

OMI AND AI: CARDIOLOGIST VIEW

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THE CARDIOLOGIST PERSPECTIVE

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"Your heart is filled with the joy of Christmas, so I'm scheduling you for angioplasty after the holidays."

time is

muscle

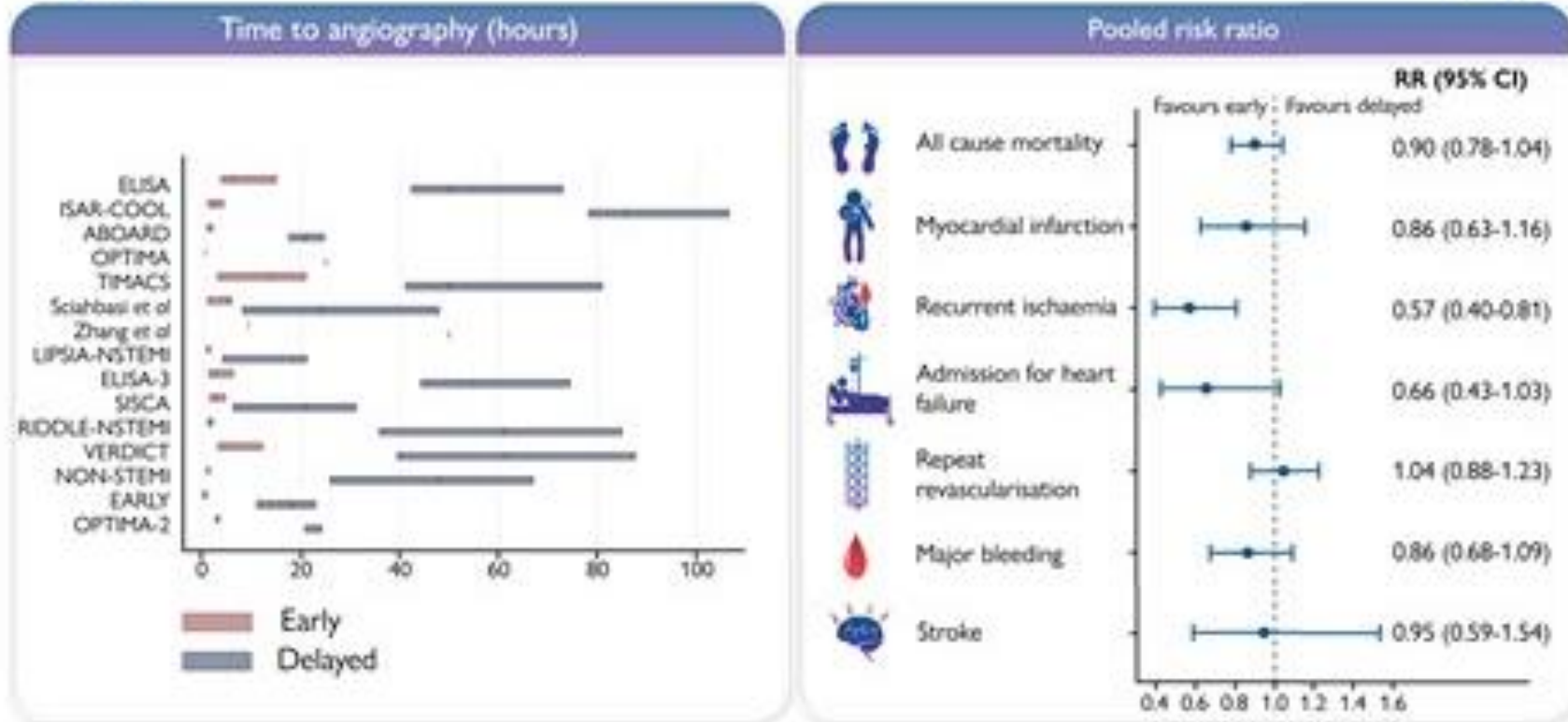


WHY NOT JUST EVERYBODY IMMEDIATE?

In patients with NSTEMI-ACS, does an early invasive strategy improve clinical outcomes when compared with a delayed invasive strategy?

