Estimating ranges on the scale of implementation for evidence-based HIV/AIDS interventions in the United States.

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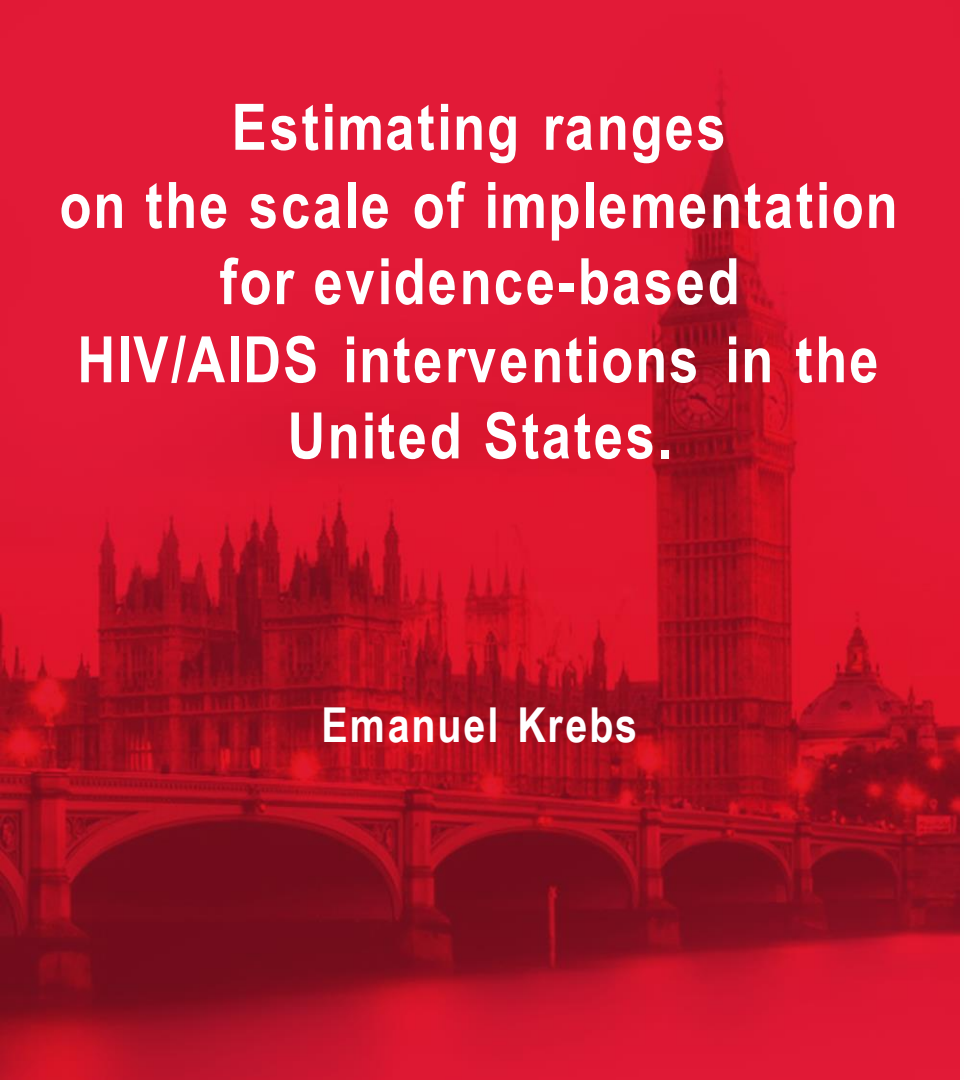

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Estimating ranges on the scale of implementation for evidence-based HIV/AIDS interventions in the United States.

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Background

- Simulation modeling plays a critical role in priority setting for HIV treatment and prevention interventions.
- Dynamic HIV transmission models can provide a unified framework to quantify the health and economic value of different strategies to address the HIV epidemic while accounting for microepidemic context and the synergistic effects of different combinations of interventions.
- Scale of delivery of HIV interventions can have an impact on the value they provide.
- A number of efficacious HIV interventions are available; however, there is a paucity of evidence on real-world implementation of many of these interventions.

Objective

- To inform a U.S. six-city microepidemic HIV transmission model, we executed a targeted literature review to identify previously-documented ranges of the scale of delivery for a set of evidence-based interventions for the treatment and prevention of HIV/AIDS among adults.

