

Background

- In low- to middle-income countries, Blood Based Biomarkers (BBMs) remain expensive and inaccessible.
- Episodic memory symptoms are major early manifestations of Alzheimer's disease (AD) and can be detected even before the staging of mild cognitive impairment (MCI).
- Utilization of episodic memory in diagnosing AD pathology in clinical settings has been underrated.
- This study aimed to evaluate the performance of Chulalongkorn Episodic Memory Score (CEMS) in detecting AD as defined by PET.

Chulalongkorn Episodic Memory Score (CEMS)

Severity of daily episodic memory changes over the past 10 years	Better or no change (1)		Occasionally change (2)	Consistently a little worse (3)		Consistently much worse (4)
A1 Recalling conversation in the past few days						
A2 Remembering events in the past few days						
A3 Remembering important events in the past month						
A4 Repetitive telling old story						
A5 Repetitive questioning						
A6 Forgetting to turn things off						
A7 Misplacing						
Average daily frequency of episodic memory symptoms in the previous month	None (0)	Less than once daily (1)	Once to twice daily (2)	3-10 times/day (3)	More than 10 times/day (4)	
B1 Repetitive telling old story						
B2 Momentary confabulation						
B3 Tangential speech/Speech circumlocution						
B4 Refuse or denial speech						
B5 Head turning (while answering questions)						
B6 Repetitive questioning						
Total score (7-52)						

Method

- Participants with amnesic MCI and mild dementia were recruited from a tertiary care memory clinic.
- Episodic memory symptoms were assessed using CEMS (Table), an informant-based interview score measure.
- (1) severity of daily episodic memory changes over the past 10 years and
- (2) average daily frequency of episodic memory symptoms in the previous month.
- Score range from min of 7 to max of 52
- Amyloid (Florbetaben) and Tau (PI-2620) PET scans were performed. AD was defined as amyloid-positive and tau-positive (A+T+).
- ROC curve analysis was conducted to assess CEMS performance in detecting A+T+.
- 2 separate cut-offs for CEMS were identified to achieve 90% sensitivity and specificity for A+T+.

Result

- 50 participants were enrolled (median age 72 [IQR 65-77] years), with 68% staging as MCI and 48% exhibiting A+T+.
- Median CEMS score was 33.5 (IQR 28.5-37.5) in participants with A+T+ compared to 20.5 (IQR 14.0-29.0) in other amyloid and tau profiles (P=0.002) (Figure Left).
- CEMS demonstrated good predictive ability for A+T+ with an area under the ROC curve of 0.76.
- A lower cut-off score of <=18 provided sensitivity >90%, while a higher cut-off of >=37 offered specificity >90% in detecting A+T+ (Figure Right).

