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Healthcare provider perceptions of clinical prediction rules

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ABSTRACT

Objectives: To examine internal medicine and emergency medicine healthcare provider perceptions of usefulness of specific clinical prediction rules.

Setting: The study took place in two academic medical centres. A web-based survey was distributed and completed by participants between 1 January and 31 May 2013.

Participants: Medical doctors, doctors of osteopathy or nurse practitioners employed in the internal medicine or emergency medicine departments at either institution.

Primary and secondary outcome measures: The primary outcome was to identify the clinical prediction rules perceived as most useful by healthcare providers specialising in internal medicine and emergency medicine. Secondary outcomes included comparing usefulness scores of specific clinical prediction rules based on provider specialty, and evaluating associations between usefulness scores and perceived characteristics of these clinical prediction rules.

Results: Of the 401 healthcare providers asked to participate, a total of 263 (66%), completed the survey. The CHADS2 score was chosen by most internal medicine providers (72%), and Pulmonary Embolism Rule-Out Criteria (PERC) score by most emergency medicine providers (45%), as one of the top three most useful from a list of 24 clinical prediction rules. Emergency medicine providers rated their top three significantly more positively, compared with internal medicine providers, as having a better fit into their workflow (p=0.004), helping more with decision-making (p=0.037), better fitting into their thought process when diagnosing patients (p=0.001) and overall, on a 10-point scale, more useful (p=0.009). For all providers, the perceived qualities of useful at point of care, helps with decision making, saves time diagnosing, fits into thought process, and should be the standard of clinical care correlated highly (≥0.65) with overall 10-point usefulness scores.

Conclusions: Healthcare providers describe clear preferences for certain clinical prediction rules, based on medical specialty.

Strengths and limitations of this study

- This is the first study to examine healthcare provider perceptions of usefulness of CPRs in the hospital setting.
- Providers consistently rated CHADS2, the Thrombolysis in Myocardial Infarction (TIMI) Score (NSTEMI), Wells Score for Pulmonary Embolism, Alcohol Abuse CAGE and the Ottawa Ankle Rule highly. These CPRs would be ideal candidates for integration into an electronic health record (EHR).
- Emergency medicine providers consistently rated CPRs more positively and may serve as early adapters to CPRs integrated into electronic health records.
- For all providers, the qualities of CPRs being useful at point of care and that these help with decision-making, save time diagnosing, fit well with one's thought process, and should be the standard of clinical care correlated highly (≥0.65) with usefulness scores.
- A significant limitation of the results of this study is that mean ratings for CPR characteristics reflect only the opinion of healthcare providers who selected the CPR as one of the top three most useful.

INTRODUCTION

Evidence-based medicine was announced as a fundamental paradigm shift in medicine in the early 1990s and predicted to de-emphasise intuition, clinical experience and pathophysiological rationale in favour of hard scientific evidence.[1] Decades later, the accessible body of clinical research has grown exponentially, but translation into common clinical practice has been protracted and inconsistent.

The seamless integration of clinical prediction rules (CPRs) into the point of care will aid in transferring evidence-based medicine into daily clinical practice. CPRs can be defined as validated tools that quantify the individual contributions that components of history, physical and laboratory results make towards a diagnosis, prognosis or treatment response.[2] A few commonly used CPRs include the CENTOR criteria, which predicts the likelihood of *Streptococcal pharyngitis*;[3] the CAGE score, which serves as a screening test

for alcoholism;[4] and the CHADS2 score, which predicts the risk of stroke in patients with atrial fibrillation.[5]

CPRs integrated into electronic clinical decision support tools have demonstrated the ability to shape healthcare provider behaviour towards more evidence-based clinical practice.[6] However, provider adoption continues to be a significant barrier to widespread use of clinical decision support as a whole, which is reported at 10–20%.[7] Efficiency, usefulness, information content, user interface and workflow have been reported by clinicians to be the keys to effective decision support.[7] These are likely to be large determinants of clinician adoption rates.

In light of the growing interest in integrated clinical decision support, and CPRs in particular, this study sought to help address the biggest challenge of implementation, poor provider adoption. The study focuses on provider perceptions of usefulness of CPRs in an effort to illuminate preferences, attitudes and thoughts that might be relevant to all types of clinical decision support. We examine healthcare provider perceptions of usefulness based on specialty and level of training with the ultimate goal of discovering which CPRs might be better adopted by these providers.

METHODS

A web-based survey platform was distributed to 401 healthcare providers between 1 January and 31 May 2013 in two academic medical centres, Hofstra North Shore—LIJ School of Medicine and Boston University, in the USA.

The survey content and structure were informed by qualitative interviews with physicians, a literature review and feedback received after pilot testing. The survey was piloted for approximately 1 month and after minor modifications, for instruction clarity and reduced length, distributed via email to attending physicians, nurse practitioners and residents training in the fields of internal medicine (IM) and emergency medicine (EM).

Providers were included in this study if they were credentialed as medical doctors, doctors of osteopathy or nurse practitioners, and were currently employed in either the IM or EM departments at each institution. Providers were excluded if they were currently involved in the study.

Participants were recruited, consented and asked to complete the survey via email. Additionally, providers were approached during grand rounds and resident afternoon conferences to encourage them to complete the survey. Laptops with the survey preloaded were placed at meetings to encourage completion. In addition, providers were sent reminder emails twice a month throughout the study period.

The survey consisted of three distinct sections. In the first section, participants were asked for demographic information, including hospital affiliation, professional degree, current position (attending vs resident), percentage of time devoted to clinical responsibilities, primarily outpatient versus inpatient practice, years of practice, medical specialty, race, gender and age. Demographic information, including race and gender, was assessed to determine the extent to which findings could be generalised to other medical communities.