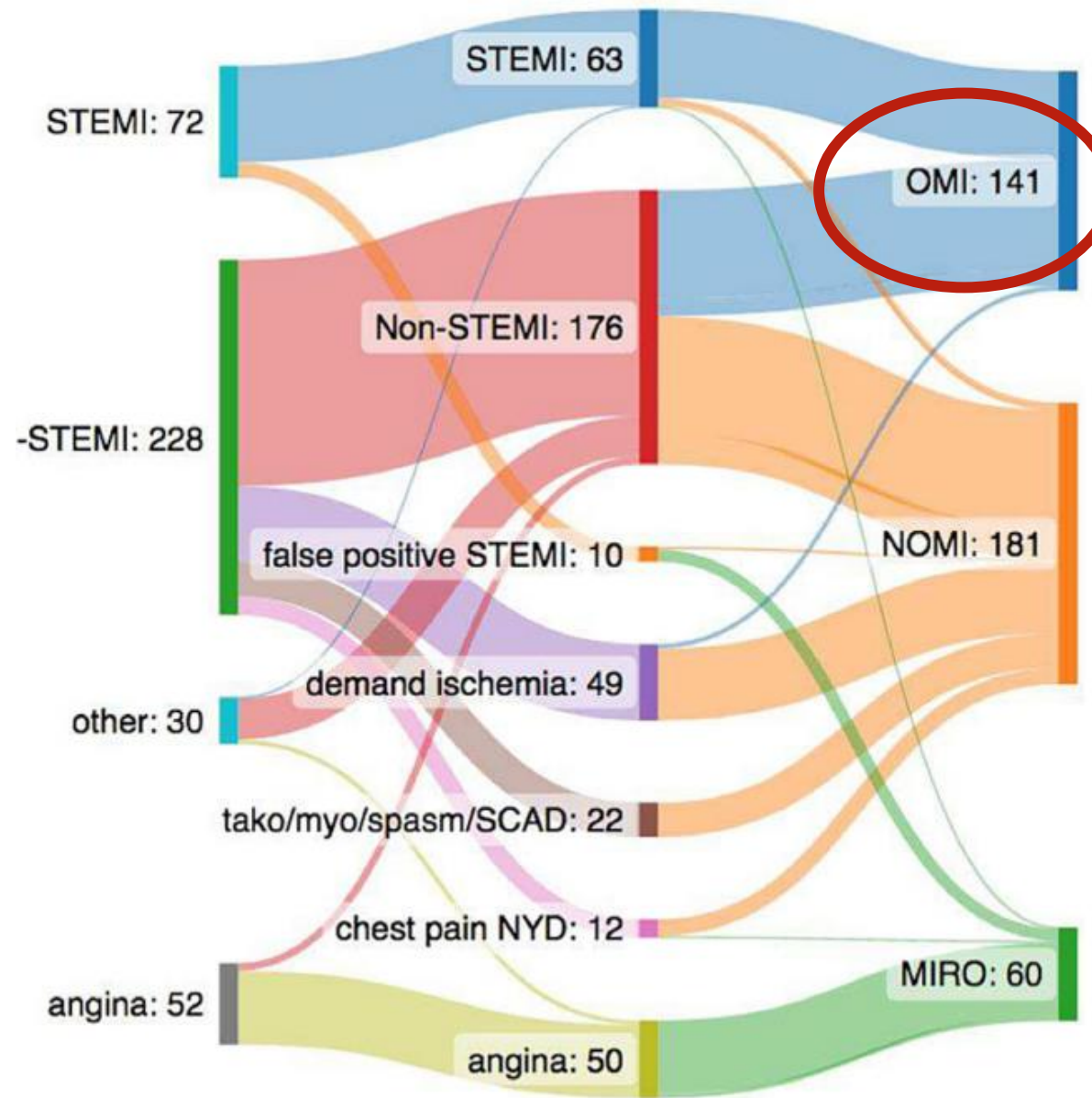
Meta-analysis of 17 randomised trials

10,209



Kite et al. Eur Heart J. 2022.

WHY OMI?



Generally 25% of NSTEMI is OMI

YES TO OMI!

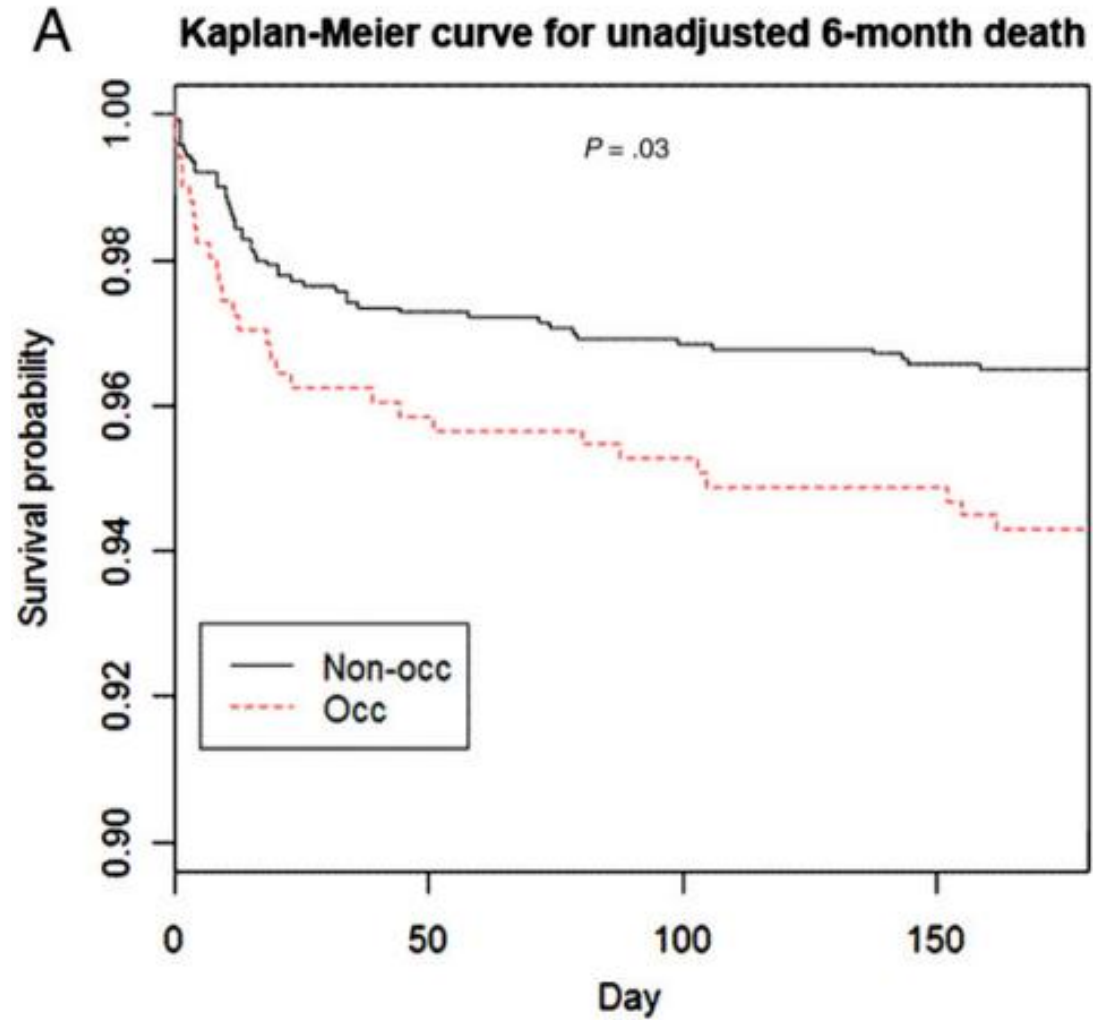
Table 2
Classification by OMI, NOMI or MIRO, and stratified by whether admitted as STEMI or not.

