The CASSY

COMPUTERIZED ADAPTIVE SCREEN FOR SUICIDAL YOUTH
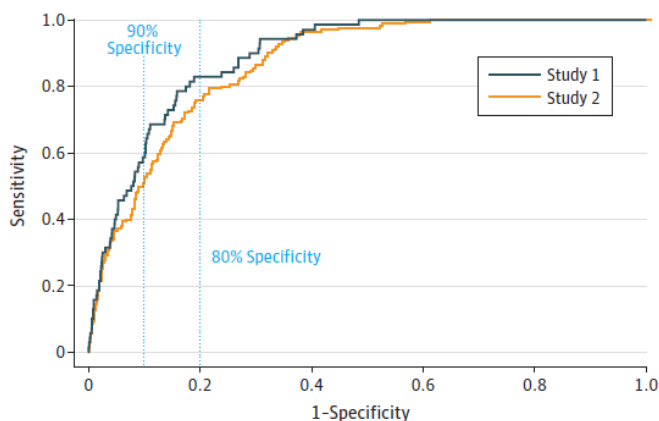
The rate of suicide among adolescents is increasing in the US, yet many adolescents at risk remain unidentified and receive no mental health services. **The CASSY is the first universal screen for suicide risk in pediatric emergency departments**. The CASSY is a **computerized adaptive test (CAT)** that represents a fundamental scientific breakthrough in child suicide risk screening and measurement. The CASSY is **cloud-based** and scalable to any size population via a **HIPAA secure Amazon Web Services (AWS) platform**, meaning that youth can be screened, measured, and monitored in or out of the emergency room or clinic.

The **72-item bank** covers suicidal ideation and behavior, and suicide related items drawn from the domains of psychopathology, PTSD, social adjustment, sleep, substance use, anger, and aggression. The mean number of adaptively administered items is 11 (range, 5-21). In an average of **84 seconds**, youth can be adaptively screened for suicide risk and their suicide risk quantified in terms of the probability of a suicide attempt in the next 3 months. This process can be further streamlined by **integrating with our API** so that the CASSY can be seamlessly integrated with the electronic health record system. The CASSY is available in **English and Spanish**, with built-in selectable audio to aid in literacy issues and further ease of use. The Flesch Reading Ease score for the CASSY is 80.4 with a **Flesch-Kincaid Grade Level of 6.0**.

Unlike traditional scales that fix the items and allow the precision of measurement to vary, we fix the precision of measurement and allow the items to vary. The result is a **dramatic increase in the precision of measurement** with a **lower burden of measurement for the patient** and the **complete elimination of clinician burden**.

Figure 2. Receiver Operating Characteristic Curves for the Computerized Adaptive Screen for Suicidal Youth (CASSY) in Study 1 and Study 2

The vertical lines indicate the 80% and 90% specificity cut points.

VALIDATION OF THE CASSY

The CASSY was calibrated using a sample of over 6,000 youth in pediatric emergency departments and almost 5,000 youth followed for 3 months and prospectively assessed for suicide attempt. The CASSY had **excellent predictive accuracy** for suicide attempt (AUC, 0.89 [95% CI, 0.85-0.91]) in study 1. At a specificity of 80%, the CASSY had a sensitivity of 83%. It also demonstrated excellent accuracy in the study 2 validation sample (AUC, 0.87 [95% CI, 0.85-0.89]). In this study, the CASSY had a sensitivity of 82.4% for prediction of a suicide attempt at the 80% specificity cutoff established in study 1.

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