

Scalable Hospital-Based Imaging Using Low-Field MRI for Dementia and Stroke in Ghana (SHIELDS)

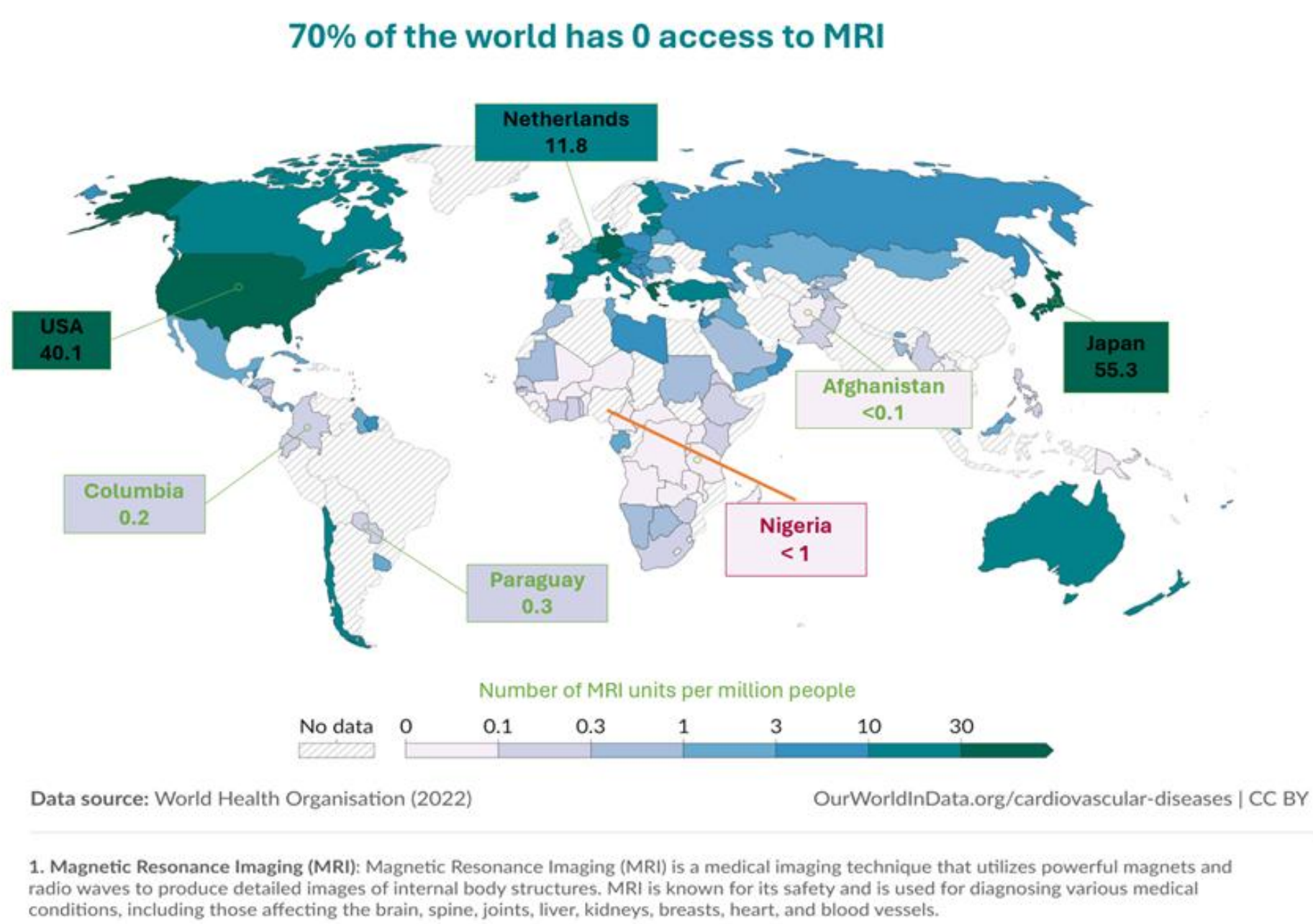
Equitable Point-of-care Brain Imaging + Rigorous Validation + Durable African-led Capacity+ Scalable Solutions