	Patients	1st ECG 'STEMI'	Any ED ECG 'STEMI'	Median first troponin I, ng/L (IQR)	Median peak troponin I, ng/L (IQR)	Echo- cardio- gram	New RWMA	Angio-gram	Median cath time, min (IQR)	TIMI 0/1 flow
All OMI	141	34/135 (25.2%)	45/134 (33.6%)	694 (61–5995)	20,513 (11,322–48,416)	139/141 (98.6%)	115/139 (82.7%)	132/141 (93.6%)	874 (119–2187)	54/85 (63.5%)
OMI admitted as STEMI	57 (40.4%)	33/55 (60.0%)	38/54 (70.4%)	1035 (36–8843)	42,052 (13,898–83,922)	55/57 (96.5%)	53/55 (96.4%)	56/57 (98%)	103 (71–149)	36/44 (81.8%)
OMI not admitted as STEMI (false negative)	84 (59.6%)	1/80 (1.3%)	7/80 (8.8%)	547 (90–3561)	14,576 (11,322–48,416)	84/84 (100%)	62/84 (73.8%)	76/84 (90%)	1712 (1043–3960)	18/41 (43.9%)

YES TO OMI!

Study	Time to angiography/PCI	Outcome Occluded
Wang et al. 2019	73; 86 h	Worse
Bahrman et al. 2011	24h; 26 h	Worse
Warren et al. 2015	18h; 22h	Same

●●● YES TO OMI!