In the second section, providers were asked to pick from a list of 24 CPRs: National Emergency X-Radiography Utilization Study (NEXUS) C-Spine Rule,[8] Canadian C-Spine Rule,[9] Ottawa Knee Rule,[10] Walsh,[11] Lee Index,[12] The Thrombolysis in Myocardial Infarction (TIMI) Risk Score (NSTEMI),[13] CHADS2,[5] 4T Score for Heparin-Induced Thrombocytopenia (HIT),[14] Ottawa Ankle Rule,[15] Pulmonary Embolism Rule-Out Criteria (PERC),[16] Wells Score for deep venous thrombosis (DVT).[17] Wells Score for Pulmonary Embolism (PE),[18] Alcohol Abuse CAGE,[4] Model for End-Stage Liver Disease (MELD) Score,[19] San Francisco Rule for Syncope,[20] Modified Early Warning System (MEWS),[21] CURB 65,[22] Ranson's Criteria,[23] Pittsburgh Knee Rule,[24] Predicting Tuberculosis (TB) in Patients,[25] Pneumonia Severity Index (PSI)/Pneumonia Patient Outcomes Research Team (PORT) Score,[26] Acute Physiology and Chronic Health Evaluation (APACHE II),[27] Mortality in Emergency Department Sepsis (MEDS)[28] and Ventilator Associated Pneumonia (VAP).[29] They were asked to select all of the CPRs that were familiar to them. Of those CPRs, participants were then asked to select three that they found most useful.

The last section of the survey applied only to those three CPRs. They were asked questions about their perception of the utility and favourability of the CPRs. Statements such as "The 4T score for Heparin-Induced Thrombocytopenia is easy to use" were rated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). The last question in this section asked the provider to rate the CPR on a 10-point scale in terms of overall usefulness.

Statistical methods

Descriptive statistics, such as means and SDs for continuous variables, and frequencies and proportions for categorical variables, were used to describe the respondent characteristics.

The χ^2 test or Fisher's exact test, as appropriate, was used to explore the association between each of the categorical questionnaire items and the key variables of interest (eg, IM vs EM). The Mann-Whitney test was used to compare the target groups on the ordinal and continuous variables. Finally, the Spearman correlation was used to measure the correlation between selected ordinal variables and the usefulness of the CPR.

RESULTS

Of the 401 healthcare providers distributed the web-based survey, 22 individuals declined participation,

111 respondents agreed to participate but did not finish the survey, 1 individual completed the survey but left the agreement field blank, and 4 individuals left the agreement field blank and did not finish the survey. A total of 263 individuals, 66% of those asked to participate, agreed to respond, provided written informed consent and completed the survey. No stipend was provided.

Demographic characteristics

The IM and EM groups were compared on a number of demographic characteristics (table 1). There were significant differences between the two groups in terms of the institution they represented. Whereas a greater proportion of IM respondents were from Hofstra North Shore-LIJ School of Medicine (77% vs 63%), a greater proportion of the EM respondents were from Boston University (37% vs 22%; p<0.01). Significant differences were also noted when comparing the IM and EM groups on position occupied. Attending physicians in EM were over-represented compared with IM attending physicians (54.2% vs 28%, respectively; p<0.001).

Participants were diverse in terms of age, race and total years of practice. There was a male predominance (61%), which paralleled that seen in national US physician data where only about one-third of medical doctors are women.[30] Compared with national US physician data, our sample included slightly less Caucasians, 62% vs 75%; and less African-Americans, 3.3% vs 6%; and more Asian, 27% vs 12.8% physicians. The majority (75%) of the physicians were between 25 and 39 years of age, and had nine or fewer years of practice.

Most familiar and most useful CPRs

Participants were asked to select an unlimited number of CPRs that they were familiar with and of those choose three they felt were the most useful (table 2). The Alcohol Abuse CAGE,[4] CHADS2,[5] TIMI Score (NSTEMI)[13] and Wells Score for PE[18] were in the top five most frequently chosen as familiar and useful. Ranson's criteria[23] was one of the top five most selected as familiar but not as useful and vice versa for the MELD score.[19] The CHADS2[5] score was chosen as most useful by most participants (63%).

When the list of CPRs most frequently selected as most useful is evaluated by specialty, the rankings diverge. EM providers were more likely to choose CPRs commonly used in emergency departments like PERC,[16] NEXUS C-Spine Rule,[8] Ottawa Ankle Rule[15] and Canadian C-Spine.[9] IM providers were more likely to choose CPRs commonly used on inpatient services like CHADS2,[5] TIMI score (NSTEMI),[13] Alcohol CAGE[4] and MELD.[19] Of note, both lists for CPRs rated as most useful included the Wells Score for PE.[18]

EM versus IM healthcare provider perceptions of CPRs

Providers were then asked specific questions about each of the three CPRs they rated as most useful. EM providers, compared with IM providers, rated their CPRs significantly more positively as having a better fit into their workflow (p=0.004), helping more with decision-making (p=0.037) and better fitting into their thought process when diagnosing patients (p=0.001) (table 3). There was a trend observed, although not meeting statistical significance, where EM providers consistently reported higher Likert scores for positive CPR qualities, such as easy to use, and IM providers consistently reported higher Likert scores for negative CPR qualities, such as limits independent decision. Lastly, compared with IM providers, EM providers rated their CPRs on a 10-point scale as overall significantly more useful (p=0.009).

