Evaluation of tuberculosis preventive treatment among persons living with HIV in the country of Georgia

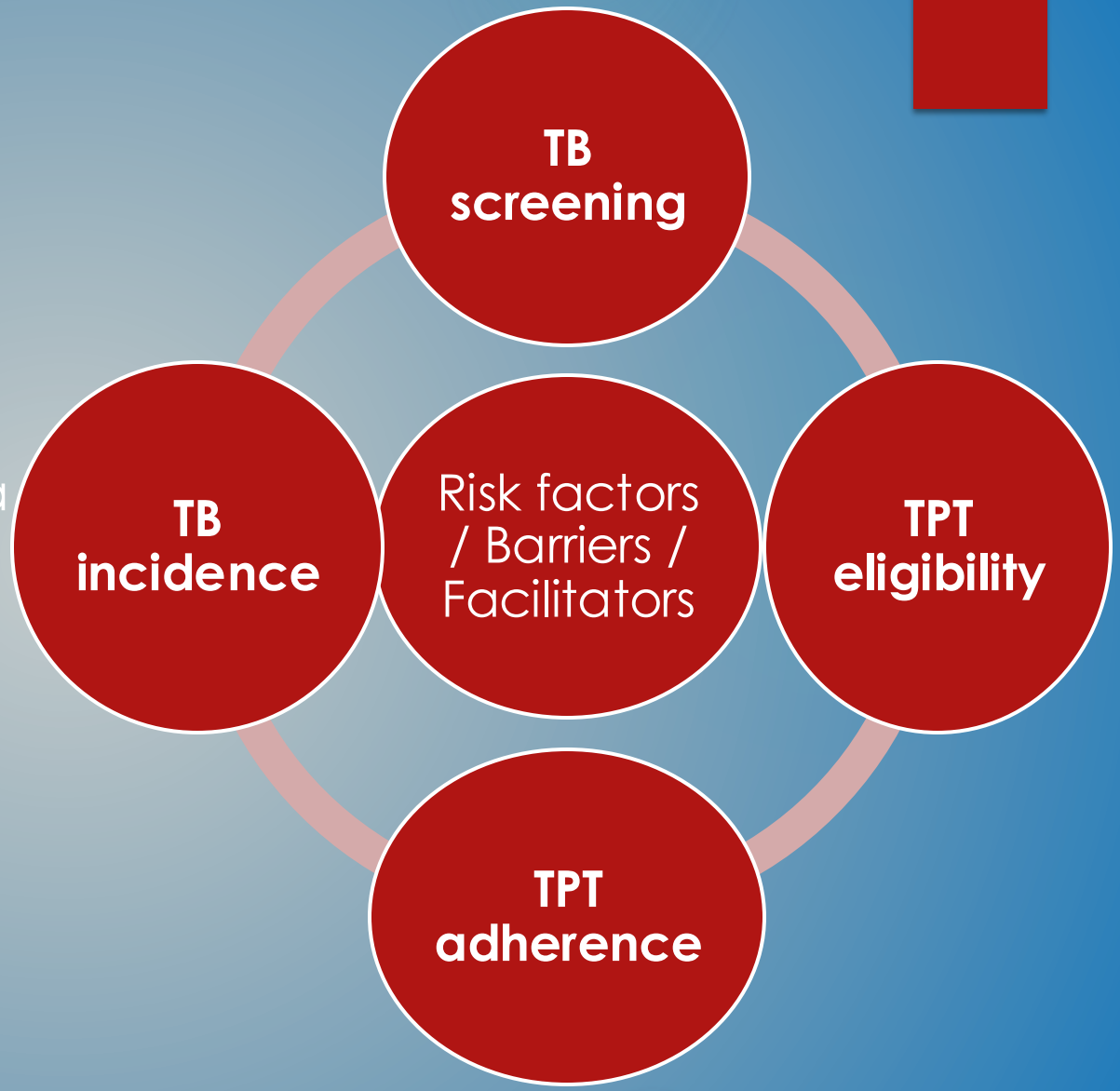
MARIANA BUZIASHVILI, BPHARM, MPH, PHD (C)

A roadmap for today's talk

- Topic introduction, a breakdown of study parts
- Methods and implementation framework
- Identified barriers and facilitators
- Conclusions, recommendations, and next steps