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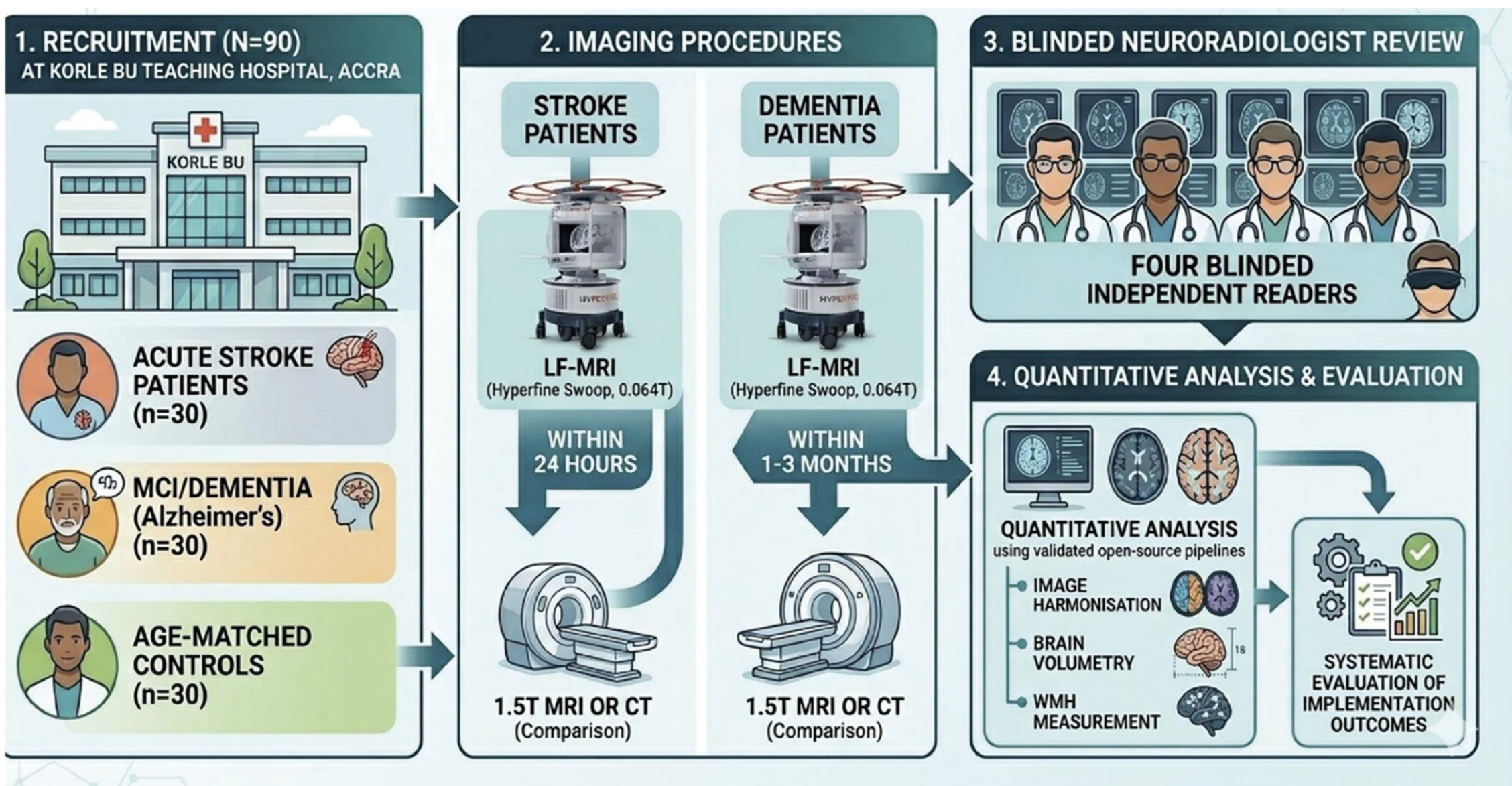
Essential to address brain health disparities, reduce healthcare costs, and protect public safety.

BACKGROUND

- **Dementia is rising fastest in LMICs**, where diagnostic and care systems remain under-resourced.
- **African populations are under-represented in ADRD neuroimaging research**, limiting globally relevant evidence.
- **MRI access remains severely limited across Africa**, with fewer than one scanner per million people in many regions.
- **Conventional structural MRI is essential but difficult to scale** because of cost, infrastructure, maintenance, and workforce constraints.
- **Portable low-field MRI offers a pragmatic, equity-focused solution**, but its feasibility and validity for dementia and stroke assessment in African clinical settings remain unproven.