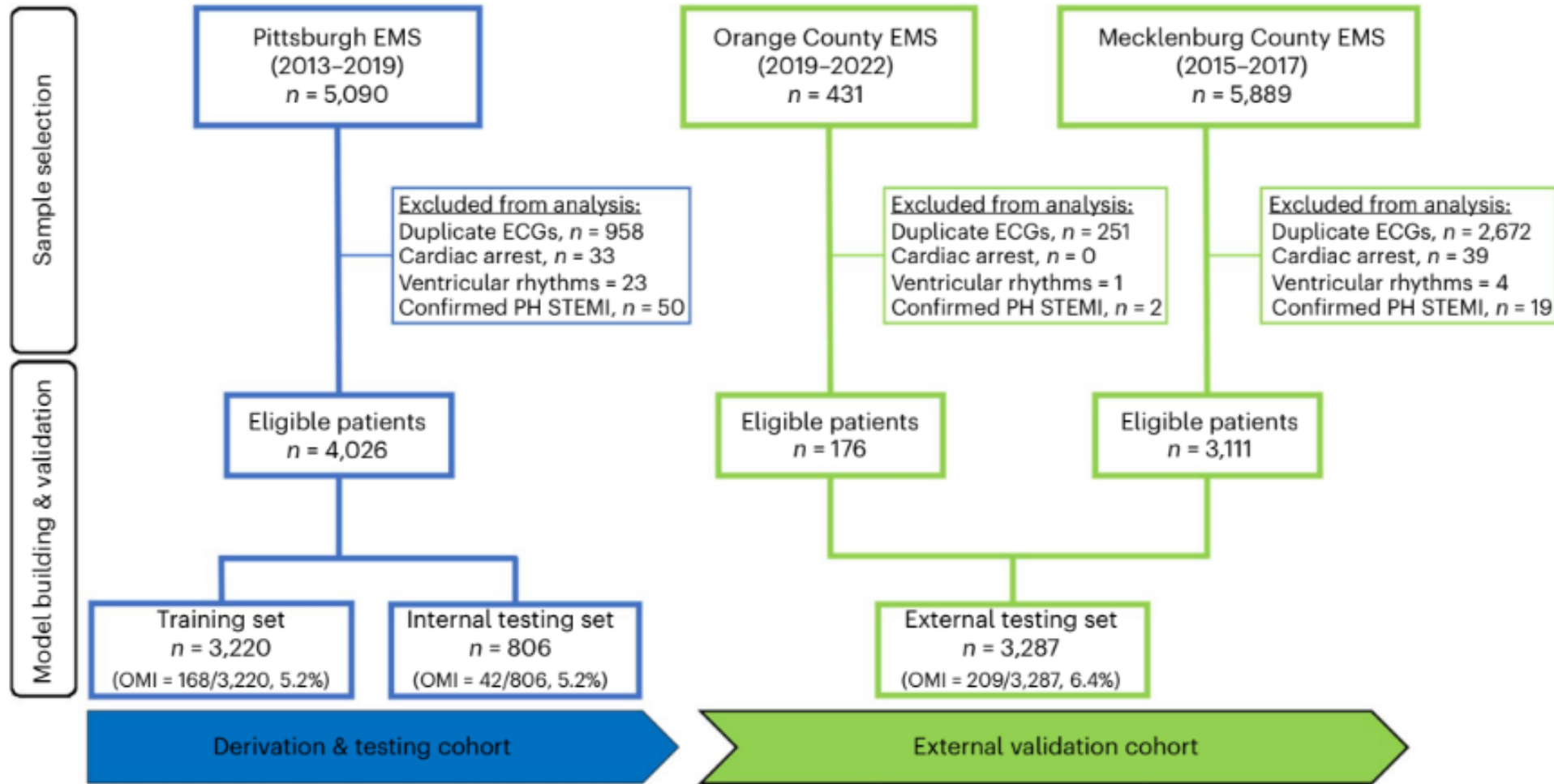


000 WHERE

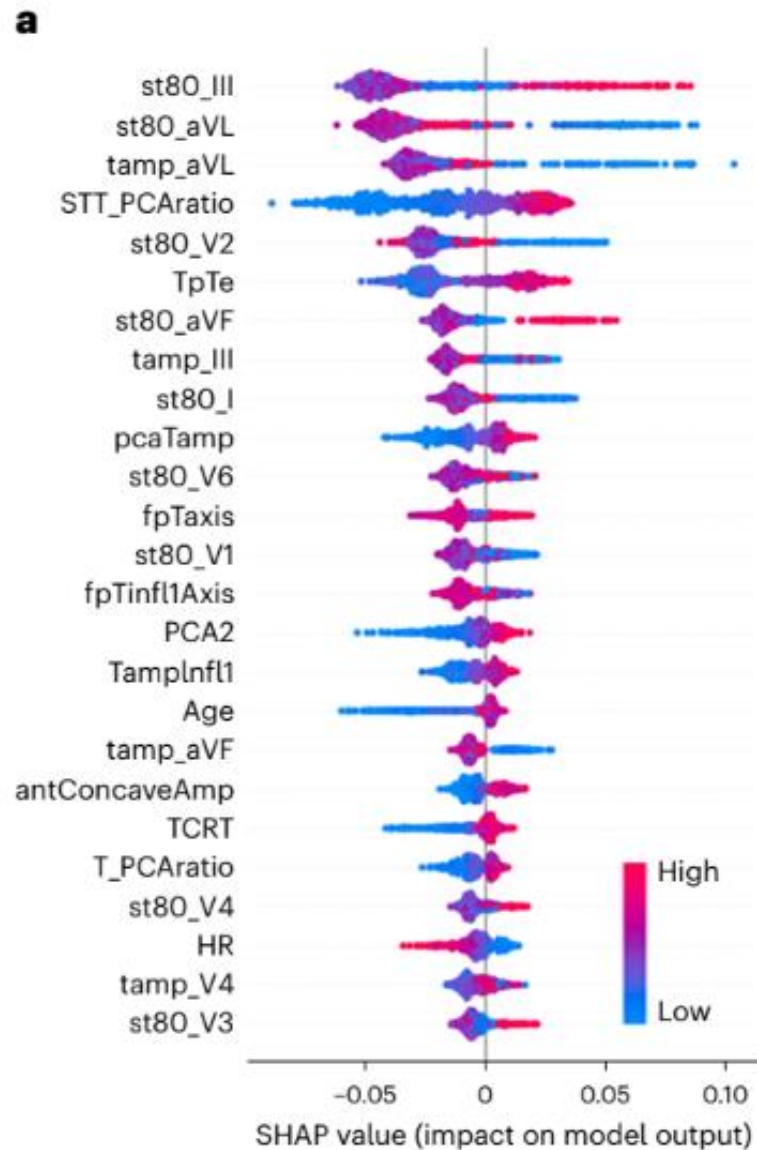


<p>ST segment elevation in ≥ 2 contiguous leads of ≥ 1.5 mm in men < 40 years, ≥ 2 mm in men ≥ 40 years, or ≥ 1.5 mm in women regardless of age in leads V2-V3 and/or ≥ 1 mm in the other leads; lasting ≥ 20 min</p>	<p>ST depression ≥ 1 mm in six or more surface leads (inferolateral ST depression), coupled with ST-segment elevation in aVR and/or V1</p>	<p>New ST-elevation at the J-point in ≥ 2 contiguous leads^a ≥ 2.5 mm in men < 40 years, ≥ 2 mm in men ≥ 40 years, or ≥ 1.5 mm in women regardless of age in leads V2-V3 and/or ≥ 1 mm in the other leads (in the absence of LV hypertrophy or left bundle branch block) ^aIncluding V3R and V4R</p>
<p>1-3 mm upsloping ST-segment depression at the J point in leads V1-V6 that continue into tall, positive, and symmetrical T waves</p>	<p>QRS duration greater than 120 ms Absence of Q wave in leads I, V5 and V6 Monomorphic R wave in I, V5 and V6 ST and T wave displacement opposite to the major deflection of the QRS complex</p>	<p>ST-segment depression in leads V1-V3, especially when the terminal T-wave is positive (ST-segment elevation equivalent), and concomitant ST-segment elevation ≥ 0.5 mm recorded in leads V7-V9</p>
<p>isoelectric or minimally elevated J point (≤ 1 mm) or biphasic T wave in leads V2 and V3 (type A) or symmetric and deeply inverted T waves in leads V2 and V3, occasionally in leads V1, V4, V5, and V6 (type B)</p>	<p>QRS duration greater than 120 ms rsR' "bunny ear" pattern in the anterior precordial leads (leads V1-V3) Slurred S waves in leads I, aVL and frequently V5 and V6</p>	<p>ST-segment elevation in V7-V9 and V3R and V4R, respectively</p>

