ZERO-BURDEN AUTISM DETECTION

Using machine-learning to enable earlier detection of Autism Spectrum Disorder, improving outcomes for patients and reducing the burden on health care providers and payers

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THE PROBLEM
AUTISM SPECTRUM DISORDER IS BEING DETECTED TOO LATE

1 in 50

Children and their families are profoundly affected by ASD

50 months

Median age of ASD diagnosis in the USA

>50%

Not being diagnosed early enough to receive optimal care

Sources:
(1) CDC: https://www.cdc.gov/mmwr/volumes/67/ss/ss6706a1.htm
(2) Guthrie et al. (2019) *Pediatrics*
(3) Reichow, B. & Wolery, M. (2009) *J Autism Dev Disord*

OUR SOLUTION:
THE TEST IS IMPLEMENTED USING THRESHOLDS THAT MAXIMIZE DETECTION WHILE LIMITING TOTAL

Autism
TRUVEN dataset, M subset, at 150 weeks
ROC Curve
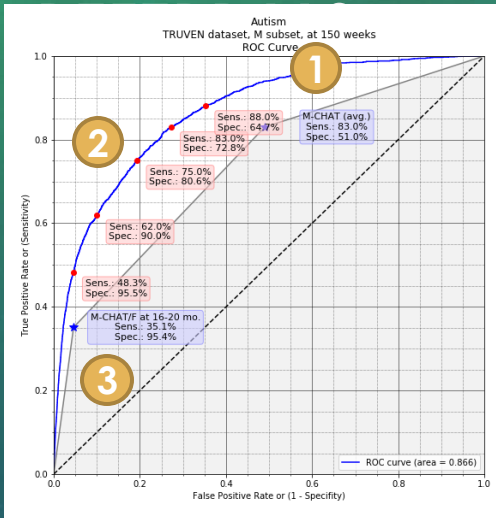
1 M-CHAT positive:
Screens out ~40% of false positives keeping high fidelity (>95%)

2 M-CHAT negative with some concern:
Detects >65% of patients with ASD

3 When M-CHAT is fully negative:
Detects ~35% of patients with ASD

Optimal test thresholds are identified based on sex and age of patient

Results – *males, 30 months*

Sensitivity	Specificity	Referrals	PPV
58.2%	**95.1%**	**5.9%**	**22.0%**
(vs. 38.8%)	(vs. 94.8%)	(vs. 5.9%)	(vs. 14.6%)

Sources:
M-CHAT based on data from CHOP analysis including prevalence of 2.2%