APPROACH & METHOD



Designed to Do

- ✓ Demo **clinical feasibility**
- ✓ Show **diagnostic agreement**
- ✓ Est. **sensitivity & specificity**
- ✓ Quantify **reader reliability**

NOT Designed to Do

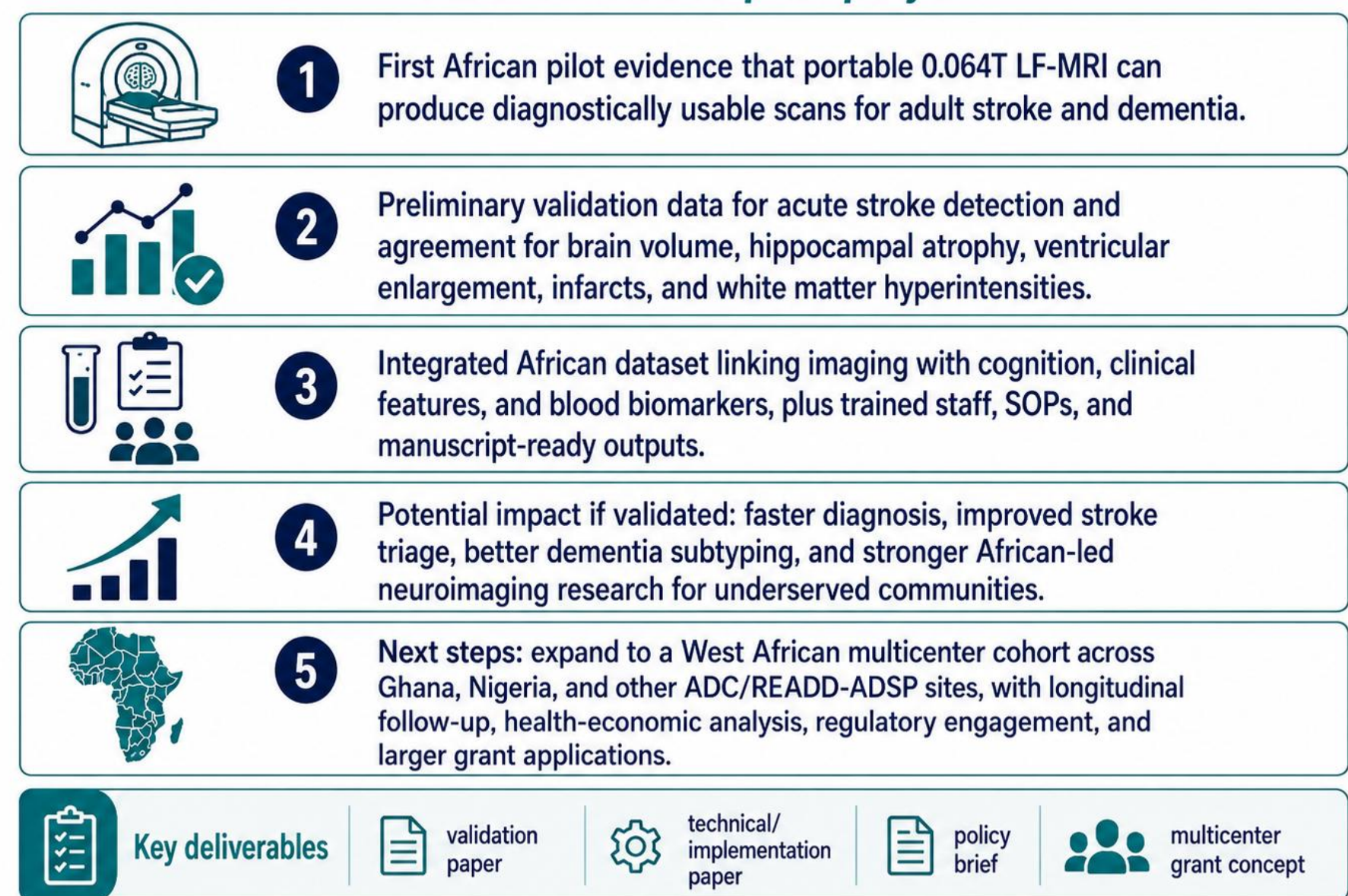
- ✗ Definitive **equivalence trial**
- ✗ Detect **small differences**
- ✗ **Subtype-level conclusions**