This research informed other work presented during this conference:

1. ***What will it take to 'End the HIV epidemic' in the US? An economic modeling study in 6 cities***
   - *Looking Beyond 90-90-90 to Support, Measure, and Model City-Level Impact* session: September 10, 16:00–17:15 by Bohdan Nosyk.
2. ***The impact of localized implementation: determining the cost-effectiveness of HIV prevention and care interventions across six U.S. cities***
   - *Policy/Finance* session: September 11, 14:30–15:30 by Emanuel Krebs.

Methods

We identified 16 evidence-based HIV interventions selected from the US CDC's Compendium of Evidence-Based Interventions and Best Practices for HIV Prevention and the literature within four specific domains:

Protect

- Syringe services program (SSP)
- Medication for opioid use disorder (MOUD) with buprenorphine
- MOUD with methadone
- Targeted pre-exposure prophylaxis (PrEP) for high-risk MSM & MWID

Diagnose

- Opt-out testing in ER
- Opt-out testing in primary care (PC)
- EMR testing offer reminder
- Nurse-initiated rapid testing
- MOUD integrated rapid testing

Treat

- Case management for initiation
- Care coordination for retention
- Care coordination for retention, targeted
- EMR alert of suboptimal ART
- Same-day ART initiation

- Enhanced personal contact
- Re-linkage program

Methods

We used the *Reach Effectiveness Adoption Implementation Maintenance (RE-AIM)* framework to define the scale of delivery.

- Scale: proportion of a target population that is provided with an intervention.

- We defined the implementation period as an 18-month scale-up from status quo service levels up to the scale of delivery defined for each intervention.

Methods

We used the *Reach Effectiveness Adoption Implementation Maintenance (RE-AIM)* framework to define the scale of delivery.

- Scale: proportion of a target population that is provided with an intervention

HIV prevention → Expanded access, or additional scale-up

Methods

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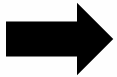
- Scale: proportion of a target population that is provided with an intervention

HIV testing

ART engagement

ART re-engagement



Reach X Adoption

Methods

We used the *Reach Effectiveness Adoption Implementation Maintenance (RE-AIM)* framework to define the scale of delivery.

- Scale: proportion of a target population, *j*, that is provided with an intervention, *i*

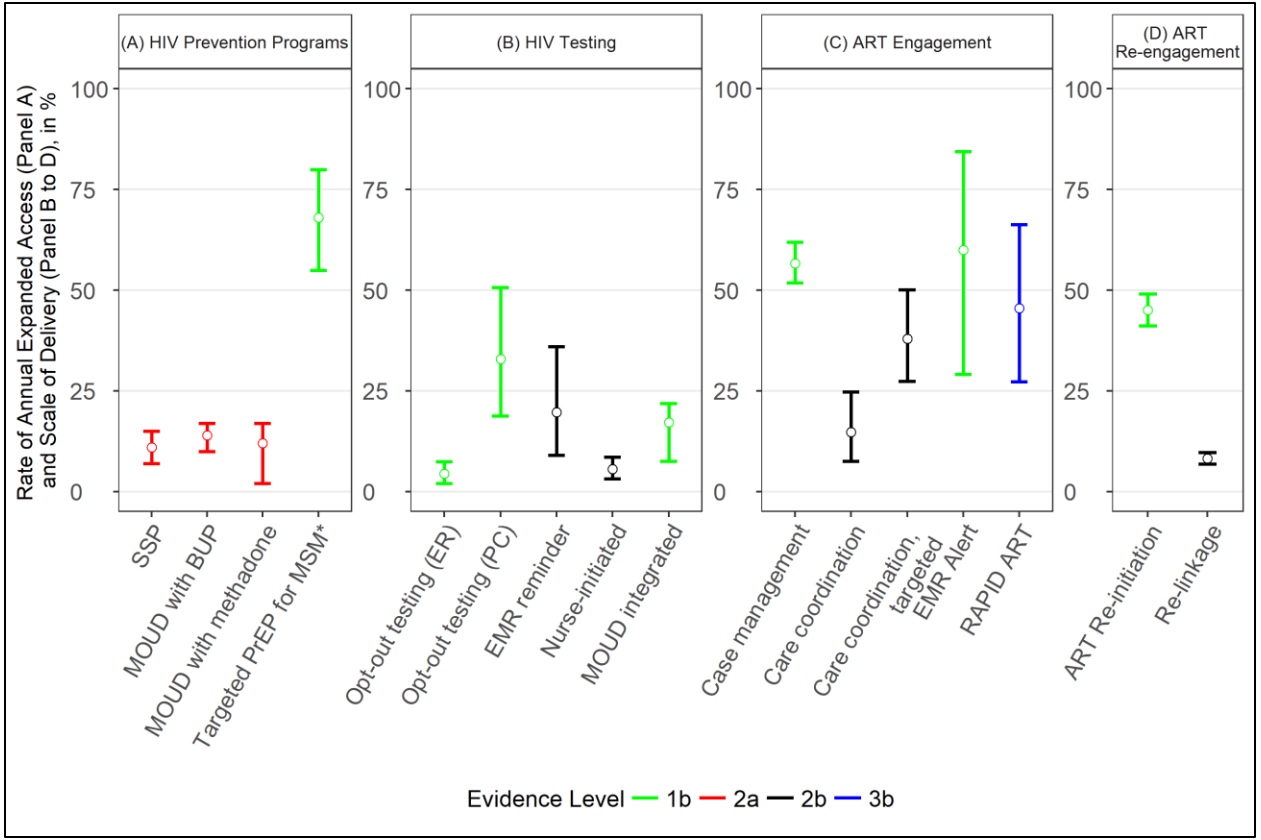
$$Scale_{ij} = Reach_{ijk} \times Adoption_{ik}$$

