

Heart2Miss:

Decentralized Community Rapid Cardiac Ultrasound Triage for Early Heart Failure Detection Using a Hub-and-Spoke Model



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Fundings

- Heart2Miss was an initiative established with public-private partnerships in local community diabetes care.
- Study grants from AstraZeneca.
- Technical support and automated echocardiography software provided by Us2.AI.
- Study was designed, performed and independently analyzed by the study team.



Disease burden of HF remains high, with challenges in early HF identification



Disease Burden



HF is the **#1 cause of hospitalization** in people >65 years^{1,a}



Over 40% have HF symptoms up to **5 years** prior to diagnosis²

2x

T2D+CKD **doubled** 1-year mortality or HF hospitalization³



Workforce Gap⁴



<20 nurses
per 10,000 people in LMICs

vs

80 nurses
per 10,000 people in high-income countries

55% of countries (mostly LMICs) reported **insufficient nurses** to deliver primary care



Complexities and delay in HF diagnosis



Low patient identification

Lack of education and/or resources for HCPs to properly identify HF patients^{5,6}



Long wait lists

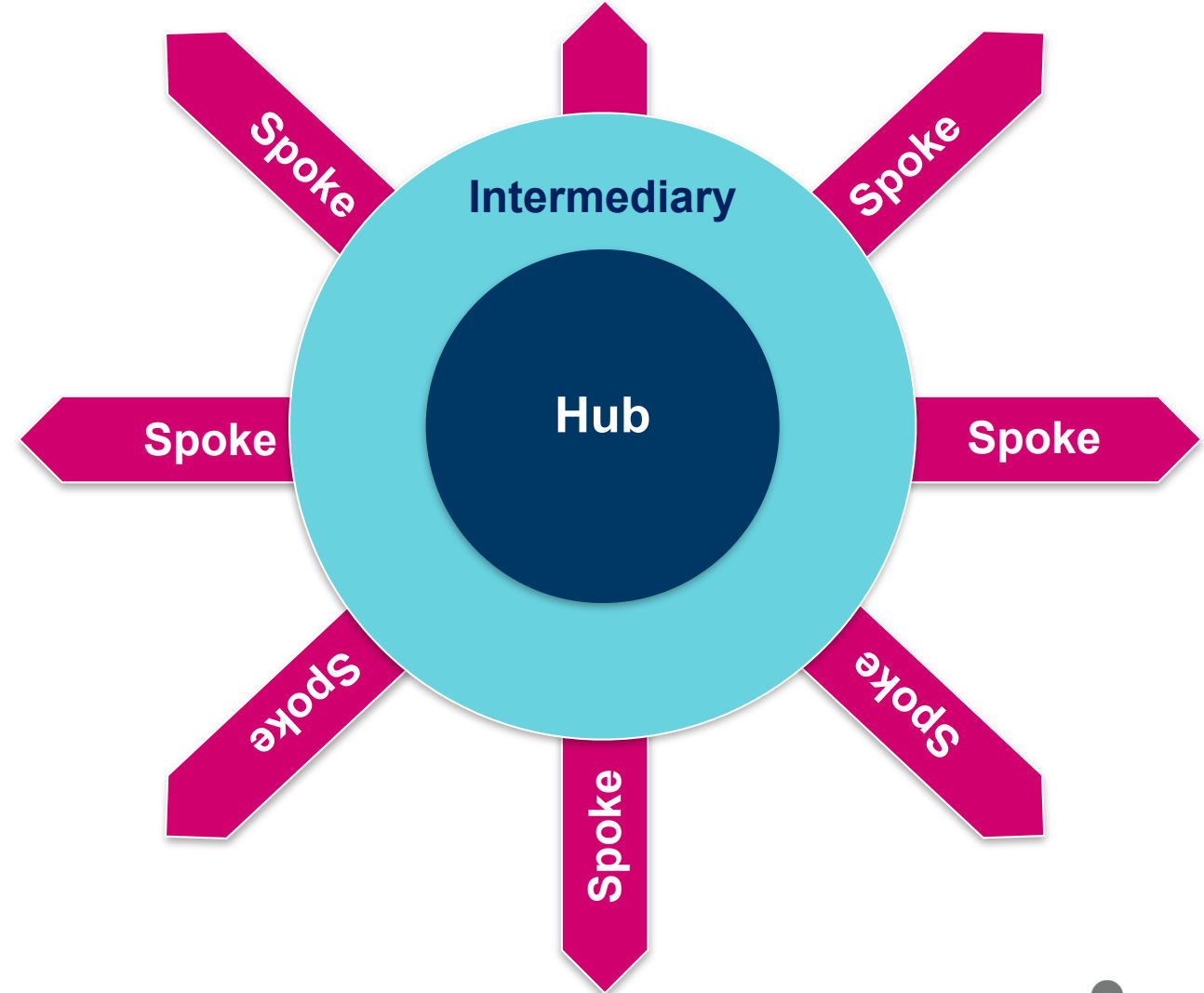
Appointments with cardiologists may be delayed in LMIC setting⁷