Problem Statement

- TB – a leading cause of morbidity and mortality among PLHIV globally
  - Incidence rate 134/100,000 – 6% among PLHIV (2023)
- Limited data on active TB development among PLHIV in EECA, including Georgia
  - TB accounting for 21% of all deaths among PLHIV in Georgia (2022)
- TPT – essential mechanism to control TB
  - Low uptake globally
- TB/TPT cascade of care among PLHIV – UNKNOWN



Three-part investigation:

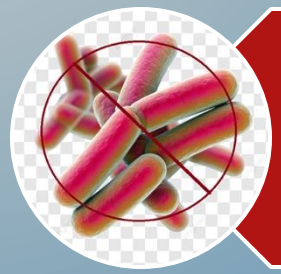
- Study 1 – TB incidence and risk factors among newly diagnosed PLHIV, 2019-2020
  - Quantitative approach
- Study 2 – TPT care cascade analysis, implementation framework-based evaluation of barriers and facilitators to successful TPT provision
  - Mixed methods approach
- Study 3 – Implementation framework-based evaluation of integrated electronic health records system to improve TPT provision among PLHIV
  - Qualitative approach

A brief look into quantitative results

- Retrospective cohort of 1,165 newly diagnose
- TB incidence **10 (95% CI 9.6-10.4)** cases/1,00
  - IDU transm. – 16.0 (15.1-16.9)
  - CD4 <200 µL at diagnosis – 28.0 (27.4-28.6)
  - Not on ART – 22.0 (20.9-23.1)
  - Developed AIDS – 29.1 (28.6-29.6)
- Highest risk (aHR)
  - First year post-HIV diagnosis (mean 200 days, SD 332.4)
  - Elder age
  - CD4 <200 µL at diagnosis
  - AIDS diagnosis

