

Emergency Medicine Resident Use of Electronic Differential Diagnosis Generator When Evaluating Critical Patients

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Disclosures

None



The Initial Evaluation

- How do you begin working up critically ill patients?
- Presenting symptoms, Vitals, HPI, Physical exam, response to interventions, diagnostic evaluation
- Creating a differential
- Make the Diagnosis
- How has that process changed as you have advanced?

WHY?

- Differential diagnosis generation is a vital skill for emergency medicine residents to develop in the care of critical patients.
- Electronic DDx tools allow a physician DDx to be cross-checked with an artificial intelligence to broaden the DDx and may aid in EM resident DDx generation when caring for a critically ill patient.
- DDx tools were developed for broad clinical application, and not specifically for the emergency department setting or for high-acuity scenarios.
- It is unclear if DDx tools may benefit EM trainees in the evaluation of the critically ill ED patient. We aimed to evaluate the use of a DDx tool by EM residents in the high-acuity area of an ED to determine its impact on resident diagnosis and testing.



HOW?

- We performed a prospective observational study on usage of a DDx tool (Isabel © Isabel Healthcare 2021) in the high-acuity area of a tertiary care, academic ED (annual census 130,000) for patients requiring immediate evaluation.
- The tool was evaluated in the high acuity area of the ED by a resuscitation resident rotating each month in the area. For each critical patient encounter they participated in, the resident completed a data collection tool that included details of when Isabel was utilized and when applicable the query results.
- Data was summarized by frequencies. Chi-squared or Fisher's exact tests were used to assess the association of additional testing and added value of a DDx tool.



Isabel Utilization Form

Did you use Isabel? Yes No

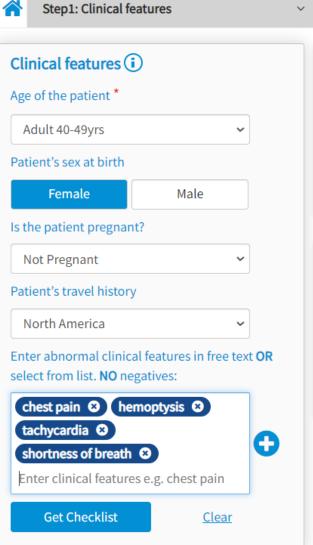
MRN: Age: Sex: (I	f no sticker available)
Arrival Method: Primary	Language:
CC:	
COVID risk? Low Mod High	
Top Diagno	ses Pre-Isabel
Resuscitation Resident	Attending
When queried, did Isabel aid in diagnosis?	Yes No
Add differentials that were not considered? Comment:	Yes No
Did it lead to additional testing? Comment:	Yes No
With results, did you query Isabel again?	Yes No
Comment:	
Final Admitting Diagnosis:	
If Isabel was not use	ed please indicate why:
Forgot Busy Dease indicate:	Diagnosis apparent

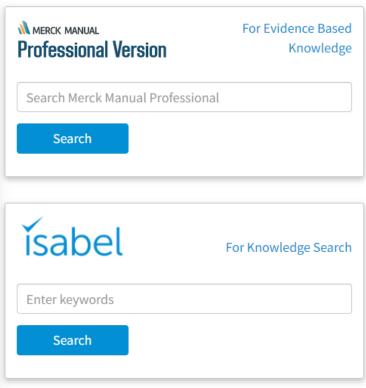












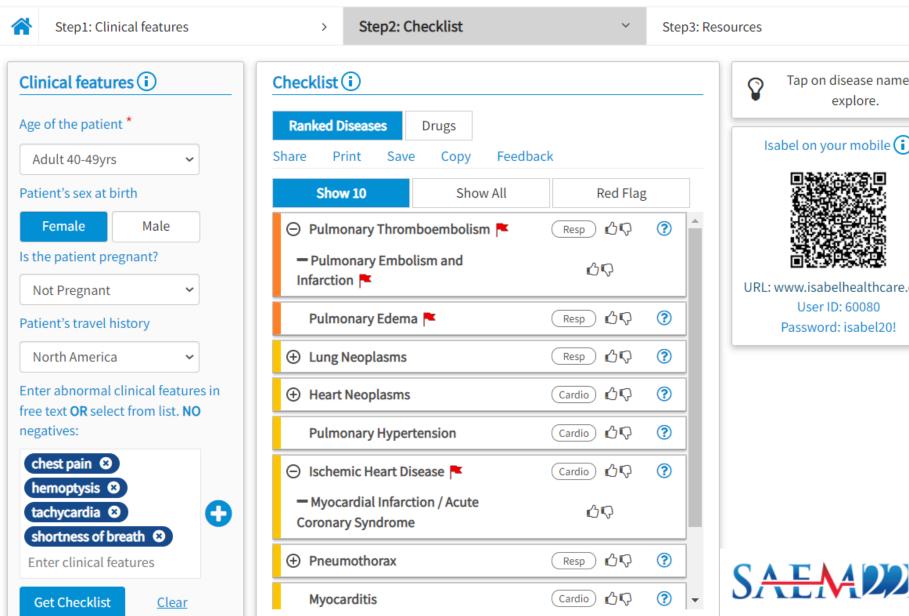
Step2: Checklist



Step3: Resources











Results

- Over the 8-month study period, the DDx tool was used by the resuscitation resident for 98 critical ED patients, of whom 60.2% were female, 7% were pediatric, and 46% were over age 65.
- Querying the tool led to a diagnosis not initially considered by the resident in 47% of cases. Additional diagnostic testing was ordered based on the tool's output in 4% of cases.
- Residents felt the tool added some value to their patient evaluation in 8% of cases and were more likely to give it this rating if the tool's output led to a diagnosis not considered (p < 0.001) or altered diagnostic testing (p = 0.05).

Conclusion

- DDx tools have the potential to improve EM resident DDx generation in the resuscitation setting by expanding the differential diagnosis and, to a lesser extent, altering diagnostic testing.
- Further research is needed to optimize such tools specifically to the ED and critical care settings to improve their utility in these environments.



Questions?

