Table A1. Linking Pathology Items to Pathology Attributes: Full Q-Matrix (Initial)

Item	Organ System									Disease State				Task		Total
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	
1				1							1				1	3
2						1							1		1	3
3							1			1					1	3
4					1						1			1		3
5	1									1				1		3
6		1										1		1		3
7	1										1				1	3
8									1			1		1		3
9						1							1	1		3
10							1						1		1	3
11	1												1	1		3
12									1				1		1	3
13			1							1					1	3
14	1											1		1		3
15								1			1			1		3
16								1			1				1	3
17						1					1				1	3
18			1									1		1		3
19									1		1			1		3
20			1								1			1		3
21					1						1				1	3
22					1					1					1	3
23			1										1		1	3
24	1												1		1	3
25	1										1			1		3
26			1							1					1	3
27								1			1				1	3
28								1				1		1		3
29							1				1			1		3
30									1		1				1	3
31			1								1				1	3
32				1							1			1		3
33					1						1				1	3
34					1						1			1		3
35						1				1				1		3
36	1										1			1		3
37						1					1			1		3
38					1						1				1	3
39									1			1		1		3
40							1				1			1		3
41								1				1		1		3
42					1					1					1	3
43							1				1				1	3
44			1								1				1	3
Total	7	1	7	2	7	5	5	5	5	7	23	7	7	22	22	132

Note: “1” indicates specification of attribute to item. “Total” is the sum of frequencies across the column or rows. List of attributes numbered based on Table 2a. For example, D1 corresponds to “Hematopoetic/Lymphoreticular” and D2 corresponds to “Central/Peripheral Nervous”, respectively. Attributes can be combined based on SME discussion proposed above.

Table A2. Linking Medicine Items to Medicine Attributes: Full Q-Matrix (Initial)

Item	Organ System													Preventative / Principles		Findings: Hx and PE		DDX
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18
1				1												1	1	1
2														1		1		
3												1				1	1	1
4				1												1	1	1
5	1															1	1	1
6								1								1	1	1
7											1					1	1	1
8															1			
9					1											1	1	1
10				1														1
11				1										1		1		
12															1			
13				1												1	1	1
14				1	1											1	1	1
15	1				1							1				1	1	1
16										1						1	1	1
17							1				1					1	1	
18												1		1		1		1
19									1			1				1	1	
20											1					1		1
21								1					1			1	1	1
22				1												1	1	1
23			1							1						1	1	1
24									1				1	1		1	1	
25										1	1					1	1	1
26						1						1				1	1	1
27					1					1						1		1
28								1				1				1	1	1
29	1											1				1	1	1
30				1			1									1	1	1
31						1										1	1	1
32					1				1							1	1	
33					1													
34						1		1								1	1	1
35								1		1	1					1	1	1
36						1						1				1	1	1
37												1				1		
38										1			1			1		1
39		1																1
40						1										1	1	1
41				1				1			1					1		1
42										1						1	1	1
43										1	1					1	1	1
44								1				1				1	1	1
Total	3	1	1	9	6	5	2	7	3	8	7	10	3	4	2	39	31	34

Note: Attributes can be combined based on SME discussion proposed above.

Table A3. Subscore Domain (Attribute) Characteristics: HO-DINA

Subject Area	Domain	Attribute	Difficulty
Pathology	Organ Systems	1. Hematopoetic/Lymphoreticular and Nervous System	–1.15 (.32)
		2. Skin/Connective Tissue/Musculoskeletal	–1.67 (.51)
		3. Cardiopulmonary Systems	–.51 (.15)
		4. Gastrointestinal	–.97 (.35)
		5. Renal/Urinary and Reproductive Systems	–.53 (.19)
		6. Endocrine	–.59 (.27)
	Disease States	7. Congenital	–1.47 (.37)
		8. Inflammatory/Infectious/Immunologic	–1.18 (.22)
		9. Neoplastic	–1.47 (.28)
		10. Metabolic/Nutrition/Environmental	–.90 (.18)
	Tasks	11. Diagnostic	–1.26 (.32)

		12. Pathogenesis	–1.99	(.50)
Medicine	Organ System	1. Immunologic Disorders / Infectious Disease	–1.18	(.35)
		2. Hematology Oncology	–.89	(.39)
		3. Somatic Tissues: skin, bones, joints, nerves	–1.00	(.28)
		4. Cardiopulmonary	–.70	(.29)
		5. Endocrinology, nutrition, and digestive system	–1.78	(.54)
		6. General and Preventative Medicine	–1.54	(.40)
		7. Renal, Urinary, and Male Reproductive System	–1.18	(.43)
	Findings	8. History and Physical Examination	–1.54	(.49)
	DDX, Interpretation, Justification	9. Interpretation of test results	–2.20	(.69)
		10. Differential diagnosis	–.83	(.22)
		11. Mechanism of disease	–.83	(.39)
	Management	12. Management	–.88	(.41)

Note: Values in parenthesis are standard errors. Magnitude of parameter estimates can be interpreted relative to other subscore domains.