Specific CPR overall usefulness score by provider type

The overall usefulness score was considered to be the ultimate indicator of strength of provider preference for the CPR. Scores for each CPR's usefulness were compared across provider specialty, resident versus attending position, and primary outpatient versus inpatient practice.

The only CPR with a significant difference between usefulness scores between specialties was the Ottawa Ankle Rule[15] and the Wells Score for PE,[18] both preferred by providers in EM. Of note, many of the 24 CPRs could not be compared by specialty because these were not selected by any EM providers as one of the top three most useful, including the 4T Score for HIT,[14] APACHE II,[27] Lee Index,[12] MELD,[19] MEWS,[21] Predicting TB,[25] Ranson's,[23] Ventilator Associated Pneumonia[29] and MEDS.[28]

Two differences were observed between usefulness scores of providers working in mostly or all inpatient versus outpatient settings. Inpatient providers rated the 4T Score for HIT[14] as significantly more useful, while providers working in mostly or all outpatient settings rated the Walsh score[11] as significantly more useful. There were no differences between resident versus attending ratings of overall usefulness for any CPR.

CPR characteristics and overall usefulness score

Ratings for perceived qualities of each CPR were analysed in terms of their correlation with usefulness score (table 4). For all providers, EM and IM, the perceived qualities of being useful at point of care and helps with decision-making, saves time in diagnosing, fits into one's thought process, and should be the standard of clinical care correlated highly (≥0.65) with usefulness scores.

DISCUSSION

Perceived utility of clinical decision support tools and clinical guidelines have been previously studied;[31 32] however, this is the first study to examine healthcare provider perception of usefulness of CPRs in the hospital setting. Providers surveyed in this study reported clear

Table 1 Demographics of survey participants

	Total N=298	Internal medicine N=215 (72%)	Emergency medicine N=83 (28%)	p Value
Institution				0.01
Hofstra North Shore-LIJ School of Medicine	176 (59%)	137	39	
Boston University	119 (40%)	75	44	
Other	3 (1%)	3	0	
Degree				0.22
Medical degree	274 (92%)	199	75	
Doctor of osteopathy	20 (7%)	12	8	
Nurse practitioner	4 (1%)	4	0	
Role				<0.0001
Attending	105 (35%)	60	45	
Hospitalist	16 (5%)	16	0	
House staff	167 (56%)	129	38	
Nurse practitioner	5 (2%)	5	0	
Other	5 (2%)	5	0	
Practice location				<0.0001
All outpatient	69 (23%)	38	31	
Mostly outpatient	31 (11%)	22	9	
Equal	15 (5%)	11	4	
Mostly inpatient	124 (42%)	117	7	
All inpatient	57 (19%)	26	31	
Years of practice				0.06
1–4	183 (61.4%)	140	43	
5–9	43 (14.4%)	23	20	
10–14	22 (7.4%)	16	6	
15–20	21 (7%)	15	6	
>20	29 (9.7%)	21	8	
Age (years)				0.34
25–29	108 (36%)	85	23	
30–39	116 (39%)	76	40	
40–49	44 (15%)	31	13	
50–59	20 (7%)	16	4	
60–69	6 (2%)	4	2	
70+	4 (1%)	3	1	
Race (may select >1)				NA
Caucasian	185 (62%)	119	66	
African-American	10 (3.3%)	8	2	
Asian	80 (27%)	71	9	
Hispanic	11 (3.8%)	7	4	
Native American	1 (0.3%)	1	0	
Other	11 (3.7%)	8	3	
Gender				0.38
Female	117 (39%)	88	29	
Male	180 (61%)	127	53	

*Attending—physician who has completed postgraduate medical training. House Staff—physician who is undergoing postgraduate medical training. Hospitalist—internal medicine physician who works only in an inpatient setting. Doctor of osteopathy—medical doctor who completed osteopathic medical school.
NA, not available.

preferences for certain CPRs. Participants consistently rated CHADS2,[5] TIMI Score (NSTEMI),[13] Wells Score for PE,[18] Alcohol Abuse CAGE[5] and the Ottawa Ankle Rule[15] highly. These CPRs would be ideal candidates for integration into an electronic health record (EHR).

Interestingly, EM providers consistently rated their chosen CPRs more positively. We found as well that qualities like ease of use, saves time, helps with decision-making, and should be standard of clinical care had a strong relationship to providers' perception of utility. These qualities should be considered as requirements for a CPR considered for integration into an electronic health record.

Improved clinical care as well as decreased costs and decreased waste are potential results of provider preferred integrated CPRs. Although the USA spends nearly double the average, $3923, of all of the Organisation for Economic Co-operation and Development (OECD)

Table 2 All 24 CPRs, frequency of selection as familiar and top 3 most useful, ordered by mean 10-point usefulness score

