Addressing Alcohol Use and Depression as a Strategy to Reduce HIV in KwaZulu-Natal, South Africa

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Background

- KwaZulu-Natal (KZN) has the highest burden of HIV infections in South Africa, (~22%, HSRC 2023).
- Conditions of Alcohol, Substance, and Mood disorders (CASM) substantially increase HIV risk behaviors and impair the care cascaded.
- Aim: To identify the impact and cost-effectiveness of screening and treatment for alcohol use disorder (AUD) and major depressive disorder (MDD), as potential strategies to reduce HIV burden in KZN.

Methods

Modeling approach:

- HIV compartmental transmission model
- CASM impacts:
  - Risk behavior
  - ART adherence
  - Retention in care
- Compared:
  - Prevention as usual (PAU)
  - CASM screening and treatment (CASM)

Intervention Screening and Treatment:

- Screening tools:
  - AUDIT-C for alcohol use disorder
  - PHQ-9 for major depressive disorder
- Treatment method:
  - Culturally tailored motivational interviewing and problem-solving therapy for AUD
  - Cognitive behavioral therapy for MDD

Model Population:

- High priority risk groups:
  - Adolescent girls and young women (AGYW) 15-24y
  - Adolescent boys and young men (ABYM) 15-24y
  - Females sex workers (FSW)
  - Men who have sex with men (MSM)
  - Men 25-34y

Outcomes Measured:

- Infections averted through 2030
- Quality-adjusted-life-years (QALYs) gained
- Cost per infection averted
- Cost per QALY gained

Targeting **FSW**, **MSM**, **AGYW,** with screening and treatment for Alcohol Use Disorder and Major Depression in KZN, South Africa is highly cost-effective for HIV prevention

Results

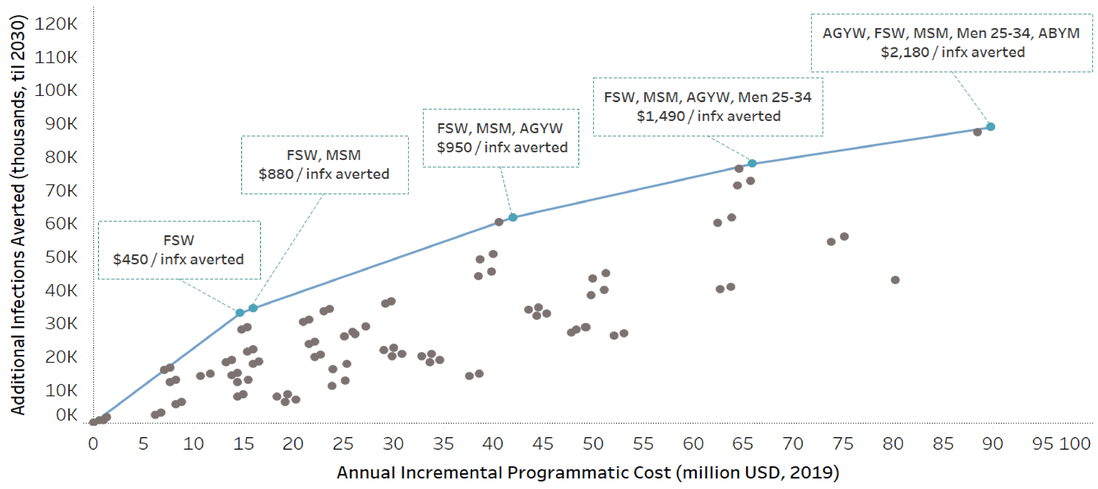
Impact of AUD and MDD on New HIV Infections:

- AUD accounts for 28.3% of new HIV infections
- MDD accounts for 11.8% of new HIV infections
  - Together, they account for 33.6% of new HIV infections due to overlap

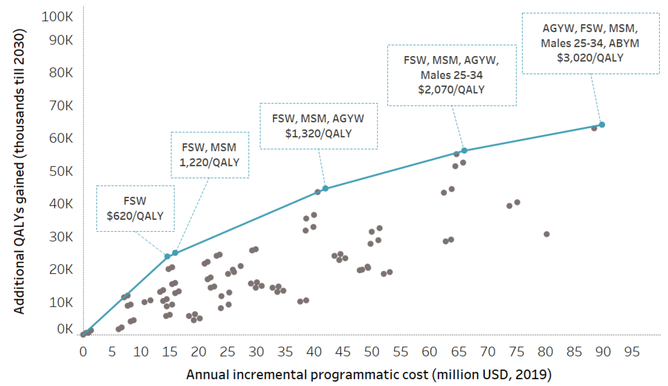
Impact of Screening and Treatment

Screening and treatment interventions	Percent of HIV infections reduced	Cost per infection averted	Cost per QALY
AUD	14.3% ↓	~ $2,000	~ $2,900
MDD	5.8% ↓	~ $1,900	~ $2,600
Combined AUD and MDD	25.8% ↓	~ $1,600	~ $2,500

Efficient Frontier showing infections averted by screening and treating AUD and MDD among risk groups



Efficient Frontier QALYs gained by screening and treating AUD and MDD among risk groups



Efficiency of Interventions targeting groups:

- Female sex workers (FSW):
  - $450/ infection averted, $620/QALY
- Men who have Sex with Men (MSM):
  - $880/ infection averted, $1,220/QALY
- Adolescent girls and young women (AGYW):
  - $950/ infection averted, $1,320/QALY
- Men ages 25-34:
  - $1,490/ infection averted, $2,070/QALY
- Adolescent boys and young men (ABYM):
  - $2,180/ infection averted, $3,020/QALY

Conclusion

- Integrated AUD and MDD screening and treatment has the potential to substantially reduce HIV infections in KZN with very favorable cost effectiveness.
  - Target screening and treatment based on behavioral risk
- These results may inform policy efforts aimed to cost-effectively reduce HIV infections and optimize resource allocation.
  - Likely not applicable to settings with less binge drinking and/or alcohol use disorders

Additional Key Information

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