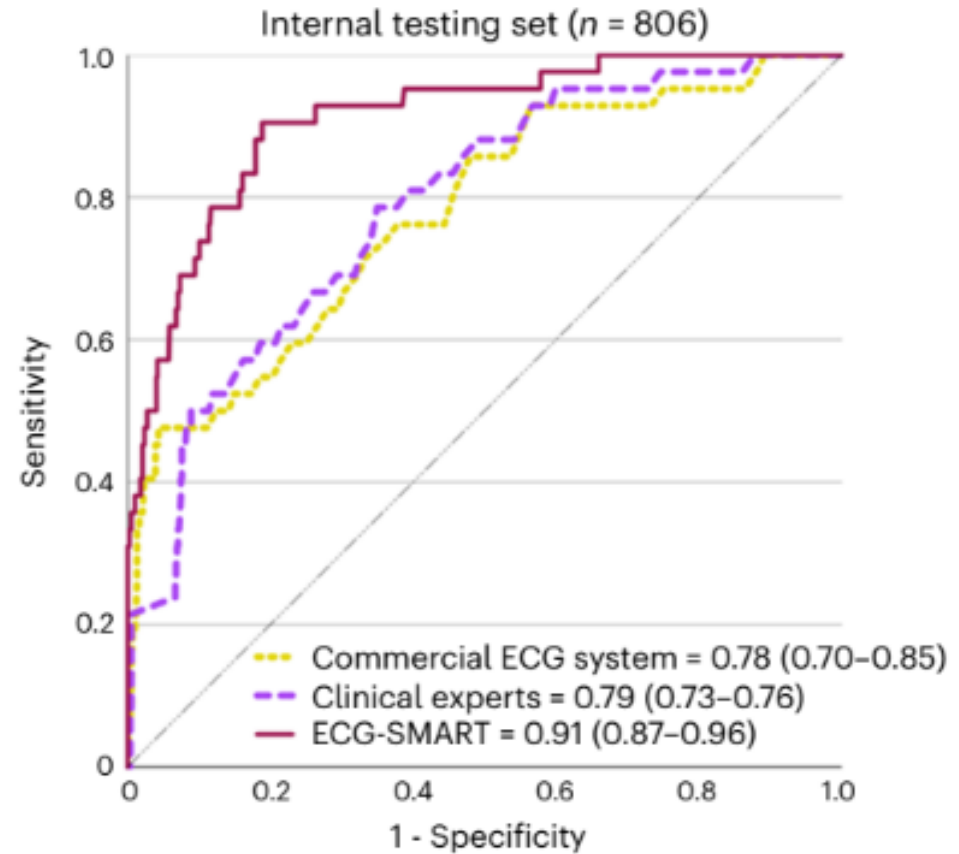
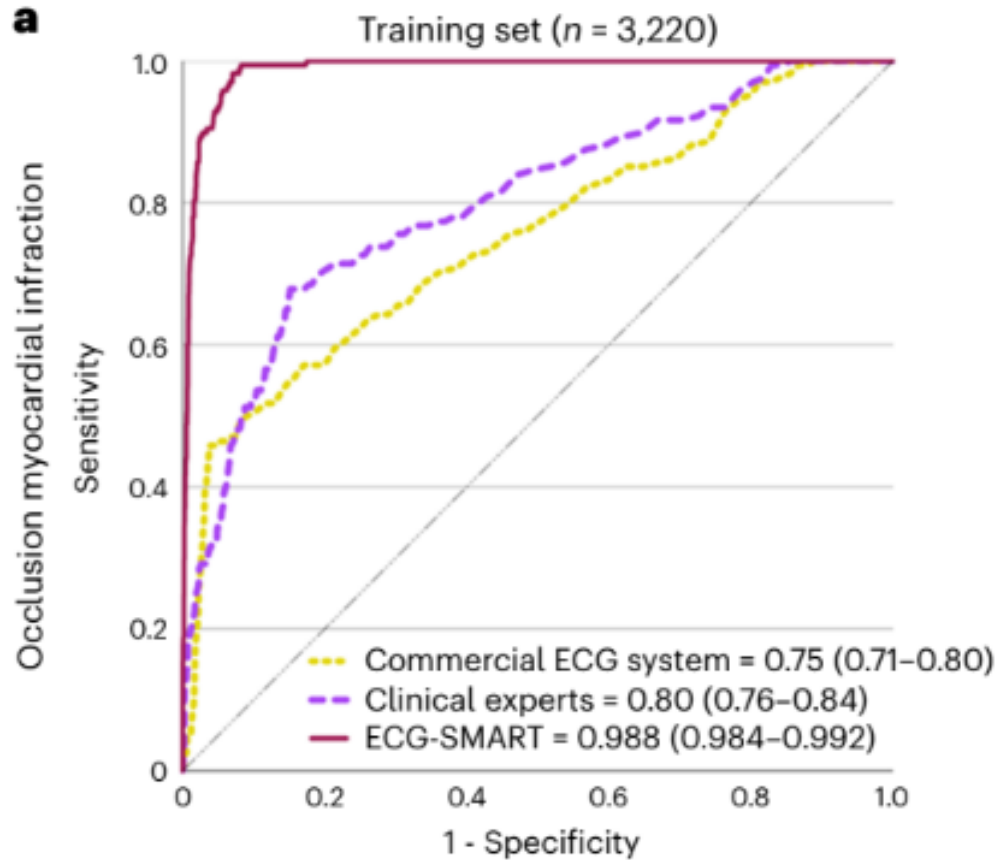
WHERE DOES AI FIT?