- **Reach**: participation rate in a given intervention, conditional on:
  a) the probability an individual will access services in setting *k*
  b) the probability the individual will accept the intervention being delivered, if applicable
- **Adoption**: the proportion of a healthcare setting, *k*, that delivers the intervention

Results

We synthesized evidence from:

- 11 peer-reviewed publications;
- 12 public health and surveillance reports;
- 3 publicly-available data sets.



Results

A worked example:

Intervention	Reach* (Setting-specific)	Reach	Adoption (Setting-specific)	Adoption	Scale of Delivery** (95% CI)
HIV Testing					*Reach X Adoption*
Opt-out HIV testing in ER	% with ER visit L12M^^	11%-29%	% visits with testing	19%-26%	3%-6%[Ŧ] (2%, 7%)
Opt-out HIV testing in primary care	% seeing Dr. L12M^	59%-94%	% visits with testing	32%-54%	25%-40%[Ŧ] (19%, 51%)
EMR testing offer reminder	% with ER visit L12M^^	11%-29%	% with certified EMR	97%-100%	11%-29%[Ŧ] (9%, 36%)
Nurse-initiated rapid testing	% seeing Dr. L12M^	10%-16%	% visits with testing	32%-54%	4%-7%[Ŧ] (3%, 9%)
MOUD integrated rapid testing	% accepting intervention	54%	% prescribers implementing	14%-40%	17% (8%, 22%)
ART engagement					
Individual case management for ART initiation	% accepting intervention	86%	% clinics implementing	60%-71%	57% (52%, 62%)
Individual care coordination for ART retention	% PLHIV eligible for RWHAP	38%-75%	% RWHAP clinics offering intervention	20%-33%	10%-20%[Ŧ] (8%, 25%)
Individual care coordination for ART retention, targeted	% initiating ART with CD4<200[Ŧ]	46%-70%	% clinics implementing	60%-71%	30%-46%[Ŧ] (27%, 50%)
EMR alert of suboptimal ART engagement	% receiving HIV care L12M	60%-91%	% with certified EMR†	69%-86%	42%-78%[Ŧ] (29%, 84%)
RAPID ART initiation	% PLHIV linked to care	46%-93%	% clinics implementing	60%-71%	30%-61%[Ŧ] (27%, 66%)
ART re-engagement					
Enhanced personal contact	% successfully enrolled	69%	% clinics implementing	60%-71%	45% (41%, 49%)
Re-linkage program	% successfully contacted	24%	% RWHAP funded clinics	29%-40%	8% (7%, 10%)

Conclusion

- Basing simulation analyses and estimating impacts of evidence-based interventions delivered at previously-documented levels of implementation is necessary to assessing their potential population-level health and economic effectiveness.

Our Scientific Advisory Committee

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Acknowledgements

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