All 24 CPRs	Familiar N (%)	Useful N (%)	Useful score mean
NEXUS C-Spine Rule[8]	14 (4.6)	33 (11)	8.54
Imaging in patients at risk for c-spine fracture			
Canadian C-Spine Rule[9]	85 (29)	28 (9)	8.5
Imaging in patients at risk for c-spine fracture			
Ottawa Knee Rule[10]	77 (26)	9 (3)	8.5
Imaging in patients with knee trauma			
Walsh[11]	110 (37)	27 (9)	8.39
Likelihood of Streptococcal pharyngitis			
Lee Index[12]	30 (10)	10 (3)	8.38
Perioperative cardiovascular risk			
TIMI Score (NSTEMI)[13]	253 (85)	89 (30)	8.12
Mortality in patients with NSTEMI			
CHADS2[5]	255 (86)	184 (62)	8.01
Stroke risk in patients with atrial fibrillation			
4T Score for HIT[14]	76 (26)	19 (6)	7.91
Likelihood of HIT			
Ottawa Ankle Rule[15]	170 (57)	55 (18)	7.84
Imaging in patients with ankle trauma			
PERC[16]	78 (26)	38 (13)	7.84
Rules out pulmonary embolism			
Wells Score for DVT[17]	212 (71)	43 (14)	7.48
Estimates likelihood of DVT			
Wells Score for PE[18]	232 (78)	82 (28)	7.29
Calculates risk of pulmonary embolism			
Alcohol Abuse CAGE[4]	271 (91)	64 (21)	7.27
Screen for alcohol abuse			
MELD[19]	211 (71)	56 (19)	7.26
Estimates mortality in end-stage liver disease			
San Francisco Rule for Syncope[20]	62 (21)	10 (3)	7.22
Risk stratification of patients with syncope			
MEWS[21]	96 (32)	7 (2)	7
Identifies clinically deteriorating patients			
CURB 65[22]	192 (64)	41 (14)	6.88
Mortality in patients with pneumonia			
Ranson's Criteria[23]	262 (88)	33 (11)	6.53
Mortality in patients with pancreatitis			
Pittsburgh Knee Rule[24]	17 (6)	2 (1)	6.5
Imaging in patients with knee trauma			
Other (please list)	19 (6)	6 (2)	6.33
Predicting TB in Patients[25]	15 (5)	1 (0)	6
Predicts likelihood of tuberculosis			
PSI/PORT Score[26]	148 (50)	18 (6)	5.83
Mortality in patients with pneumonia			
APACHE II[27]	193 (65)	12 (4)	5.8
Estimates mortality in ICU patients			
MEDS[28]	100 (34)	6 (2)	NA
Estimates mortality in septic ED patients			
VAP[29]	48 (16)	2 (1)	NA
Predicts risk of VAP			

APACHE II, Acute Physiology and Chronic Health Evaluation; CPR, clinical prediction rule; ED, emergency department; HIT, Heparin-Induced Thrombocytopenia; ICU, intensive care unit; MEDS, Mortality in Emergency Department Sepsis; MELD, Model for End-Stage Liver Disease; MEWS, Modified Early Warning System; NA, not available; NEXUS, National Emergency X-Radiography Utilization Study; PE, pulmonary embolism; PERC, Pulmonary Embolism Rule-Out Criteria; PORT, Pneumonia Patient Outcomes Research Team; PSI, Pneumonia Severity Index; TIMI, Thrombolysis in Myocardial Infarction; VAP, Ventilator Associated Pneumonia.

countries[33] on healthcare, American patients receive about 55% of recommended clinical care.[34] Overtreatment and failures in execution of care processes are partially responsible for waste in healthcare spending, estimated as exceeding 20%.[35] Meta-analysis of the effect of clinical decision support has shown that

Table 3 Mean ratings of all chosen CPRs by EM versus IM

CPR characteristic	EM mean (SD)	IM mean (SD)	p Value
Easy to use	3.93 (1.04)	3.77 (1.00)	0.112
Useful at point of care	3.94 (1.03)	3.78 (1.01)	0.141
Currently look-up electronically	2.98 (1.21)	2.91 (1.17)	0.583
Would use if electronic	3.49 (1.18)	3.57 (1.13)	0.659
Fits into workflow	3.92 (1.06)	3.65 (0.99)	0.004
Helps with decision-making	3.96 (1.07)	3.79 (0.98)	0.037
Saves time diagnosing	3.50 (1.05)	3.33 (1.01)	0.088
Limits independent decision	1.96 (0.82)	2.12 (0.88)	0.242
Patient too complex to use CPR	2.05 (0.77)	2.25 (0.83)	0.118
Fits into thought process	3.85 (1.03)	3.63 (0.94)	0.001
Many colleagues use	3.61 (1.01)	3.54 (0.96)	0.572
Should be standard clinical care	3.52 (1.02)	3.57 (0.97)	0.588
Overall usefulness scale	7.43 (1.87)	6.84 (2.03)	0.009

CPR, clinical prediction rule; EM, emergency medicine; IM, internal medicine.

Table 4 Correlations between CPR characteristics and the overall usefulness rating

CPR characteristic	Emergency medicine	Internal medicine	p Value
Easy to use	0.734	0.581	0.07
Useful at POC	0.767	0.681	0.219
Currently look-up electronically	0.267	0.383	0.379
Would use if electronic	0.480	0.656	0.077
Fits into workflow	0.768	0.634	0.072
Helps with decision-making	0.763	0.677	0.222
Saves time diagnosing	0.704	0.660	0.569
Limits independent decision	0.200	0.188	0.936
Patient too complex to use CPR	0.074	0.165	0.535
Fits into thought process	0.725	0.668	0.453
Many colleagues use	0.630	0.556	0.435
Should be standard clinical care	0.778	0.748	0.631

CPR, clinical prediction rule; POC, point of care.

providers with decision support were more likely to provide preventive care services and order appropriate treatments.[7]

Limitations

A significant limitation of the results of this study is that mean ratings for CPR characteristics reflect only the opinion of healthcare providers who selected the CPR as one of the top three most useful. However, the structure of the survey also ensures that CPR characteristic ratings were made only by providers who were likely to use the CPR in daily practice.

Additionally, participants were recruited during academic conferences, including grand rounds as well as afternoon conferences for residents. This may have increased the number of participants who attend academic conferences, and who are more familiar with CPRs.