OUR TEAM



Albert Akpalu Yaw Mensah D. Brodie-Mends Steven Williams Samuel Oppong Hafisatu Gbadamosi Rufus Akinyemi

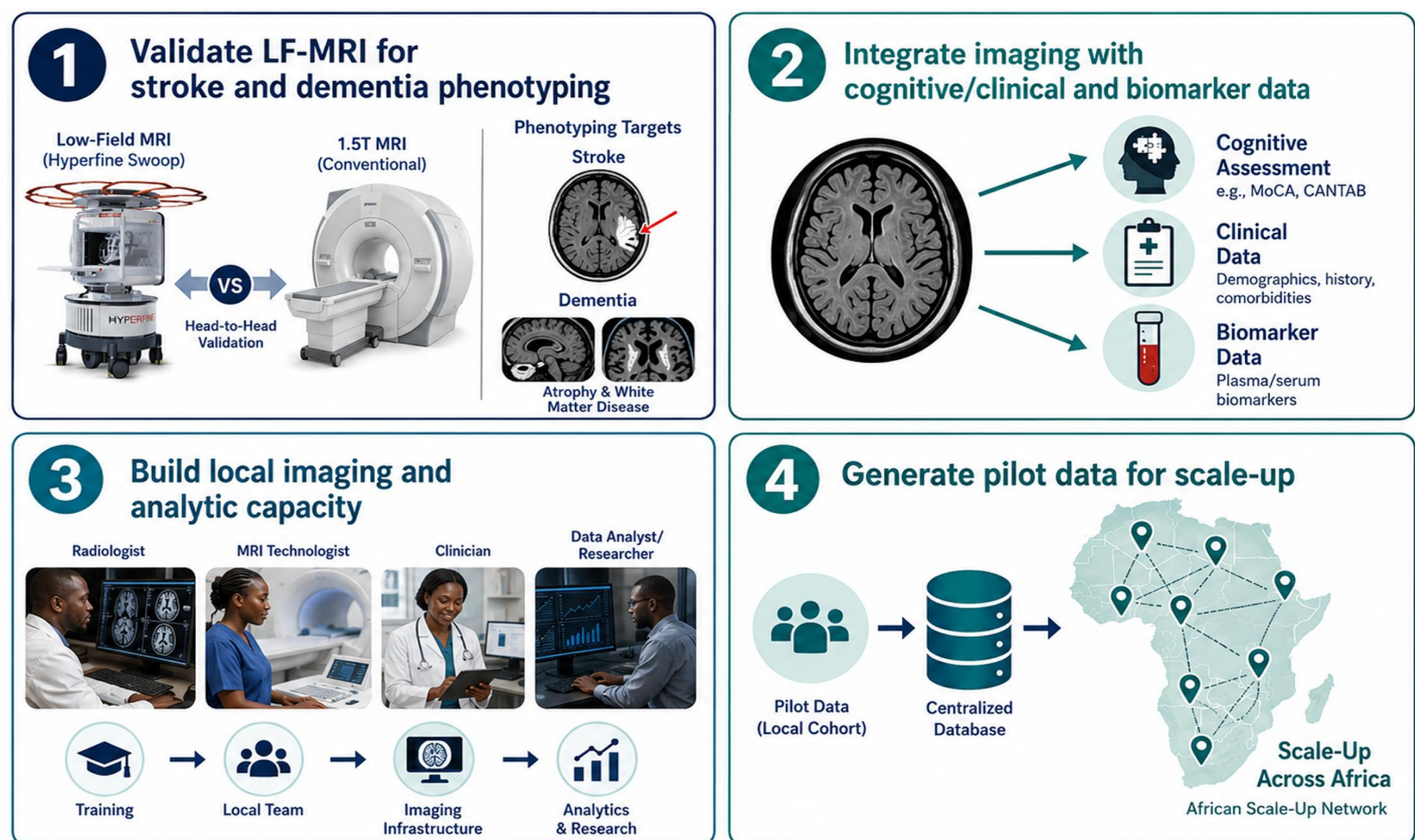
EXPECTED RESULTS



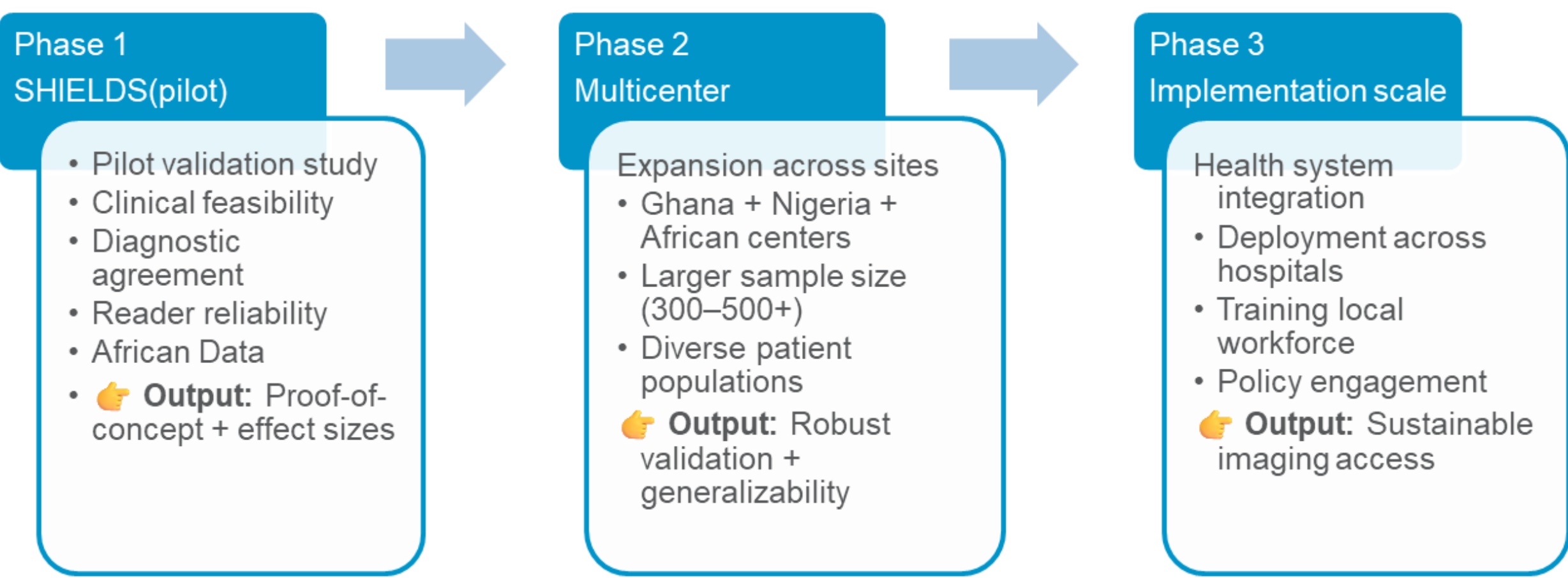
Anticipated Challenges, Mitigation and Limitations

Challenge/limitation	Mitigation	Why feasible
Ethics and approvals	Start early; use KBTH/READD-ADSP pathways; leadership team	Existing site relationships & clinical infrastructure
Recruitment/Consent	Use stroke unit, CT/MRI pathway and READD-ADSP/cognitive clinic; weekly logs	Two recruitment streams increase yield
Comparator timing	Record intervals; prioritise <=24h for stroke; adjust analyses for interval	Routine CT/1.5T MRI available at KBTH
Image quality	Standard protocols, repeat sequences where feasible, QC reviews, artefact training	PI has low-field MRI and imaging quality experience
Data-transfer/security	De-identification, secure storage, data agreements and controlled access	Connectivity/cloud support & SOPs built into the pilot
Overinterpretation	Frame as validation pilot, not replacement; use blinded comparison and transparent reporting	Pilot endpoints focus feasibility and effect sizes

OUR AIMS



OUR PATHWAY TO EQUITABLE IMAGING



OUR CONCLUSION

- **First African evidence** that portable LF-MRI can be integrated into routine hospital care
- **Generate valid biomarkers** for stroke and ADRD,
- **Provide scalable strategies** to reduce neuroimaging inequities
- improve **African representation** in dementia research