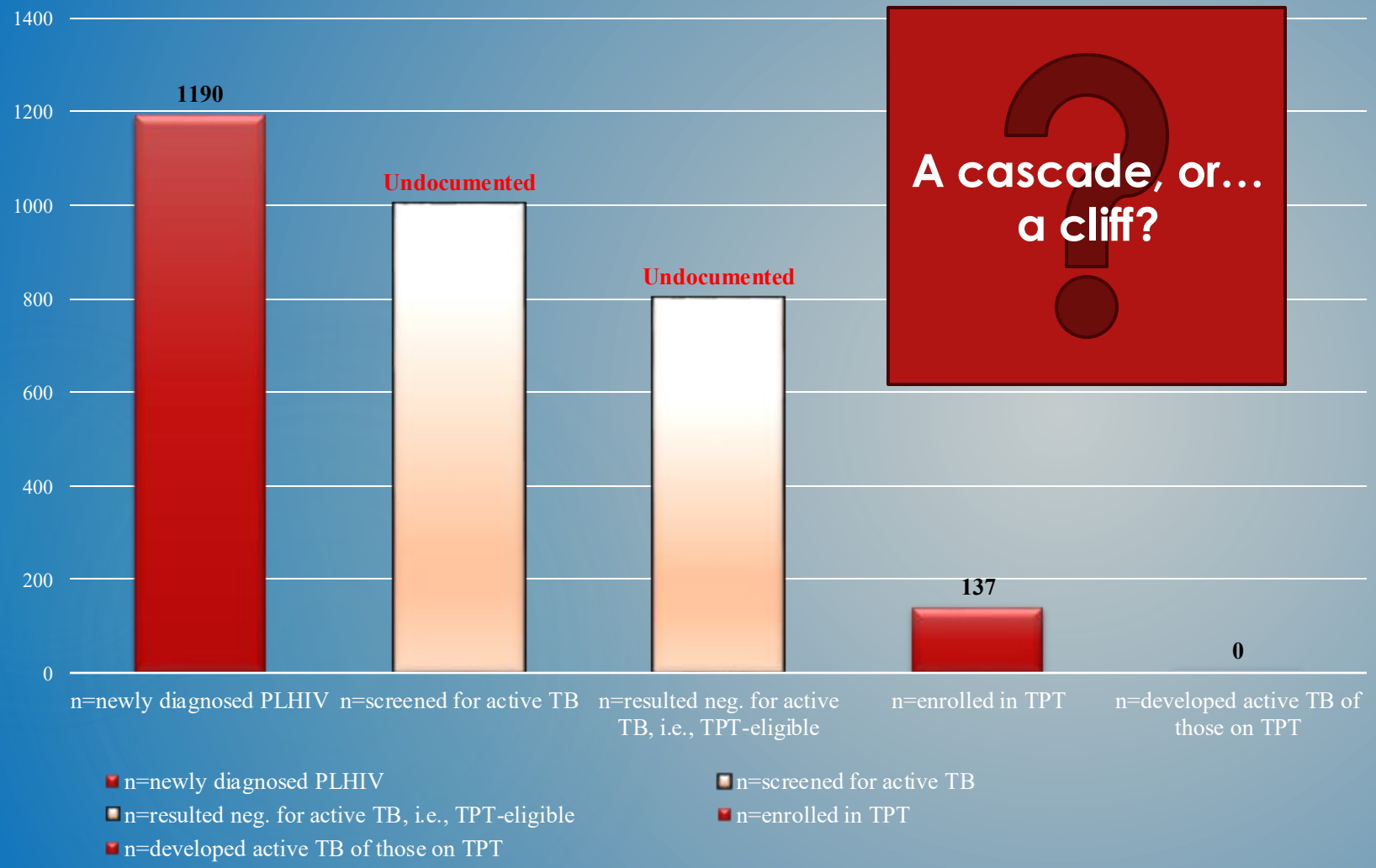
137 (11.8%) received TPT

29 (21.1%) completed full course



None on TPT developed TB disease

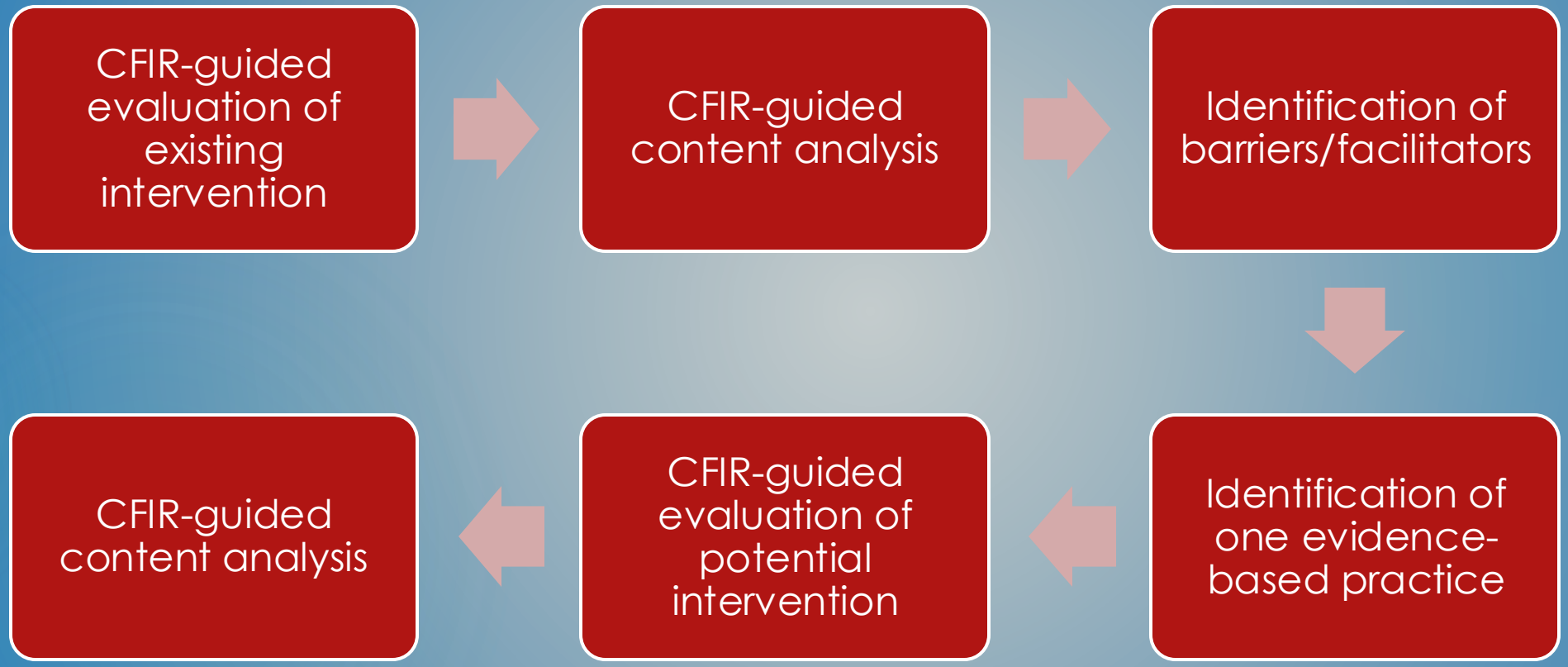
TPT cascade of care among Georgian PLHIV, 2019-2020



