WORLD TELEHEALTH INITIATIVE

Improving Healthcare Capacity in Africa:

A Telehealth-Enabled Model for Breast and Cervical Cancer Screening in Rwanda

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BACKGROUND

Breast and cervical cancer are leading causes of mortality among women in sub-Saharan Africa.

Limited access to screening and diagnostic services and long travel distances result in late diagnosis and poor outcomes.

Traditional care pathways require multiple visits and 4–6 hours of travel per visit, driving high loss to follow-up and economic burden.

OBJECTIVE

To evaluate the impact of a telehealth-enabled model that integrates screening, imaging, and specialist consultation to improve access, enhance efficiency, and enable earlier detection of breast and cervical cancer in Rwanda.

METHODS

Study Design
Implementation-based observational analysis of a telehealth-enabled screening model.

Setting
Rwanda National Breast and Cervical Cancer Screening Program sites, including remote clinics and referral hospitals.

Intervention
Hub-and-spoke telehealth model integrating clinical breast exam (CBE), ultrasound (Butterfly iQ), and remote specialist consultation (Teladoc Lite v3).

Data Sources
Program implementation data, screening volumes, care pathway time studies, and operational metrics.

Analytical Approach
Descriptive analysis of program data and care pathway modeling to estimate impact on visits, travel burden, and screening capacity.

CARE PATHWAY TRANSFORMATION

TRADITIONAL CARE PATHWAY

Fragmented • Multiple Visits • High Burden

1 Initial Screening → 2 Imaging (US/Mammo) → 3 Specialist Consultation → 4 Results & Follow-up → Diagnosis

- 4+ Visits
- 4–6 Hours Travel Per Visit
- High Loss to Follow-up

TELEHEALTH-ENABLED MODEL

Integrated • Same-Visit Capabilities • Lower Burden

Screening (CBE/HPV) + Imaging (US ± Mammo) + Remote Specialist Consultation → Diagnosis (Same Visit) 1–2 Visits

- ~50–75% Fewer Visits
- Drastically Reduced Travel Burden
- Improved Follow-up and Outcomes

KEY HEALTH SYSTEM IMPACT

ACCESS EXPANSION

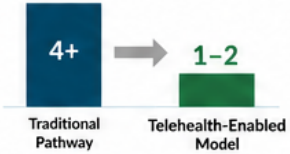
Expands reach to underserved populations

- Extends screening services to underserved rural populations
- Removes geographic barriers through telehealth connectivity
- Brings specialty care closer to communities

CARE PATHWAY EFFICIENCY

Streamlines care and reduces burden

~50–75% reduction in required visits (4+ visits to 1–2 visits)



HEALTH SYSTEM CAPACITY

Increases throughput without proportional infrastructure expansion

- Optimizes specialist time through remote consultation
- Enables task-shifting and builds provider capabilities
- Supports scale-up of screening through existing resources

More women served with existing capacity

ENABLING TECHNOLOGIES

Butterfly IQ+
High-quality portable ultrasound

Teladoc Lite v3
Secure telehealth solutions for remote consultation

IMPLEMENTATION HIGHLIGHTS

- 5 Teladoc Lite v3 devices deployed across Rwanda with full accessory kits
- Successful customs clearance and site installation
- 5 clinicians trained using a train-the-trainer approach
- Strong partnership with Ministry of Health, ICRAD Africa, and local facilities
- Aligned with national cancer control priorities

PARTNER SITES

Gisenyi District Hospital
Pilot implementation site for screening and telehealth integration

Rwandan Military Referral and Teaching Hospital
Referral hub and advanced diagnostic capacity

ICRAD Africa (Kigali)
Training, innovation, and technology collaboration partner

PROGRAM IMPACT (ANNUAL CAPACITY)

50,000+
WOMEN SCREENED
Population-level screening capacity across Rwanda

5,000+
WOMEN AVOIDED ADDITIONAL VISITS
Identified for imaging who would otherwise require separate travel and appointments

500+
CANCERS DETECTED EARLIER
Through improved access, timely diagnosis, and reduced delays in care

LESSONS LEARNED

- ✓ Strong government leadership and stakeholder engagement are critical for successful implementation.
- ✓ Telehealth and mobile ultrasound are feasible and acceptable in remote settings.
- ✓ Training local providers and task-shifting are essential for sustainability.
- ✓ Bureaucratic processes and public health disruptions (e.g., Marburg virus outbreak) can affect timelines.

LIMITATIONS

- Outcomes based on program data and modeled projections; longitudinal clinical outcomes are still being collected.
- Impact estimates may vary by site and over time.
- Requires ongoing evaluation and real-world outcome tracking.

CONCLUSIONS

An integrated telehealth-enabled model for breast and cervical cancer screening in Rwanda can substantially expand access, reduce care pathway inefficiencies, and enable earlier detection. This scalable approach strengthens health system capacity and brings high-quality cancer care closer to the women who need it most.

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