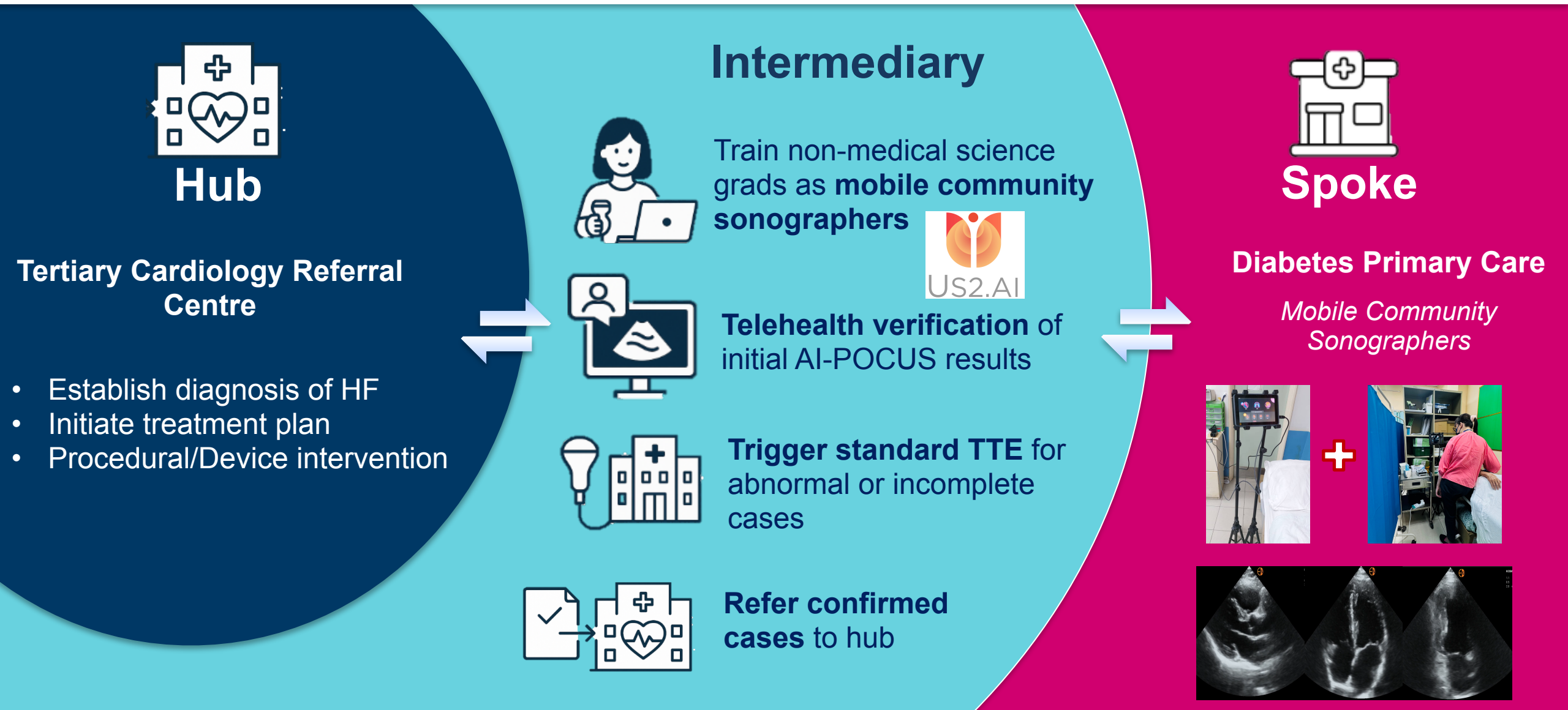
Echo access challenges

Limited access to echocardiography in many regions and need for highly trained specialists