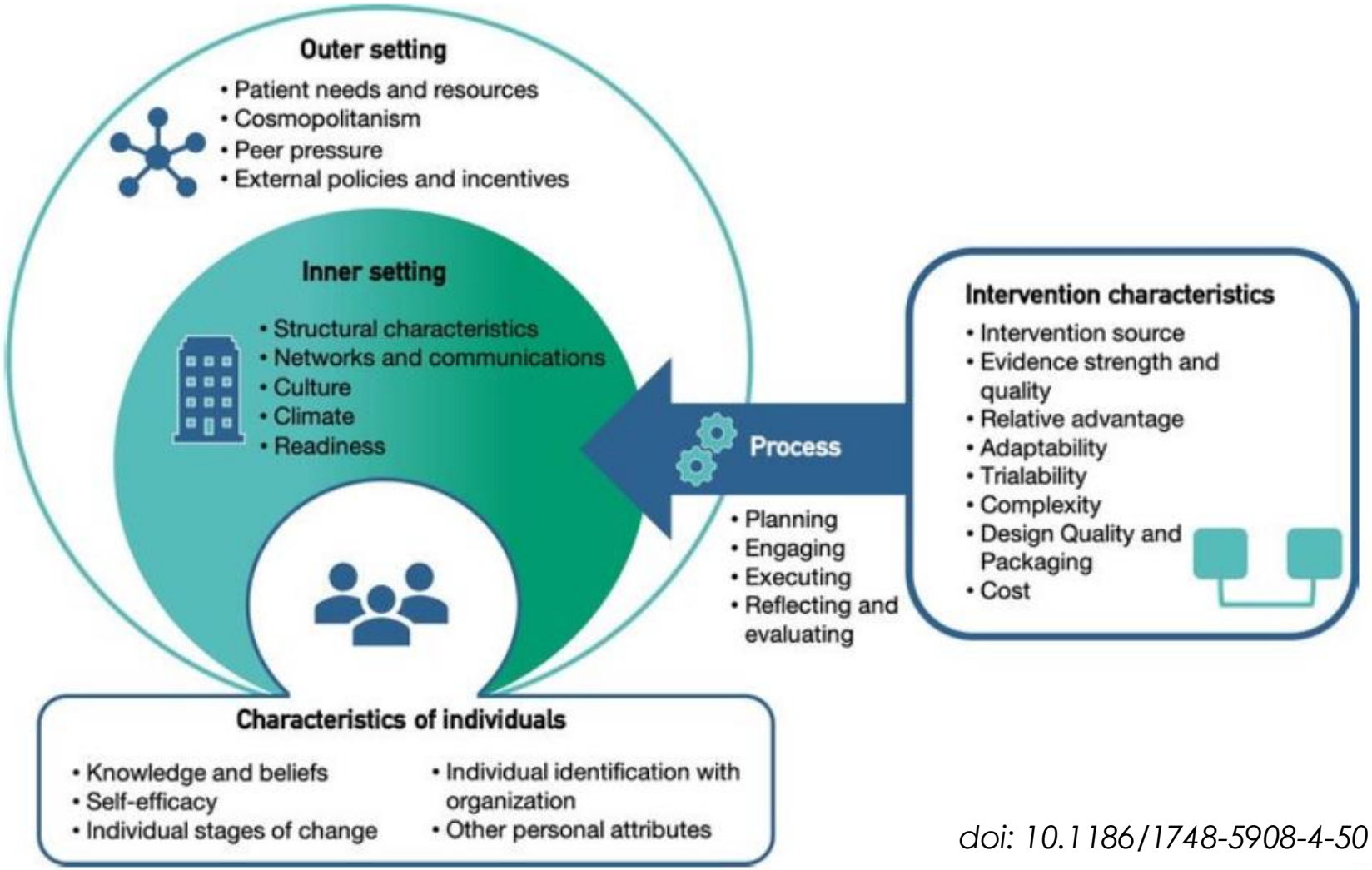
A cascade, or… a cliff?

