Policy Forum for PLoS Collection on HIV Targets

HIV prevention for the next decade: Appropriate, Person-centred, Prioritised, Effective, Combination Prevention

Supplementary table and figures.

One of the most striking features of the epidemiology of HIV is the heterogeneous distribution across geographies [1]. More sophisticated mathematical models are providing better estimates of incidence at sub-national levels and highlighting the huge variation in incidence within countries and across different ages and genders. Table 1 shows the highest, lowest and median estimated incidence per 100 person-years among women and men aged 15-24 in districts of five countries in East, Central and Southern Africa [2]. Figure 1 shows the range of incidence among women aged 15-24 across all districts in the same countries with the districts from Table 1 highlighted. In each case there is a several fold difference between the incidence in different sub-national administrative areas. What is also striking, is that several recent clinical trials in these same countries have recruited young women in whom the incidence measured in the control or placebo arms was considerably higher than these averages [3,4,5].

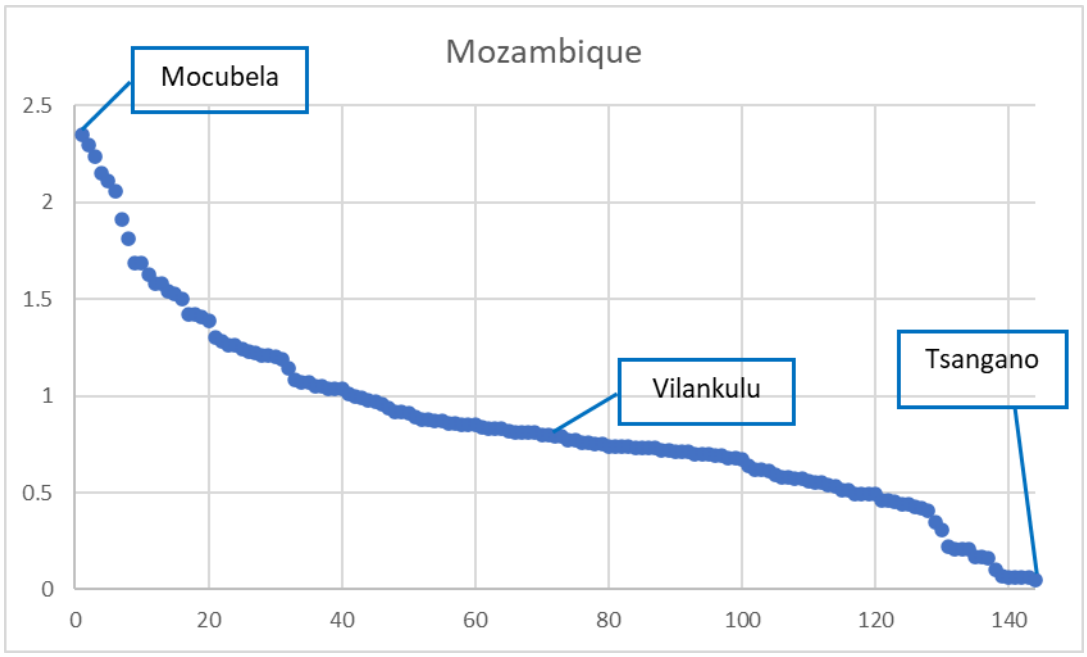
Table 1: Examples of sub-national areas in East and Southern Africa with diverse HIV epidemics by age and sex: 2020