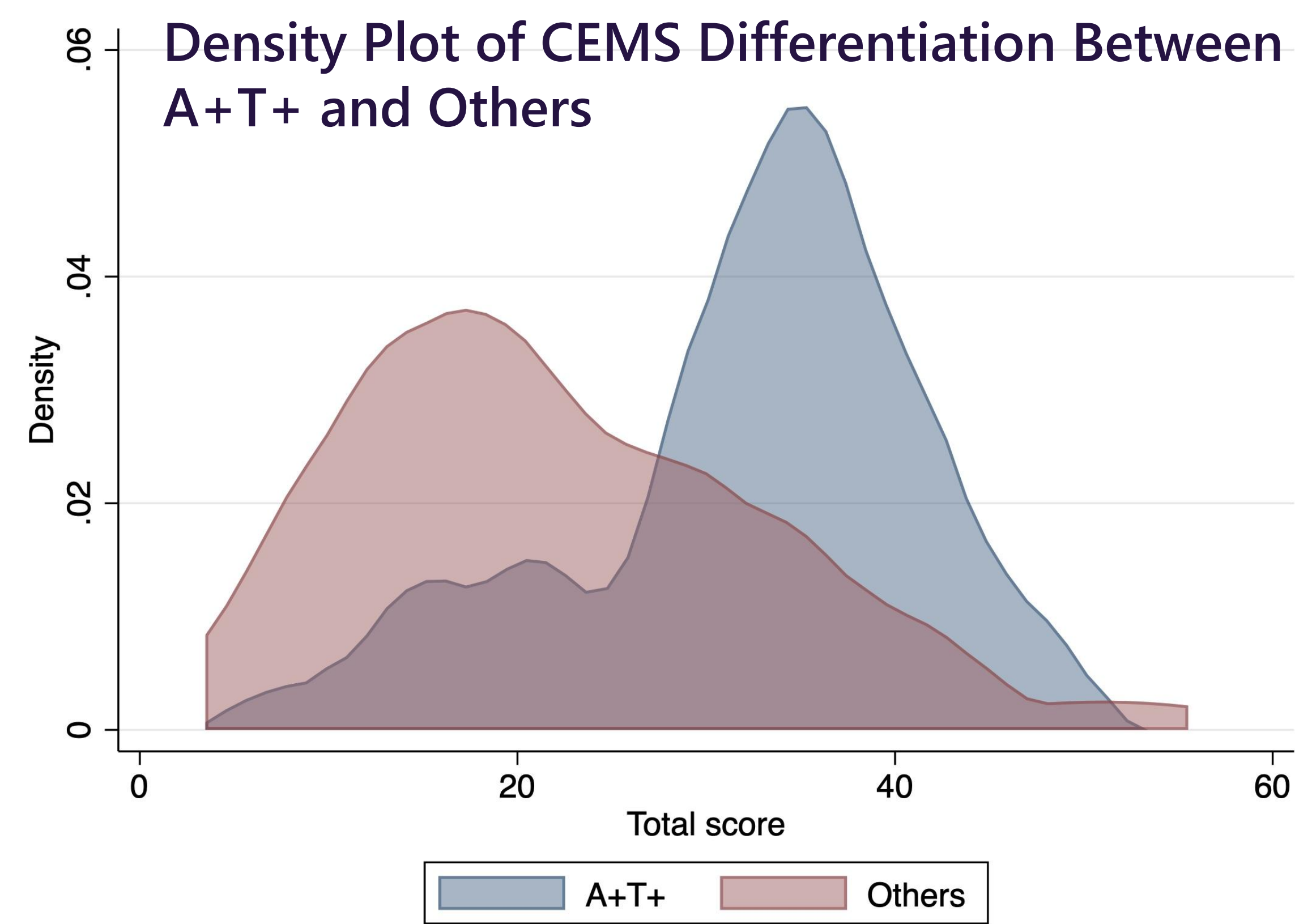
Conclusion

- Episodic memory symptoms remain clinically useful for detecting A+ and T+ in MCI and mild dementia.
- CEMS could serve as an effective screening tool for Alzheimer's disease in settings where BBMs are inaccessible.

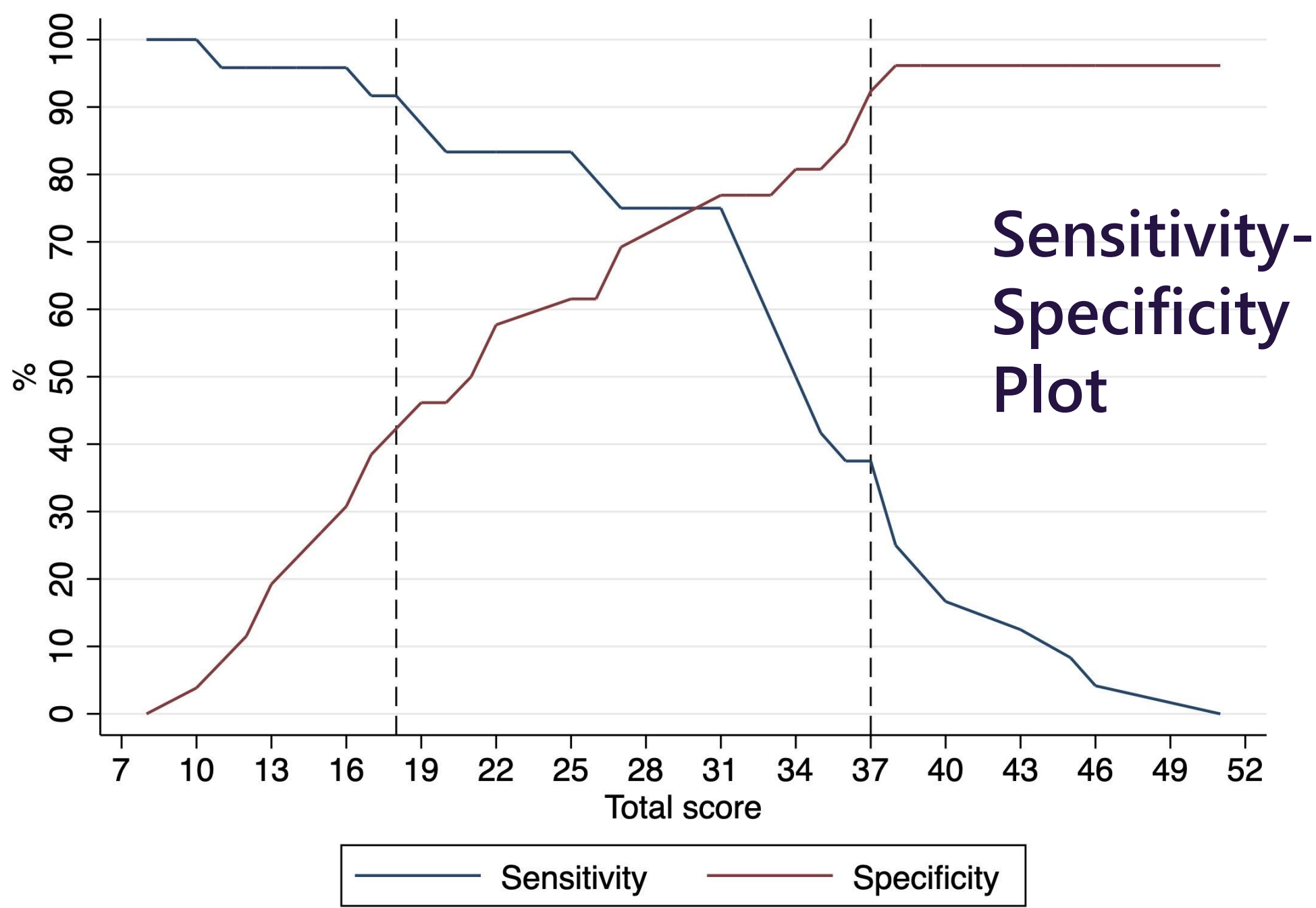
Performance of Chulalongkorn Episodic Memory Score in Detecting Early Alzheimer's Disease Defined by PET in Amnesic MCI and Mild Dementia

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Density Plot of CEMS Differentiation Between A+T+ and Others



Lower threshold	Crossover zone	Upper threshold
Score = 18	Score ≈ 28-31	Score = 37
Sens ≈ 91% · Spec ≈ 45%	Sens ≈ Spec ≈ 75%	Sens ≈ 37% · Spec ≈ 93%



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