

## MISSION Syncope App: Validating an evidence-based clinical decision support tool

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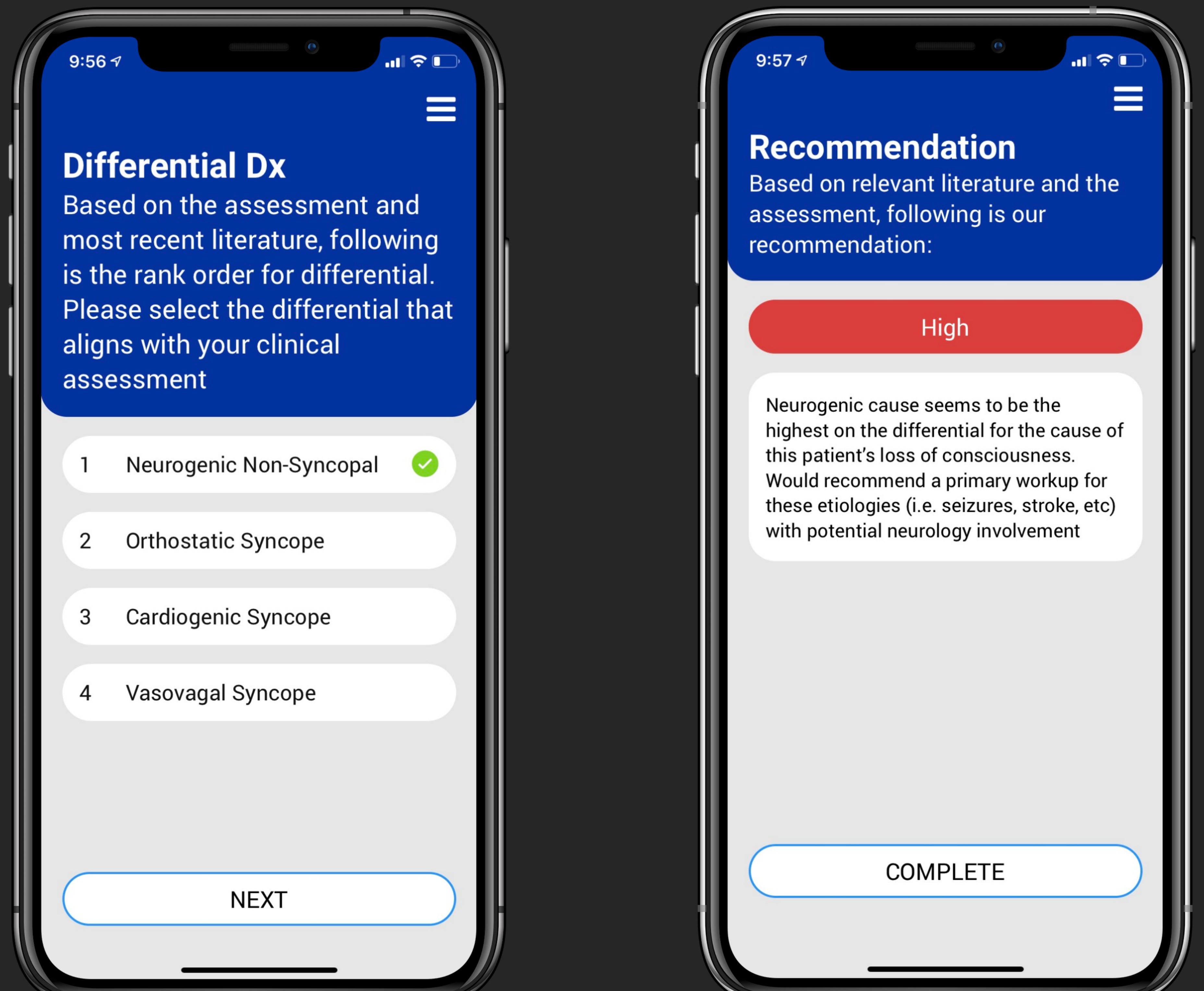
### BACKGROUND

1. Syncope is a prevalent and recurrent condition. With patients at an increased risk for an impending catastrophic event, overuse of testing and admission are common.
2. MISSION Syncope mobile application (App) is a clinical decision support (CDS) tool that generates a rank order differential diagnosis for syncope using existing literature and guidelines. We validate the accuracy and effectiveness of the App's mathematical model that is used to derive the differential diagnosis.

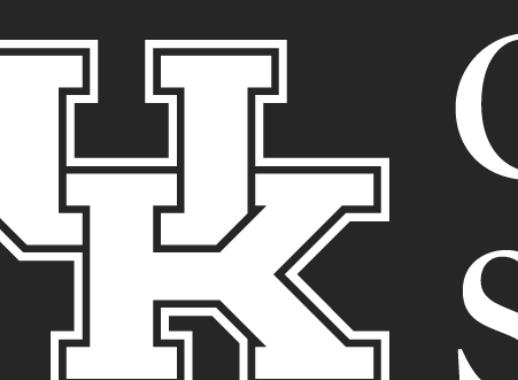
### METHODS

1. To validate the accuracy, we conducted a clinical chart review of 30 known cases of syncope that were presented at the University of Kentucky's Emergency Department (ED).
2. We compared the clinician's diagnosis with the App's highest ranked differential. For each case, two clinicians were asked to review patient information from the Electronic Health Record system, and a third clinician adjudicated any discordant diagnoses.
3. Using the same information, a clinician processed the case through the App's differential generator to derive the App's differential.

# An evidence-based, clinical decision support tool that provides differential diagnosis and actionable recommendations.



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### RESULTS

1. The data showed a correlation of 43% between the clinician's diagnosis and the App's highest ranked differential, with a weakness in identifying orthostatic cause of syncope.
2. Discounting cases with an orthostatic cause resulted in a 70% correlation between the App's differential and the clinician's diagnosis.
3. The App's differential had the highest correlation for cardiogenic and vasovagal causes of syncope.

### DISCUSSION

1. The App performs well when identifying high-risk causes of syncope and underperforms with orthostatic syncope.
2. Continuous improvement using data collected from the App and further validation testing can result in a more accurate mathematical model.
3. The App demonstrates the viability of using evidenced-based literature along with clinical expertise and input in developing a clinical decision support tool that can produce a reliable differential.