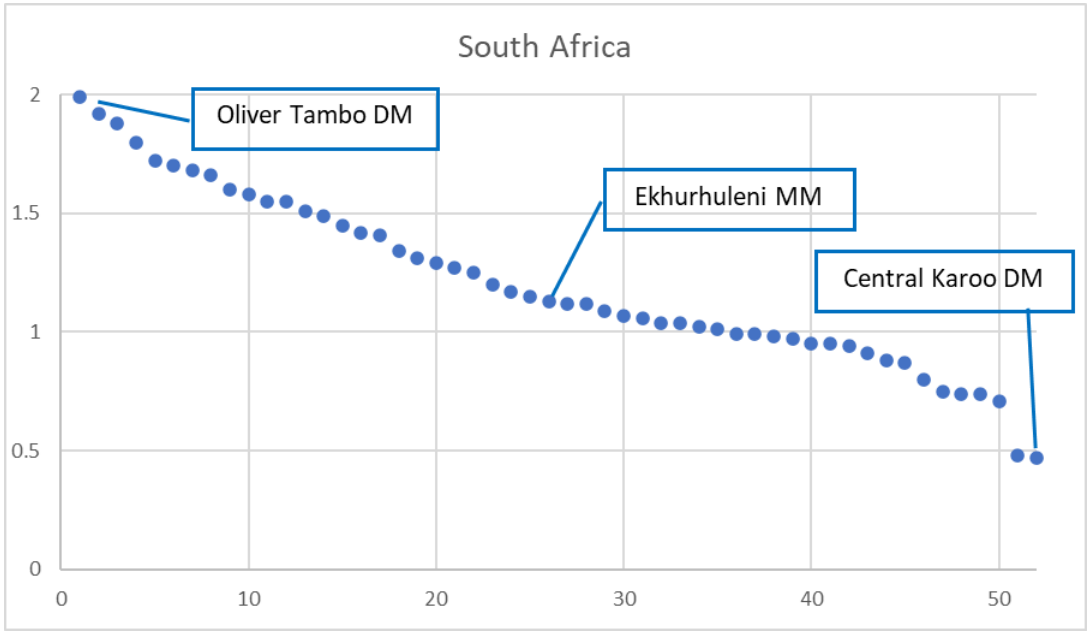
Country	Sub-national area	HIV Incidence(and 95% credible interval) per 100 person-years among young women 15-24		HIV Incidence (and 95% credible interval) per 100 person-years among young men 15-24	
Mozambique (High)	Mocubela	2.35	1.57-3.34	0.71	0.47-1.01
Mozambique (Median)	Vilankulu	0.79	0.54-1.11	0.25	0.17-0.35
Mozambique (Low)	Tsangano	0.05	0.03-0.09	0.02	0.01-0.03
South Africa (High)	Oliver Tambo DM	1.99	1.26-3.07	0.58	0.31-0.98
South Africa (Median)	Ekhurhuleni MM	1.13	0.71-1.18	0.23	0.12-0.41
South Africa (Low)	Central Karoo DM	0.47	0.26-0.77	0.13	0.06-0.25
Uganda (High)	Kalangala	0.72	0.52-1.01	0.25	0.18-0.35
Uganda (Median)	Mbale	0.21	0.16-0.28	0.06	0.04-0.08
Uganda (Low)	Yumbe	0.04	0.03-0.07	0.01	0.01-0.02
Kenya (High)	Kisumu	0.69	0.58-0.81	0.24	0.2-0.28
Kenya (Median)	Machakos	0.12	0.09-0.15	0.02	0.02-0.03
Kenya (Low)	Mandera	0	0-0.01	0	0
Zimbabwe (High)	Bulilima	0.93	0.76-1.14	0.31	0.25-0.37
Zimbabwe (Median)	Chitungwiza	0.42	0.34-0.53	0.12	0.09-0.15
Zimbabwe (Low)	Centenary	0.17	0.13-0.22	0.07	0.05-0.09