Implications for clinical practice and research

Meaningful clinical decision support requires not just understanding healthcare provider perceptions, but also choosing tools that are strongly evidence-based and have been tested for their effectiveness. Future trials should focus on evaluating the clinical impact of healthcare provider preferred CPRs.

CONCLUSION

Healthcare providers describe clear preferences for certain characteristics and disease-specific CPRs. EM providers consistently rated CPRs more positively and may serve as early adapters for CPRs integrated into EHRs. Understanding provider perceptions may help to address limiting factors in meaningful integration of clinical decision support into our electronic health systems.

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Contributors TM and DM were involved in study concept and design, critical revision of the manuscript for important intellectual content and study

supervision. SR was involved in acquisition of data. SR, TM, LM, SK and MK were involved in analysis and interpretation of data and drafting of the manuscript. SR, SK, LM and MK were involved in statistical analysis. LM and SK were involved in administrative, technical and material support.

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SECTION A. Demographics

1. **What institution are you affiliated with?**
    a. North Shore Hospital System- Long Island Jewish Hospital
    b. Boston University/Boston Medical Center
    c. Other

2. **Professional Degree**
    a. MD
    b. DO
    c. PhD
    d. PA-C
    e. NP
    f. Other

3. **Current position**
    a. Attending
    b. Hospitalist
    c. House staff (fellows, residents, interns)
    d. NP
    e. PA-C
    f. Other

4. **Amount of time spent in each role (0-100%)**
    a. Clinical
    b. Research
    c. Education
    d. Administration
    e. Other

5. **Where do you practice?**
    a. All out patient
    b. Mostly outpatient
    c. Equally outpatient and inpatient
    d. Mostly inpatient
    e. All inpatient

6. **Years of clinical experience**
    a. 1-4 years
    b. 5-9 years
    c. 10-14 years
    d. 15-20 years
    e. >20 years

7. **Please select the specialty you practice.**
    a. Allergy and Immunology
    b. Anesthesiology
    c. Cardiology
    d. Dermatology
    e. Emergency Medicine
    f. Endocrinology
    g. Family Medicine
    h. Gastroenterology
    i. General Surgery
    j. Geriatrics
    k. Hematology/Oncology
    l. Internal Medicine
    m. Nephrology
    n. Neurology
    o. Obstetrics and Gynecology
    p. Ophthalmology
    q. Orthopedic Surgery
    r. Otolaryngology
    s. Pediatrics
    t. Pulmonary and Critical Care
    u. Psychiatry
    v. Radiology and Diagnostic Radiology
    w. Urology
    x. Other

8. **Ethnicity/Race (may select more than one)**
    a. African American or Black, not of Hispanic origin
    b. American Indian or Alaskan Native
    c. Asian or Pacific Islander
    d. Hispanic, Chicano, Mexican American, Latino
    e. White or Caucasian, not of Hispanic origin
    f. Other _____

9. **Gender**
    a. Female
    b. Male

10. **Age**
    a. 18-24
    b. 25-29
    c. 30-39
    d. 40-49
    e. 50-59
    f. 60-69

g. 70 or over

SECTION B. Provider Preference

Clinical Prediction Rules (CPRs) are a type of evidence-based medicine that uses validated probability scores to stratify risk level for specific prognoses and/or diagnostic assessments. They are more tailored than other clinical decision support in that they take into account the patient's history, examination, and lab results. One example is the Wells score for pulmonary embolism; other examples are listed in the next question.

Please answer the following set of questions in regards to CPRs in general.

1. I find clinical prediction rules more useful for *high-risk* clinical situations than for *low-risk* clinical situations.
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

2. I find clinical prediction rules more useful for *complex* clinical decisions than for *uncomplicated* clinical decisions.
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. I use clinical prediction rules as something *concrete* to support my clinical decision.
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. Many of *my colleagues* use clinical prediction rules to assist in making decisions at the point of care.
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. I value *my colleagues' decisions* to use clinical prediction rules to assist in decision making.
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. Which of the following Clinical Prediction Rules are you familiar with? (Select all that apply)

__ 4T Score for Heparin-induced Thrombocytopenia
__ Alcohol Abuse CAGE
__ Apache II (Score for ICU mortality)
__ CHADS2 for Atrial Fibrillation
__ Canadian C-Spine Rule (Cervical spine fracture)
__ CURB 65 (assessment of severity of community-acquired pneumonia)
__ Lee index for cardiovascular risk before surgery
__ MEDS (Mortality in Emergency Department Sepsis)
__ MELD (Model for end stage liver disease)
__ MEWS (Modified early warning score)

__ NEXUS C-Spine Rule (Cervical spine fracture)
__ Ottawa Ankle Rule (to determine need for imaging in patients with ankle trauma)
__ Ottawa Knee Rule (to determine need for imaging in patients with knee trauma)
__ PERC rule for pulmonary embolism
__ Pittsburgh Knee Rule (to determine need for imaging in patients with knee trauma)
__ Predicting TB in patients being considered for respiratory isolation
__ PSI/PORT score (Pneumonia severity index for adult community-acquired pneumonia)
__ Ranson's criteria for acute pancreatitis
__ San Francisco rule for syncope
__ TIMI score for non-ST elevation myocardial infarction (NSTEMI)
__ Ventilator Associated Pneumonia (VAP)
__ Walsh/Centor score for streptococcal pharyngitis
__ Wells score for DVT (Deep vein thrombosis)
__ Wells score for PE (Pulmonary embolism)

__ Other (please list)

7. (skip logic) Among the CPRs that you identified, which are the top three (3) that you find *most useful*?

