Modeled Comparison of Well-Being and Quality-Adjusted Life Years as HIV Outcomes in Southern Africa

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BACKGROUND

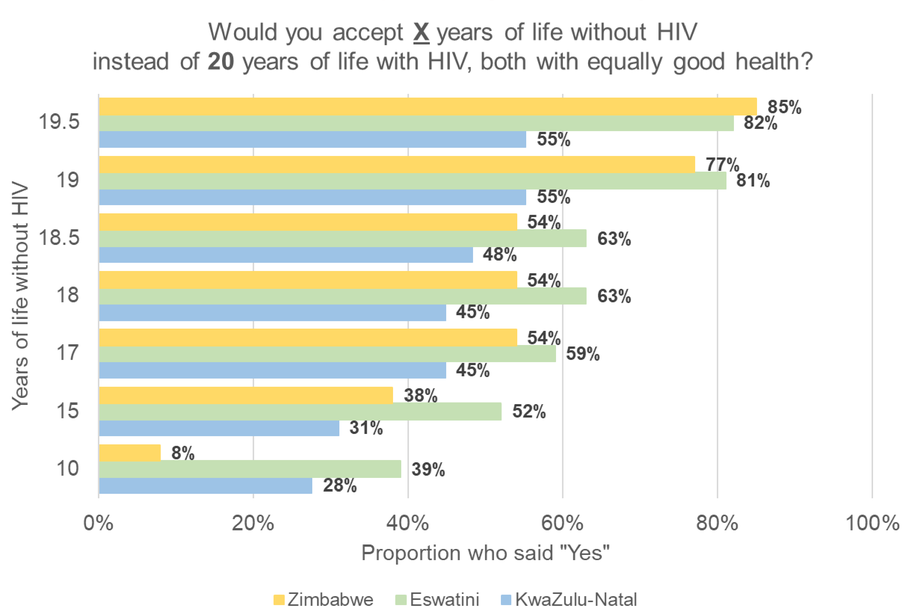
- **Quality-adjusted life-years (QALYs)**
  - Assess the value of medical interventions
  - Do not consider factors beyond health-related quality-of-life (HRQoL)
- **Well-being-adjusted life-years (WALYs)**
  - An emerging metric that broadens QALYs
  - Consider factors beyond HRQoL, e.g. stigma
- **Aim:** Compare outcomes of WALYs and QALYs in an allocative efficiency analysis of HIV-related interventions

METHODS

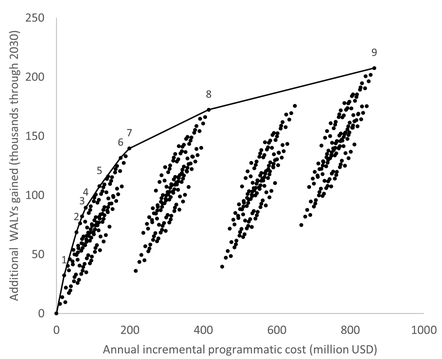
- Used validated HIV compartmental transmission model calibrated to three different settings
- Model inputs varied by setting
  - Zimbabwe: ~10% adult HIV prevalence
    - ❖ 97% knows HIV status
    - ❖ 98% on ART among those knowing HIV status
    - ❖ 95% virally suppressed among those on ART
  - Eswatini: ~25% adult HIV prevalence
    - ❖ 94% knows HIV status
    - ❖ 97% on ART among those knowing HIV status
    - ❖ 96% virally suppressed among those on ART
  - KwaZulu-Natal, South Africa: ~30% adult HIV prevalence
    - ❖ 97% knows HIV status
    - ❖ 86% on ART among those knowing HIV status
    - ❖ 79% virally suppressed among those on ART
- QALYs assessed as per usual methods
  - Acute HIV: 0.06 disutility
  - Chronic HIV: 0.15 disutility
  - Advanced HIV: 0.21 disutility
  - Treatment side effects: 0.053 disutility
- WALYs assessed with a time trade-off based procedure
  - Trade-off: Anonymous, and during on-site workshops
    - ❖ Web-based elicitation procedure
    - ❖ Participants asked the proportion of remaining life they would give up to avoid HIV if treatment eliminated all HIV-related HRQoL impairments
  - Participants included:
    - ❖ Ministry of Health leadership
    - ❖ Academic and civil society representatives
    - ❖ Local and international donors
    - ❖ HIV program implementation partners
    - ❖ HIV prevention/treatment technical working groups

Well-being-adjusted life years (WALYs) produced numerically lower ICERs than QALYs (53-68% decrease) in HIV allocative efficiency analyses for Southern Africa settings.