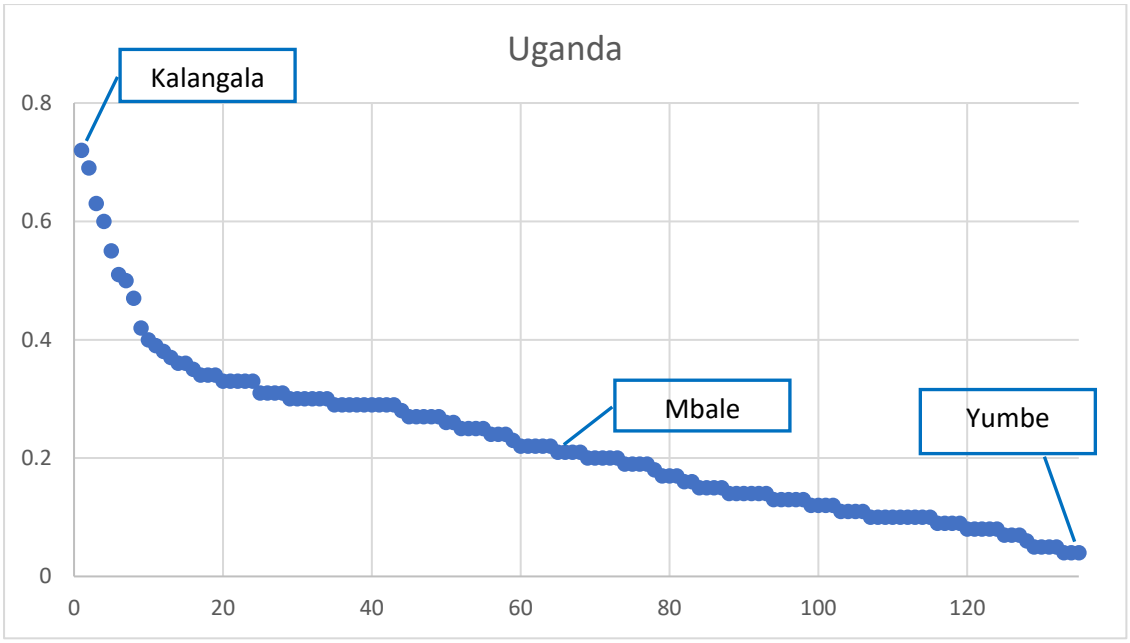
Source: UNAIDS Epidemiological Estimates 2021. https://naomi-spectrum.unaids.org/

Figure 1.a-e

Estimated incidence of HIV per 100 person years among women aged 15-24 in sub-national areas across five African countries, ranked from highest to lowest.



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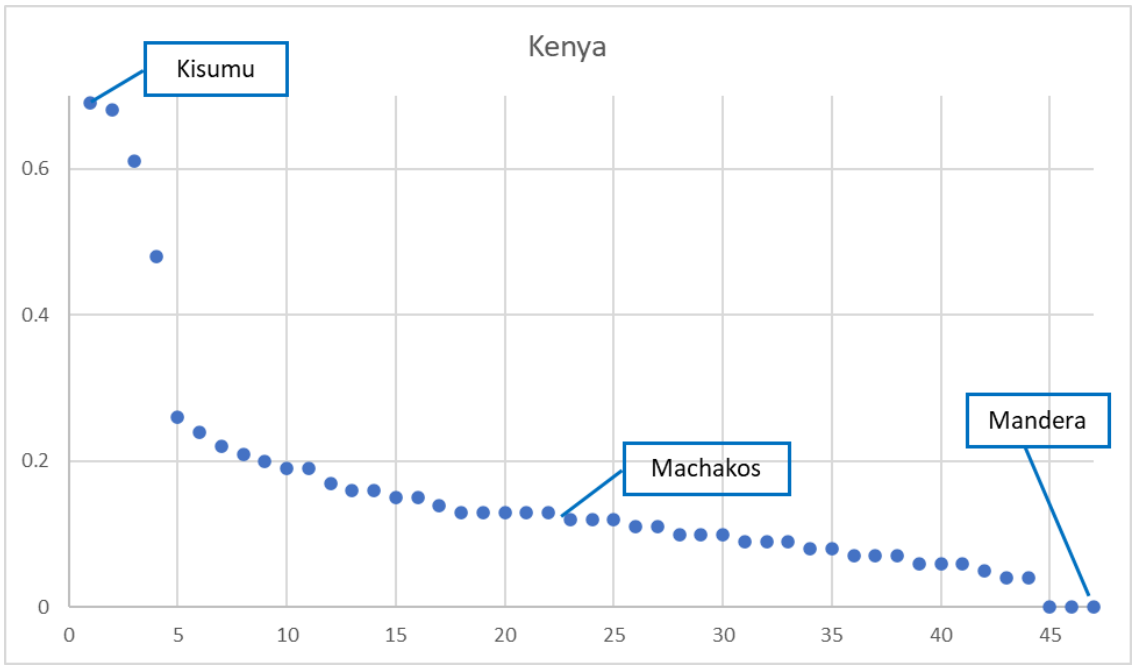
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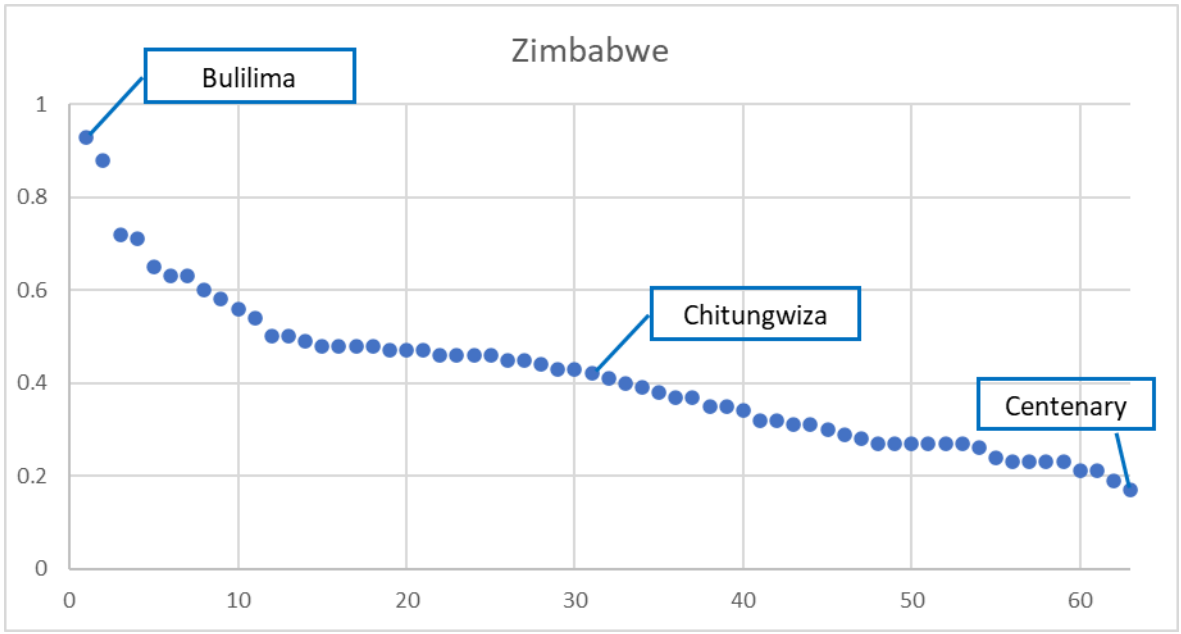