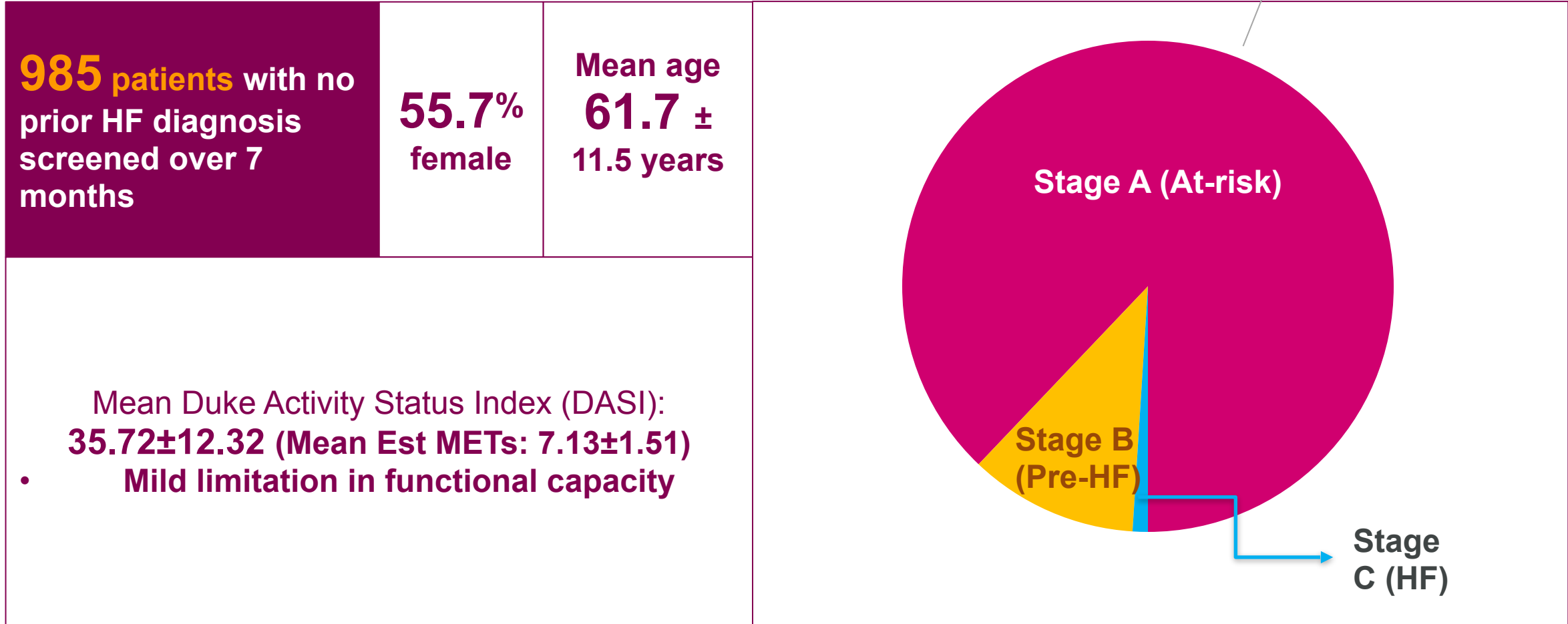
Decentralized rapid echo triage model using hub-spoke approach provides scalable method for community-based HF screening