TRADE-OFF RESULTS – Recursive Bipartitioning to Assess Beyond-HRQoL Disutilities



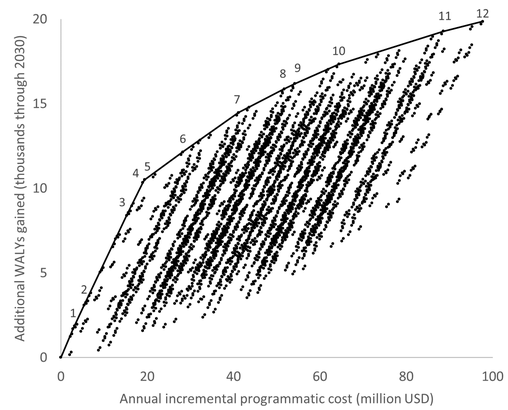
MODEL RESULTS – Zimbabwe WALYs gained (Mean Beyond-HRQoL Disutilities: 0.20)



	Intervention	ICER (QALYs → WALYs)
1	Long-Acting ART	$ 1.5k → **$ 0.7k**
2	+ Long-Action PrEP	$ 2.1k → **$ 0.9k**
3	+ Index Tracing	$ 3.0k → **$ 1.2k**
4	+ Differentiated Care	$ 3.4k → **$ 1.3k**
5	+ VMMC	$ 5.3k → **$ 2.1k**
6	+ HIV Self-Testing	$ 5.6k → **$ 2.4k**
7	+ Defaulter Tracing	$ 7.8k → **$ 3.0k**
8	+ Community-Based Testing	$15.3k → **$ 6.6k**
9	+ Oral PrEP	$29.5k → **$12.8k**

57-61% decrease from QALYs to WALYs

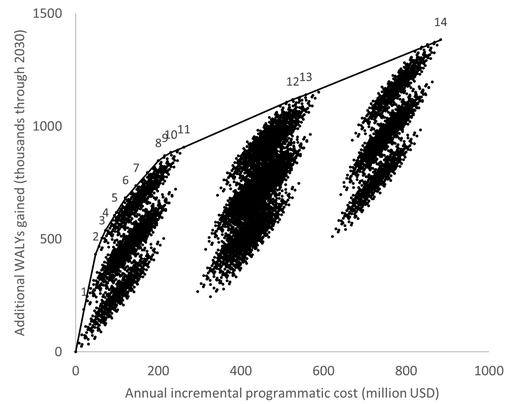
MODEL RESULTS – Eswatini WALYs gained (Mean Beyond-HRQoL Disutilities: 0.25)



	Intervention	ICER (QALYs → WALYs)
1	Defaulter Tracing	$ 3.9k → **$ 1.7k**
2	+ HIV Self-Testing	$ 5.6k → **$ 1.8k**
3	+ LA PrEP	$ 5.7k → **$ 1.9k**
4	+ Long-Acting ART	$ 5.8k → **$ 2.0k**
5	– Risk Communication	$ 7.4k → **$ 2.4k**
6	+ Index Tracing	$13.1k → **$ 5.4k**
7	+ Community-Based Testing	$17.1k → **$ 5.5k**
8	+ Commodity Distribution	$18.2k → **$ 7.5k**
9	+ Condom Distribution	$24.4k → **$ 7.9k**
10	+ VMMC	$27.4k → **$ 8.9k**
11	+ Oral PrEP	$38.3k → **$12.4k**
12	+ DREAMS for AGYW	$48.4k → **$15.7k**

58-68% decrease from QALYs to WALYs

MODEL RESULTS – KwaZulu-Natal WALYs gained (Mean Beyond-HRQoL Disutilities: 0.17)



	Intervention	ICER (QALYs → WALYs)
1	Long-Acting ART	$ 227 → **$107**
2	+ Long-Action PrEP	$ 237 → **$112**
3	+ HIV Self-Testing	$ 268 → **$126**
4	+ DREAMS for AGYW	$ 285 → **$135**
5	+ Index Tracing	$ 334 → **$156**
6	+ VMMC	$ 382 → **$177**
7	+ Defaulter Tracing	$ 432 → **$199**
8	+ Community-Based Testing	$ 512 → **$236**
9	+ Differentiated Care	$ 540 → **$249**
10	+ Condom Distribution	$ 567 → **$261**
11	+ ART Support	$ 630 → **$289**
12	+ Oral PrEP – ART Support	$1015 → **$470**
13	+ ART Support	$1059 → **$489**
14	+ CASM Screening/Treatment	$1379 → **$639**

53-54% decrease from QALYs to WALYs

LIMITATIONS

- Time trade-off did not use nationally representative sample
- Did not account for discounting of time trade-off results
- Assumed disutilities are additive
- Incomplete reliability testing, and not yet cross-validated with EuroQol's EQ-HwB
- Willingness-to-pay for WALYs less certain than willingness-to-pay for QALYs

CONCLUSIONS

- Beyond-HRQoL can significantly impact adjusted life expectancy
- WALYs produces numerically lower ICERs than QALYs for interventions preventing HIV
- May yield alternative decision making inferences depending on willingness-to-pay for WALYs

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