https://naomi-spectrum.unaids.org/

Specific HIV prevention targets.

In order to model global estimates or the impact and resource needs for the HIV response over the next years, specific prevention targets have been proposed and are shown in figure 2 [6].

However, these should be seen as global targets for what needs to be reached if their impact is to achieve the global targets for 2030. Prioritised prevention can be stratified according to the level of HIV in different populations as follows: A geographical focus for sex workers and prisoners (based on the background national adult prevalence); a behavioural focus for gay/MSM, transgender people and people who inject drugs (based on survey data and models of risk); a geographical and behavioural approach for AGYW, ABYM, and adults >25 (based on models of subnational incidence and reported behavioural risk) [7,8].

The process to translate these targets into impact is described elsewhere, and involves interpolation and imputation for missing data [7]. The specific targets aim to promote the principles encapsulated in the wording of the overarching target. They should allow national planners to define nationally appropriate targets for their own priorities and populations.

Figure 2: Criteria for stratification of countries or subnational areas; thresholds for stratification and targets for each stratum. (See UNAIDS Strategy and Targets documentation for fuller description) [9]

Suggested thresholds to define strata *for prioritisation*
Key Populations

	Criterion	Low-moderate	High	Very high
Sex workers	National Adult (15-49) HIV prevalence	≤0.3%	>0.3%	>3%
Prisoners	National Adult (15-49) HIV prevalence	<1%	>1%	>10%
Gay men and other men who have sex with men	UNAIDS analysis by country/region	Proportion of populations estimated to have incidence <0.3%	Proportion of populations estimated to have incidence 0.3%	Proportion of populations estimated to have incidence >3%
Transgender people	Mirrors MSM in absence of data	Proportion of populations estimated to have incidence <0.3%	Proportion of populations estimated to have incidence 0.3%	Proportion of populations estimated to have incidence >3%
People who inject drugs	UNAIDS analysis by country/region	High NSP coverage with adequate needles and syringes per PWID; OST available	Some NSP; some OST	Low NSP and OST coverage