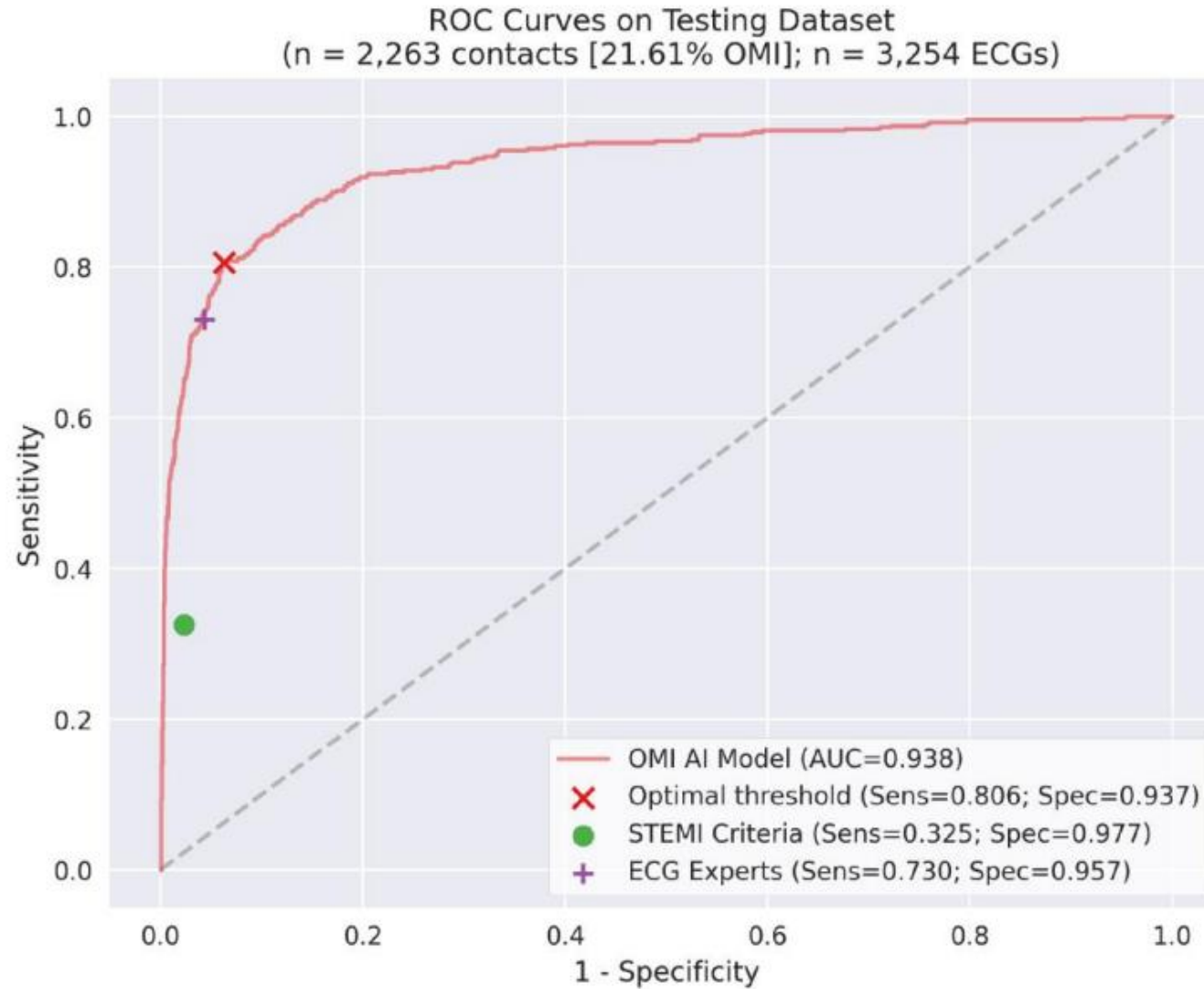
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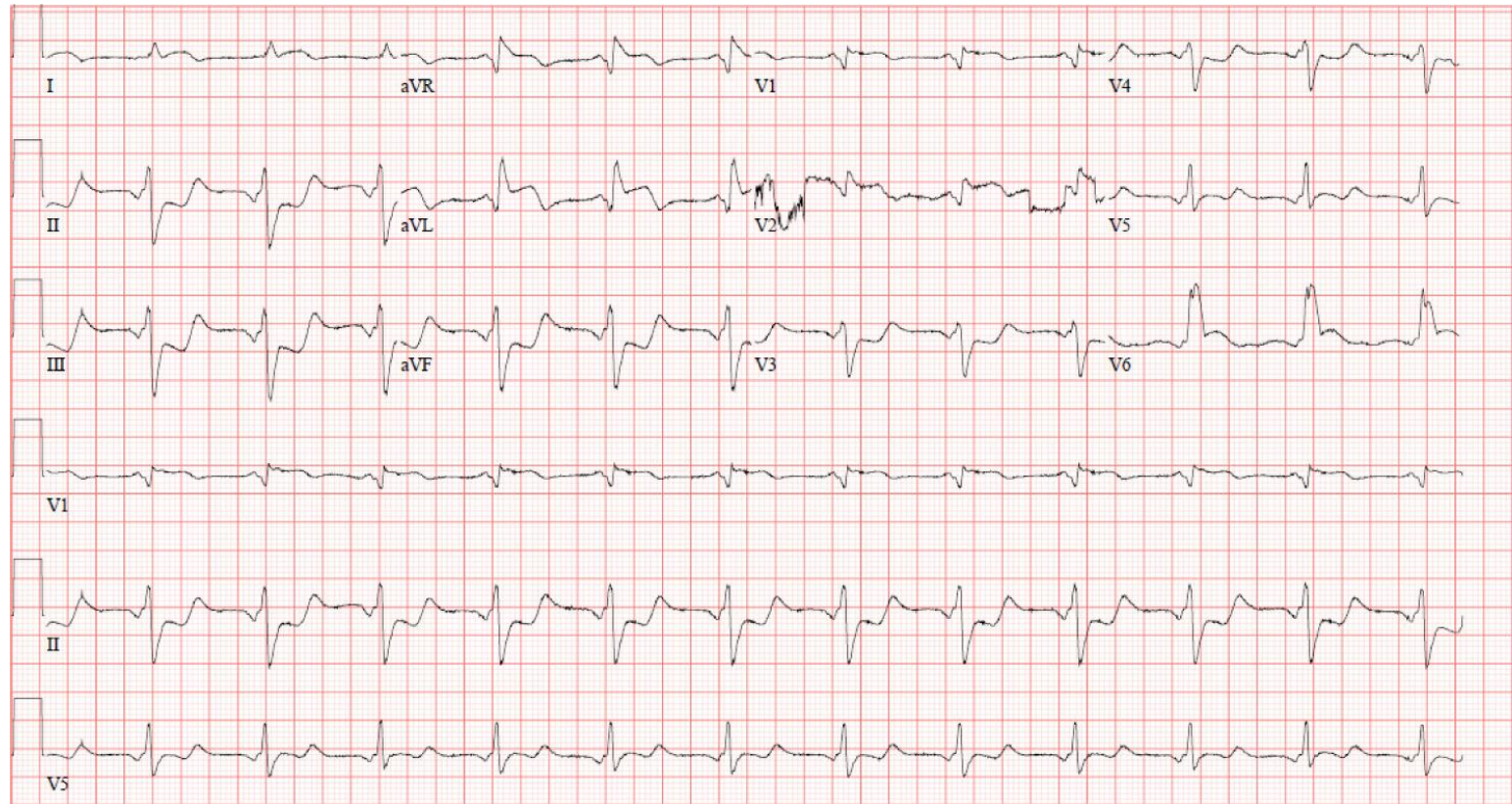