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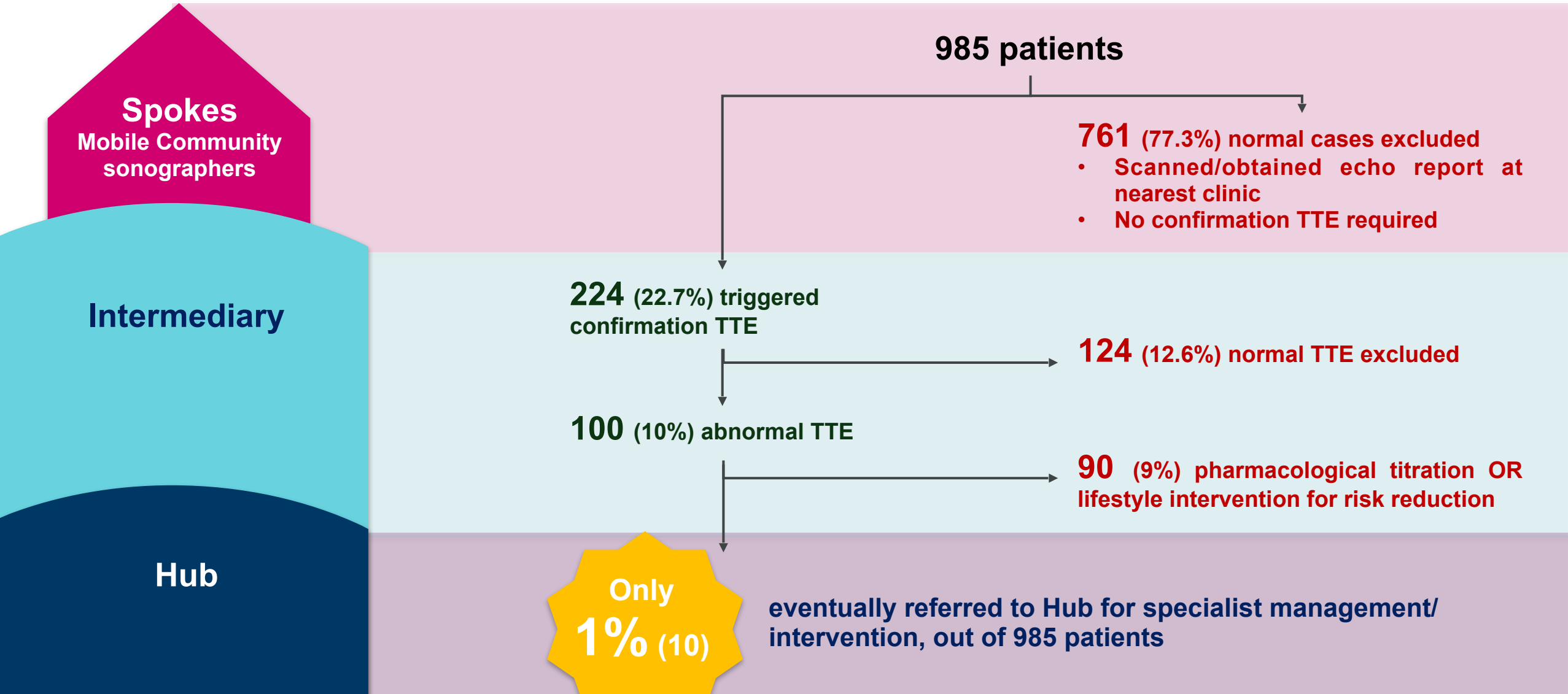