Suggested thresholds to define strata *for prioritisation*
Other Populations

	Criterion	Low	Moderate	Very high	
Adolescent girls and young women	Combination of [National or subnational incidence in 15 -24 yr old women] AND [Reported behaviour from DHS or other (>2 partners; or reported STI in previous 12 months)]	<0.3% incidence OR 0.3-<1% incidence and low risk reported behaviour	0.3-<1% incidence and high risk reported behaviour OR 1-3% incidence and low risk reported behaviour	1-3% incidence AND high risk reported behaviour	>3% incidence
Adolescent boys and young men	Combination of [National or subnational incidence in 15 -24 yr old men] AND [Reported behaviour from DHS or other (>2 partners; or reported STI in previous 12 months)]	<0.3% incidence OR 0.3-<1% incidence and low risk reported behaviour	0.3-<1% incidence and high risk reported behaviour OR 1-3% incidence and low risk reported behaviour	1-3% incidence AND high risk reported behaviour	>3% incidence
Adults (aged 25 and older)	Combination of [National or subnational incidence in 25 -49 yr old adults] AND [Reported behaviour from DHS or other (>2 partners; or reported STI in previous 12 months)]	<0.3% incidence OR 0.3-<1% incidence and low risk reported behaviour	0.3-<1% incidence and high risk reported behaviour OR 1-3% incidence and low risk reported behaviour	1-3% incidence AND high risk reported behaviour	>3% incidence
Sero-discordant partnerships	Estimated number of HIV negative regular partners of someone newly starting on ART	Risk stratification depends on choices within the partnership – choice of timing and regimen of ART for the positive partner; choice of behavioural patterns (condoms, frequency of sex); choice of PrEP			

Levels used for global impact models for key populations

Intervention	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners and others in closed settings
Condoms/lube use at last sex by those not taking PrEP with a non-regular partner whose HIV viral load status is not known to be undetectable (includes those who are known to be HIV -negative)	--	95%	95%	95%	--
Condom/lube use at last sex with a client or non-regular partner	90%	--	--	--	90%
PrEP use (by prioritization stratum) • Very high • High • Moderate and low	80% 15% 0%	50% 15% 0%	15% 5% 0%	50% 15% 0%	15% 5% 0%
Sterile needle and syringes	--	--	90%	--	90%
Opioid substitution therapy among people who are opioid dependent	--	--	50%	--	--
STI screening and treatment	80%	80%	--	80%	--
Regular access to appropriate health system or community-led services	90%	90%	90%	90%	100%
Access to PEP as part of package of risk assessment and support	90%	90%	90%	90%	90%

Levels used for global impact models for other populations

		Risk by stratum or geography		
		Very high	Moderate	Low
All ages and genders	Condoms/lube use at last sex by those not taking PrEP with a non-regular partner whose HIV viral load status is not known to be undetectable (includes those who are known to be HIV -negative)	95%	70%	50%
	PrEP use (by risk category)	50%	5%	0%
	STI screening and treatment	80%	10%	10%
Adolescents and young people	Comprehensive sexuality education in schools, in line with UN international technical guidance	90%	90%	90%
		Strata based on geography alone		
		Very high (>3%)	High (1-3%)	Moderate (0.3-1%)	Low (<0.3%)
All ages and genders	Access to PEP (non-occupational exposure) as part of package of risk assessment and support	90%	50%	5%	0%
	Access to PEP (nosocomial) as part of package of risk assessment and support	90%	80%	70%	50%
Adolescent girls and young women	Economic empowerment	20%	20%	0%	0%
Adolescent boys and men	Voluntary medical male circumcision	90% in 15 priority countries			
People within serodiscordant partnerships	Condoms/lube use at last sex by those not taking PrEP with a non-regular partner whose HIV viral load status is not known	95%			
	PrEP until positive partner has suppressed viral load	30%			
	PEP	100% after high-risk exposure			

Note: Incidence is measured or modelled for each 5yr age and sex cohort in “other populations”

Abbreviations in figure 2:

MSM: Gay men and other men who have sex with men

NSP: Needle and Syringe Programme

OST: Opioid Substitution Therapy

PWID: People who inject drugs

PrEP: Pre-exposure prophylaxis

PEP: Post-exposure prophylaxis

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