●●● WHERE DOES AI FIT?



000 CASE: AI APPROACH

32-year-old male, lean, non-smoker. Only history: spontaneous pneumothorax. Presenting with chest pain.



000 CASE: AI APPROACH

AI: extremely high p

- Collapses on table at injection
 - TTE: pericardial effusion
- Pericardiocentesis: pure blood, transient stability but transfer to OR in active CPR
 - Bad neurological outcome

●●● WILL AI BE THE ONLY THING WE NEED?

Does AI really represent real intelligence?

"The human mind is not, like ChatGPT and its likes, a glutton statistical machine for structure recognition, that swallows hundreds of terabytes of data and snatches the most plausible answer to a conversation or the most likely to a scientific question." The other way around... the human mind is a surprisingly efficient and elegant system operating with a limited amount of information. It doesn't try to injure raw correlations from data but tries to create explanations [...] → **Asking question**

Let's stop calling it "Artificial Intelligence" and call it what it is: "plagiarism software." Don't create anything, copy existing works from existing artists and alter it sufficiently to escape copyright laws.

It's the largest theft of property ever since Native American lands by European settlers. "

Noam Chomsky, New York Times - March 8, 2023

000 CASE: HUMAN APPROACH

Human: wh

→ Quick fami

- Grandmo

- Niece had

→ Blood pres

- Urgent transfer to OR
- Collapsed during induction but immediate axillary cannulation for CBP
- Good recovery after 5 day ICU and 15 day hospital stay

7.

mmHg



Conclusions and Relevance In this cross-sectional study among patients with CHF presenting with SOB, physicians were less likely to test for PE when the patient visit reason that was documented before they saw the patient mentioned CHF. Physicians may anchor on such initial information in decision-making, which in this case was associated with delayed workup and diagnosis of PE.

