2016-2020.

Using the Table

- To use 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." This number indicates the percentage of examinees that scored below the examinee's equated percent correct score.

Equated Percent Correct Scores

	ICG
Number of Examinees	6,042
Mean	48
SD	18

Equated Percent Correct Score	Percentile Ranks	Equated Percent Correct Score	Percentile Ranks
100	100	60	75
99	100	59	73
98	100	58	72
97	100	57	70
96	100	56	69
95	100	55	67
94	100	54	65
93	99	53	63
92	99	52	61
91	99	51	60
90	99	50	58
89	98	49	56
88	98	48	54
87	98	47	52
86	97	46	49
85	97	45	47
84	97	44	45
83	96	43	44
82	96	42	41
81	95	41	39
80	95	40	37
79	94	39	35
78	93	38	32
77	93	37	30
76	92	36	28
75	91	35	27
74	90	34	23
73	89	33	21
72	88	32	19
71	88	31	17
70	87	30	16
69	86	29	13
68	84	28	12
67	83	27	10
66	82	26	9
65	81	25	7
64	80	24	6
63	79	23	5
62	77	22	4
61	76	21 and below	3

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Approximate Correspondence with USMLE Step 1 Performance

The IFOM BSE is intended to determine an examinee's relative areas of strength and weakness in general areas of basic science, not to predict performance on the Step 1 examination, and the content covered by the two examinations is somewhat different. However, because there is substantial overlap in content coverage and many IFOM items were previously used on Step 1, it is possible to roughly project IFOM performance onto the Step 1 score scale. The table below provides this information.

To use the table, locate an IFOM score in the associated column and look up the corresponding entry in the column labeled Step 1 Scale. For example, if an examinee's score is 54, the corresponding entry of 140 indicates that the examinee's performance on the IFOM BSE corresponds approximately to a Step 1 score of 140. The IFOM BSE score is not the same as, and cannot be used in place of, a Step 1 score.

IFOM Score	Step 1 Scale	IFOM Score	Step 1 Scale	IFOM Score	Step 1 Scale
100	274	73	182	46	123
99	271	72	180	45	122
98	268	71	178	44	121
97	266	70	176	43	119
96	255	69	173	42	117
95	252	68	170	41	115
94	250	67	168	40	113
93	246	66	166	39	111
92	242	65	163	38	110
91	238	64	161	37	108
90	234	63	159	36	106
89	231	62	157	35	105
88	228	61	154	34	103
87	223	60	151	33	101
86	220	59	150	32	100
85	217	58	147	31	98
84	215	57	146	30	96
83	211	56	143	29	95
82	208	55	142	28	93
81	205	54	140	27	92
80	202	53	138	26	90
79	199	52	136	25	89
78	197	51	134	24	87
77	194	50	132	23	86
76	191	49	130	22	85
75	188	48	128	21	83
74	185	47	126	20	81

Mean Performance of examinees from U.S. and Canadian medical schools taking Step 1 for the first time in 2019 is 232.

The Step 1 Minimum Passing Score as of 1/1/2021 is 194.

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Interpretation of Box Plots on Group Performance Report and Performance Summary Profile

- The "box" represents the middle 50% of all observed scores;
- The upper boundary of the box indicates the 75th percentile of the score distribution, the lower boundary indicates the 25th percentile; the box is referred to as the inter-quartile range (IQR);
- The line in the box indicates the median, or the 50th percentile of the distribution;
- The ends of the lines extending from the box, or "whiskers," represent the highest and lowest values that are not more than 1.5 x the IQR interval from either end of the box.

Guidelines for the Use of IFOM BSE Scores for Decisions

When comparing student performance, it is generally appropriate to consider IFOM BSE results in conjunction with other criteria such as grades, rather than using test scores as the sole basis for decisions. Test scores should be viewed as approximate, not exact, measures of medical knowledge; consequently, small differences in IFOM BSE scores alone should not be used as the basis for decisions about students.