Primary Outcome: Hub-Spoke-Intermediary Screening Model was effective in identifying prevalence rate based on HF staging



Secondary Outcome: Hub-Spoke-Intermediary Screening Model reduces tertiary centre overload

(Diagnostic burden, referrals and outpatient management burden)

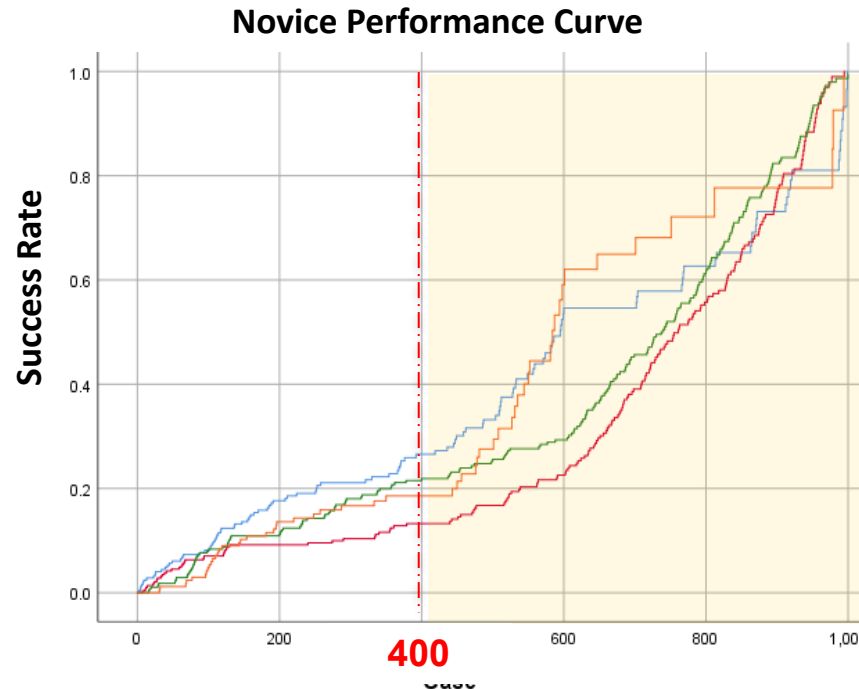


Secondary Outcome: Novice performance significantly improves after 400 cumulative patient cases

Novice operators achieved **>85% analyzable scans** after just **4 weeks training**

Echo Parameter	Yield
IVSd	966 (98.1%)
LVPWd	953 (96.8%)
RWT	949 (96.3%)
LV mass index	949 (96.3%)
LVEDVi	897 (91.1%)
LVESVi	898 (91.2%)
LVEF	896 (91.1%)
LAVi	874 (88.7%)

Each individual novice operator showed **exponential up-trend after cumulative 400 cases.**



Success Rate:
 Defined as complete 3 echo views capture within 10 minutes

Time taken by novice operators to perform scans **reduced significantly**

	Case 1 - 400	Case 401 - 985
Time, minutes	11.03 ± 5.28	8.31 ± 4.41

Mean difference: 2.31 min
 (95% CI: 1.52-3.11), $p < 0.001$

Implications of Heart2Miss Study: Scaling Early HF Detection

Beyond Partnerships → True Co-Creation



Public-private collaboration seeded **an evidence-based, real-world, scalable care model**, co-designed to meet **real local needs**

Not just deploy product/service

Unlocking Untapped Talents → New Diagnostic Workforce



Trained underemployed bioscience graduates as **mobile community sonographers**

Create **new career pathways in health diagnostics**

Driving System Change and Health Equity



Enable **early HF detection in underserved diabetes clinics** (Spokes)



Relieve specialist bottlenecks (Hub)



Build capacity for **sustainable & equitable community care**

Thank you!

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