**“The power to question is the basis of all human progress.”
Indira Gandhi**

000 CASE: AI APPROACH

- 67-year-old Male, smoker. Known HT.
- Chest pain since 2h
- BP 100/82 mmHg, HR 97/min



000 CASE: AI APPROACH

AI: low probability of OMI

- Admitted with Aspirin and Fondaparinux
- Overnight becomes hypoxemic, receives diuretics
- Quickly becomes code for VT -> refractory VF -> ECPR

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6 van 7

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●●● CASE: HUMAN APPROACH

- Left main on angio
- Shock team



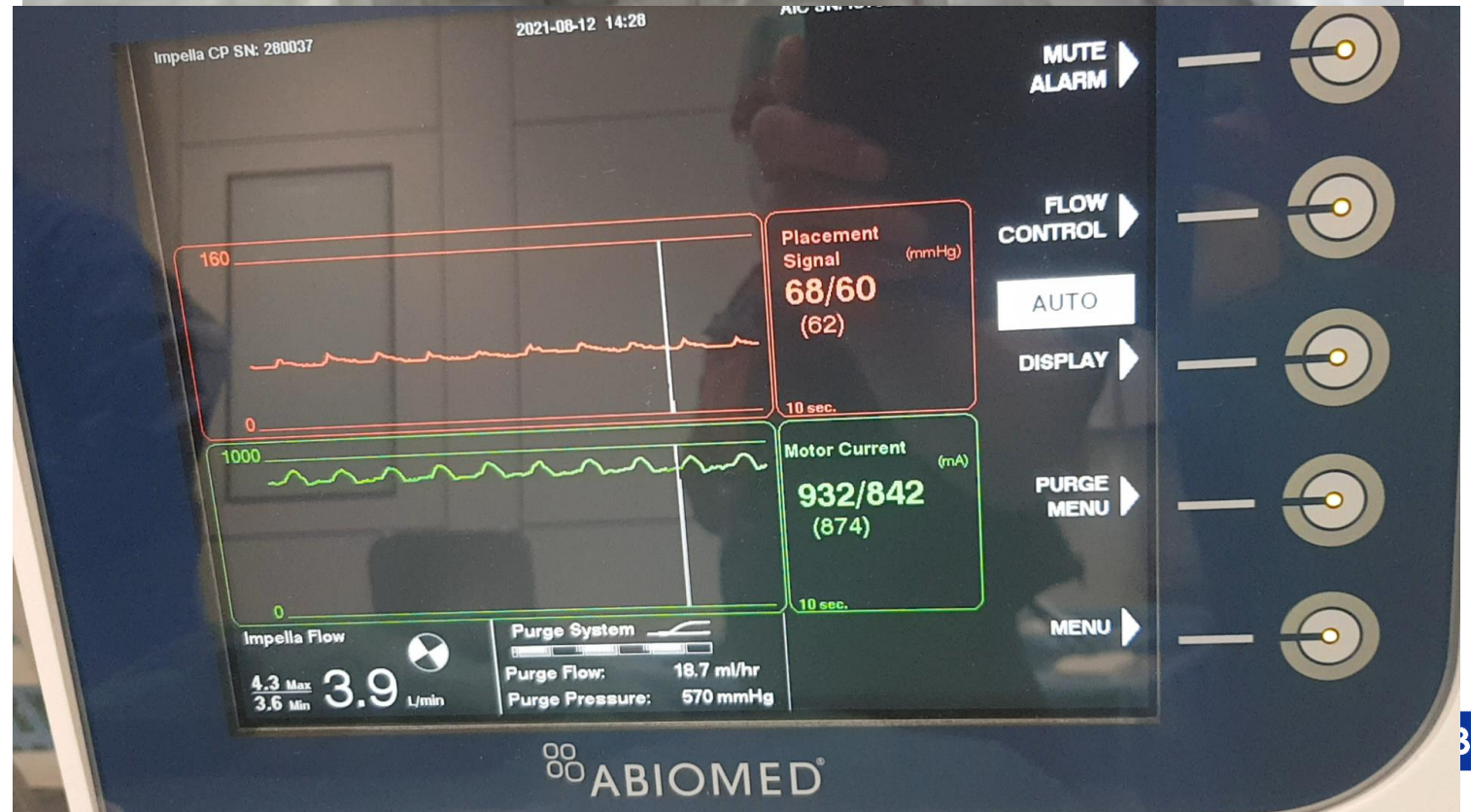
000 CASE: HUMAN APPROACH

- Left main on angio
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- -> Impella CP
- -> intubated
- Then PCI: uncoupling



000 CASE: HUMAN APPROACH

- Left main on angio
- Shock team
- -> Impella CP
- -> intubated
- Then PCI: uncoupling
- Walks home



000 WILL AI REPLACE US?

AI will never get mere knowledge nostalgia. Without components. There goes the "i

Airway

	LOOK	LISTEN	FEEL	MANAGE
A	LOC	Stridor	Crepitus	Cervical Collar
I	Facial trauma	Gurgling	Tenderness	Temporize:
R	UAW burn	Hoarseness	Edema	Suction
W			Trachea midline	Jaw Thrust
A				OP/NP airways
Y				Remove FB
				Prepare and perform ETT: draw meds, start iv, get BP/ tools

than injury or of its logic. So

●●● CONCLUSIONS

- Using OMI approach might save muscle!
- AI is very good at pattern recognition
 - Will assist in ECG reading more and more
= answer to a selective question: “what is probability for OMI”
 - Will assist in finding new ECG patterns for OMI
- BUT AI is not like real human intelligence:
 - It does not ask questions, AND ASKING WHY IS EVERYTHING
 - It does NOT “LOOK, LISTEN, FEEL” and remains dependent on our judgement!