CPR Questions:

(Depending on which clinical prediction rules are selected as *the most useful*, the following questions will be prompted)

Please answer the following Questions regarding **4T score for Heparin-Induced Thrombocytopenia** appropriately:

1. **How often do you use the 4T score for Heparin-Induced Thrombocytopenia?**
    - **a.** Daily
    - **b.** Once to several times *a week*
    - **c.** Once to several times *a month*
    - **d.** Once to several times *a year*
    - **e.** In the past but not recently
    - **f.** Never

2. **The 4T score for Heparin-Induced Thrombocytopenia is *easy to use***
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **4T score for Heparin-Induced Thrombocytopenia is a *useful tool at the point of care* (i.e. it is appropriate/improves quality of patient care)**
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I *currently* look up the 4T score for Heparin-Induced Thrombocytopenia on an electronic device (e.g. smartphone, computer, EHR)**
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I *would use* 4T score for Heparin-Induced Thrombocytopenia if it was integrated into an electronic device (e.g. smartphone, computer, EHR)**
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using 4T score for Heparin-Induced Thrombocytopenia *fits well in to my workflow***
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **4T score for Heparin-Induced Thrombocytopenia is *helpful to my decision making***
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **4T score for Heparin-Induced Thrombocytopenia *limits my ability to make independent decisions***
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **4T score for Heparin-Induced Thrombocytopenia *helps me save time when diagnosing patients***
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. My patients' health problems are *often too complex* to diagnose using the guidelines of the 4T score for Heparin-Induced Thrombocytopenia
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. Using 4T score for Heparin-Induced Thrombocytopenia *fits into my thought process when diagnosing a patient*
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. *Many of my colleagues* use the 4T score for Heparin-Induced Thrombocytopenia
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. 4T score for Heparin-Induced Thrombocytopenia s*hould be used as standard clinical care*.
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find the 4T score for Heparin-Induced Thrombocytopenia
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding Alcohol Abuse CAGE appropriately:

1. **How often do you use Alcohol Abuse CAGE?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **Alcohol Abuse CAGE is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **Alcohol Abuse CAGE is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up Alcohol Abuse CAGE (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use Alcohol Abuse CAGE if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using Alcohol Abuse CAGE fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **Alcohol Abuse CAGE is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **Alcohol Abuse CAGE limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **Alcohol Abuse CAGE helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of Alcohol Abuse CAGE**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using Alcohol Abuse CAGE fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use Alcohol Abuse CAGE
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of Alcohol Abuse CAGE
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. Alcohol Abuse CAGE should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find Alcohol Abuse CAGE
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding Apache II appropriately:

1. **How often do you use Apache II?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **Apache II is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **Apache II is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up Apache II (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use Apache II if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using Apache II fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **Apache II is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **Apache II limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **Apache II helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of Apache II**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using Apache II fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use Apache II
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of Apache II
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. Apache II should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find Apache II
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding CHADS2 for atrial fibrillation appropriately:

1. **How often do you use CHADS2?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **CHADS2 is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **CHADS2 is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up CHADS2 (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use CHADS2 if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using CHADS2 fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **CHADS2 is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **CHADS2 limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **CHADS2 helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of CHADS2**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using CHADS2 fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use CHADS2
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of CHADS2
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. CHADS2 should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find CHADS2
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding Canadian C-Spine Rule appropriately:

1. **How often do you use the C-Spine Rule?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **The C-Spine Rule is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **The C-Spine Rule is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up the C-Spine Rule (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use the C-Spine Rule if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using the C-Spine Rule fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **The C-Spine Rule is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **The C-Spine Rule limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **The C-Spine Rule helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the C-Spine Rule**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using the C-Spine Rule fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. **Many of my colleagues use the C-Spine Rule**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of the C-Spine Rule
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. The C-Spine Rule should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find the C-Spine Rule
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding CURB 65 appropriately:

1. **How often do you use CURB 65?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **CURB 65 is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **CURB 65 is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up CURB 65 (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use CURB 65 if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using CURB 65 fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **CURB 65 is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **CURB 65 limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **CURB 65 helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of CURB 65**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using CURB 65 fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use CURB 65
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of CURB 65
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. CURB 65 should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find CURB 65
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding the Lee index for cardiovascular risk before surgery appropriately:

1. **How often do you use the Lee index for cardiovascular risk before surgery?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **The Lee index for cardiovascular risk before surgery is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **The Lee index for cardiovascular risk before surgery is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up the Lee index for cardiovascular risk before surgery (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use the Lee index for cardiovascular risk before surgery if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using the Lee index for cardiovascular risk before surgery fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **The Lee index for cardiovascular risk before surgery is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **The Lee index for cardiovascular risk before surgery limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **The Lee index for cardiovascular risk before surgery helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of the Lee index for cardiovascular risk before surgery**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. Using the Lee index for cardiovascular risk before surgery fits into my thought process when diagnosing a patient
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use the Lee index for cardiovascular risk before surgery
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of the Lee index for cardiovascular risk before surgery
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. The Lee index for cardiovascular risk before surgery should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find the Lee index for cardiovascular risk before surgery
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding MEDS appropriately:

1. **How often do you use MEDS?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **MEDS is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **MEDS is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up MEDS (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use MEDS if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using MEDS fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **MEDS is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **MEDS limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **MEDS helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of MEDS**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using MEDS fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use MEDS
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of MEDS
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. MEDS should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find MEDS
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding MELD (model for end stage liver disease) appropriately:

1. **How often do you use MELD?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **MELD is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **MELD is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up MELD (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use MELD if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using MELD fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **MELD is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **MELD limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **MELD helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of MELD**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using MELD fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use MELD
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of MELD
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. MELD should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find MELD
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding MEWS appropriately:

1. **How often do you use MEWS?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **MEWS is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **MEWS is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up MEWS (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use MEWS if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using MEWS fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **MEWS is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **MEWS limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **MEWS helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of MEWS**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using MEWS fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use MEWS
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of MEWS
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. MEWS should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find MEWS
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding NEXUS C-Spine Rule appropriately:

1. **How often do you use NEXUS C-Spine Rule?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **NEXUS C-Spine Rule is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **NEXUS C-Spine Rule is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up NEXUS C-Spine Rule (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use NEXUS C-Spine Rule if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using NEXUS C-Spine Rule fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **NEXUS C-Spine Rule is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **NEXUS C-Spine Rule limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **NEXUS C-Spine Rule helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of NEXUS C-Spine Rule**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using NEXUS C-Spine Rule fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use NEXUS C-Spine Rule
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of NEXUS C-Spine Rule
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. NEXUS C-Spine Rule should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find NEXUS C-Spine Rule
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding the Ottawa Ankle Rule appropriately:

1. **How often do you use the Ottawa Ankle Rule?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **The Ottawa Ankle Rule is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **The Ottawa Ankle Rule is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up the Ottawa Ankle Rule (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use the Ottawa Ankle Rule if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using the Ottawa Ankle Rule fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **The Ottawa Ankle Rule is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **The Ottawa Ankle Rule limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **The Ottawa Ankle Rule helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of the Ottawa Ankle Rule**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using the Ottawa Ankle Rule fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use the Ottawa Ankle Rule
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of the Ottawa Ankle Rule
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. The Ottawa Ankle Rule should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find the Ottawa Ankle Rule
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding the Ottawa Knee Rule appropriately:

1. **How often do you use the Ottawa Knee Rule?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **The Ottawa Knee Rule is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **The Ottawa Knee Rule is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up the Ottawa Knee Rule (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use the Ottawa Knee Rule if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using the Ottawa Knee Rule fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **The Ottawa Knee Rule is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **The Ottawa Knee Rule limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **The Ottawa Knee Rule helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of the Ottawa Knee Rule**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using the Ottawa Knee Rule fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use the Ottawa Knee Rule
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of the Ottawa Knee Rule
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. The Ottawa Knee Rule should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find the Ottawa Knee Rule
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding PERC rule for pulmonary embolism appropriately:

1. **How often do you use PERC rule for pulmonary embolism?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **PERC rule for pulmonary embolism is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **PERC rule for pulmonary embolism is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up PERC rule for pulmonary embolism (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use PERC rule for pulmonary embolism if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using PERC rule for pulmonary embolism fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **PERC rule for pulmonary embolism is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **PERC rule for pulmonary embolism limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **PERC rule for pulmonary embolism helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of PERC rule for pulmonary embolism**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using PERC rule for pulmonary embolism fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use PERC rule for pulmonary embolism
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of PERC rule for pulmonary embolism
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. PERC rule for pulmonary embolism should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find PERC rule for pulmonary embolism
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding the Pittsburgh Knee Rule appropriately:

1. **How often do you use the Pittsburgh Knee Rule?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **The Pittsburgh Knee Rule is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **The Pittsburgh Knee Rule is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up the Pittsburgh Knee Rule (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use the Pittsburgh Knee Rule if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using the Pittsburgh Knee Rule fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **The Pittsburgh Knee Rule is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **The Pittsburgh Knee Rule limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **The Pittsburgh Knee Rule helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of the Pittsburgh Knee Rule**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using the Pittsburgh Knee Rule fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use the Pittsburgh Knee Rule
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of the Pittsburgh Knee Rule
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. The Pittsburgh Knee Rule should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find the Pittsburgh Knee Rule
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding Predicting TB in patients being considered for respiratory isolation appropriately:

1. How often do you use Predicting TB in patients being considered for respiratory isolation?

- **a.** Daily
- **b.** Once to several times a week
- **c.** Once to several times a month
- **d.** Once to several times a year
- **e.** In the past but not recently
- **f.** Never

2. Predicting TB in patients being considered for respiratory isolation is easy to use
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. Predicting TB in patients being considered for respiratory isolation is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. I currently look up Predicting TB in patients being considered for respiratory isolation (e.g. CPRs) online
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. I would use Predicting TB in patients being considered for respiratory isolation if it was integrated into an electronic device (e.g. smartphone, EHR)
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. Using Predicting TB in patients being considered for respiratory isolation fits well in to my workflow
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. Predicting TB in patients being considered for respiratory isolation is helpful to my decision making
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. Predicting TB in patients being considered for respiratory isolation limits my ability to make independent decisions
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. Predicting TB in patients being considered for respiratory isolation helps me save time when diagnosing patients
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. My patients' health problems are often too complex to diagnose using the guidelines of Predicting TB in patients being considered for respiratory isolation
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. Using Predicting TB in patients being considered for respiratory isolation fits into my thought process when diagnosing a patient
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use Predicting TB in patients being considered for respiratory isolation
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of Predicting TB in patients being considered for respiratory isolation
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. Predicting TB in patients being considered for respiratory isolation should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find Predicting TB in patients being considered for respiratory isolation
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding the PSI/PORT score appropriately:

1. **How often do you use the PSI/PORT score?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **The PSI/PORT score is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **The PSI/PORT score is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up the PSI/PORT score (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use the PSI/PORT score if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using the PSI/PORT score fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **The PSI/PORT score is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **The PSI/PORT score limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **The PSI/PORT score helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of the PSI/PORT score**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using the PSI/PORT score fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use the PSI/PORT score
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of the PSI/PORT score
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. The PSI/PORT score should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find the PSI/PORT score
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding Ranson's criteria for acute pancreatitis appropriately:

1. **How often do you use Ranson's criteria for acute pancreatitis?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **Ranson's criteria for acute pancreatitis is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **Ranson's criteria for acute pancreatitis is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up Ranson's criteria for acute pancreatitis (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use Ranson's criteria for acute pancreatitis if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using Ranson's criteria for acute pancreatitis fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **Ranson's criteria for acute pancreatitis is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **Ranson's criteria for acute pancreatitis limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **Ranson's criteria for acute pancreatitis helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of Ranson's criteria for acute pancreatitis**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. Using Ranson's criteria for acute pancreatitis fits into my thought process when diagnosing a patient
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use Ranson's criteria for acute pancreatitis
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of Ranson's criteria for acute pancreatitis
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. Ranson's criteria for acute pancreatitis should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find Ranson's criteria for acute pancreatitis
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding the San Francisco rule for syncope appropriately:

1. **How often do you use the San Francisco rule for syncope?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **The San Francisco rule for syncope is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **The San Francisco rule for syncope is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up the San Francisco rule for syncope (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use the San Francisco rule for syncope if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using the San Francisco rule for syncope fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **The San Francisco rule for syncope is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **The San Francisco rule for syncope limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **The San Francisco rule for syncope helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of the San Francisco rule for syncope**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using the San Francisco rule for syncope fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use the San Francisco rule for syncope
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of the San Francisco rule for syncope
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. The San Francisco rule for syncope should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find the San Francisco rule for syncope
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding TIMI for non-ST elevation myocardial infarction appropriately

1. **How often do you use TIMI?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **TIMI is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **TIMI is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up TIMI (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use TIMI if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using TIMI fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **TIMI is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **TIMI limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **TIMI helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients health problems are often too complex to diagnose using the guidelines of TIMI**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using TIMI fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use TIMI
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of TIMI
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. TIMI should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find TIMI
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding Associated pneumonia (VAP) appropriately:

1. **How often do you use Associated pneumonia (VAP)?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **Associated pneumonia (VAP) is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **Associated pneumonia (VAP) is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up Associated pneumonia (VAP) (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use Associated pneumonia (VAP) if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using Associated pneumonia (VAP) fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **Associated pneumonia (VAP) is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **Associated pneumonia (VAP) limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **Associated pneumonia (VAP) helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of Associated pneumonia (VAP)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. Using Associated pneumonia (VAP) fits into my thought process when diagnosing a patient
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use Associated pneumonia (VAP)
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of Associated pneumonia (VAP)
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. Associated pneumonia (VAP) should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find Associated pneumonia (VAP)
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding Walsh for strep appropriately:

1. **How often do you use Walsh for strep?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **Walsh for strep is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **Walsh for strep is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up Walsh for strep (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use Walsh for strep if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using Walsh for strep fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **Walsh for strep is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **Walsh for strep limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **Walsh for strep helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of Walsh for strep**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using Walsh for strep fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use Walsh for strep
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of Walsh for strep
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. Walsh for strep should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find Walsh for strep
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding Wells for DVT appropriately:

1. **How often do you use Wells for DVT?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **Wells for DVT is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **Wells for DVT is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up Wells for DVT (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use Wells for DVT if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using Wells for DVT fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **Wells for DVT is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **Wells for DVT limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **Wells for DVT helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of Wells for DVT**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using Wells for DVT fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use Wells for DVT
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of Wells for DVT
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. Wells for DVT should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find Wells for DVT
0----1----2----3----4----5---6---7----8----9----10

CPR Questions:

Please answer the following Questions regarding Wells for PE appropriately:

1. **How often do you use Wells for PE?**
    - **a.** Daily
    - **b.** Once to several times a week
    - **c.** Once to several times a month
    - **d.** Once to several times a year
    - **e.** In the past but not recently
    - **f.** Never

2. **Wells for PE is easy to use**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

3. **Wells for PE is a useful tool at the point of care (i.e. is appropriate/improves quality of patient care)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

4. **I currently look up Wells for PE (e.g. CPRs) online**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

5. **I would use Wells for PE if it was integrated into an electronic device (e.g. smartphone, EHR)**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

6. **Using Wells for PE fits well in to my workflow**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

7. **Wells for PE is helpful to my decision making**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

8. **Wells for PE limits my ability to make independent decisions**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

9. **Wells for PE helps me save time when diagnosing patients**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

10. **My patients' health problems are often too complex to diagnose using the guidelines of Wells for PE**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

11. **Using Wells for PE fits into my thought process when diagnosing a patient**

Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

12. Many of my colleagues use Wells for PE
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

13. I value my colleagues' decisions on their use of Wells for PE
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

14. Wells for PE should be used as standard clinical care
Strongly Disagree-1----Disagree-2----Neutral-3----Agree-4----Strongly Agree-5

15. On a scale of 0 to 10, 0 being least useful and 10 being most useful, please rank how useful you find Wells for PE
0----1----2----3----4----5---6---7----8----9----10

<u>Section D: Closing Questions:</u> (everyone answers)

1. What CPRs do you think are best suited to being integrated into the EMR?

2. For which clinical conditions not already mentioned would you find a clinical prediction rule useful?

3. Do you have any other comments?

Thank you for participating in the survey. We appreciate your time.