The system is in place – so why are we still in the dark?

Implementation Evaluation



Consolidated Framework for Implementation Research (CFIR)



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Barriers and Facilitators to TPT Implementation

Intervention Characteristics	Outer Setting	Inner Setting	Characteristics of Individuals	Process of Implementation
• Highly beneficial • Evidence-based • Cost-effective • Relative advantage • Compatibility within existing HC framework • Integration into HIV care is complex	• Limit geographical accessibility • HIV-stigma, status disclosure concerns • External funding and support from intl. organizations • Tx advancement and innovations, e.g., VST	• Overall institutional commitment • Lack of necessary capacity and skills on individual level • No financial interest • Lack of formal communication channels	• Effective collaboration across all stakeholder levels required • All level identified as key contributors • Lack of communication, coordination, and shared accountability	• Lack of capacity building training • Poor data recording practices • Weak monitoring frameworks and evaluation mechanisms • Lack of financial and human resources to support process

Key factors summarized

BARRIERS	FACILITATORS
Fragmented services between HIV and TB programs and guideline inconsistencies	External funding and international support
Data gaps and poor documentation	Technical support from decision-making level
Stigma and disclosure concerns	Motivated staff and willingness to support the process
Lack of provider training and digital literacy	Integration of TPT into HIV care, specifically via standardized electronic data platform

Evidence-based practice to support TPT implementation

- **Integrated Electronic Health Records (EHR) system**
  - An integrated digital platform identified as one of the potential factors to address TPT implementation barriers, including siloed TB/HIV services, delays in TPT initiation, difficulties with adherence tracking, referrals across facilities, and gaps in data documentation and accountability.
    - Emani et al., Muthee et al., – EHRs as tools of improving continuity of care, service integration, and long-term management of chronic conditions through enhanced patient tracking
    - Lee et at., 2021; Musaazi et al., 2023 – integrated EHRs promoted effective patient follow-up and adherence monitoring, streamlined data recording and reporting, improved coordinated care delivery, and informed clinical decisions
    - Murphy et al., 2022 – consolidated governance, adequate financial resources, and effective stakeholder engagement supported integrated TB/HIV EHR implementation
- **Objectives:**
  - To explore the barriers and facilitators in Georgian context
  - To inform strategies to enhance digital infrastructure, improve TPT delivery, and ultimately reduce TB burden among PLHIV in Georgia

Barriers and Facilitators to EHR Implementation

Intervention Characteristics	Outer Setting	Inner Setting	Characteristics of Individuals	Process of Implementation
• Advantageous over current practices • Supporting coordinated care, patient follow-up, and informed decision-making • Data security concerns to protect patient confidentiality	• Alignment with global best practices • External support could accelerate adoption • Lack of national-level leadership, dedicated resources, and clear guidance	• Positive attitude and overall institutional readiness toward this innovation • HR constraints, physical infrastructure, technical capacity and equipment, and adequate data security systems • Initially time-consuming, but significantly simplified workflow in the long-run	• All level identified as key components to effective implementation • Managing-level leaders – active early involvement to guide and facilitate downstream adoption • Mid-level leaders and implementors – strong sense of professional readiness and commitment to patient care on all levels	• Phased implementation strategy: initial needs assessment, careful planning, engagement, and coordination • Multidisciplinary working group, including continuous monitoring and evaluation • Comprehensive and iterative training for all service providers

Key factors summarized

BARRIERS	FACILITATORS
Confidentiality and stigma-related concerns	Alignment with donor recommendations on digitalization priorities
Outdated IT infrastructure and limited hardware	Significant advantage over current practice
Digital literacy gaps among elderly healthcare workers	Existing strong [though informal] collaboration between TB/HIV programs
Legal/administrative restrictions	Perceived value in continuity of care and patient tracking

Conclusions and Next Steps

Key Takeaways:

- TPT remains underutilized:
  - Despite high TB incidence among PLHIV
  - Despite available tools and resources
- Service fragmentation and data silos impede progress
- Integrated EHR systems can potentially be a game-changer
- Implementation science drives systemic solutions and offers tools for sustainable reform

Proposed implementation strategy:

- Phased EHR rollout in pilot sites
- Legal and data protection policy reform
- Capacity-building for HCWs
- Ongoing stakeholder feedback loop
- Continuous evaluation of implementation process

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Contact:

buziashvili.mari@gmail.com

mbuzias@emory.edu

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