TB and HIV epidemiology in South Africa: status and opportunities for collaborative and integrated care

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Human Sciences Research Council
TBAC Convening 25 October 2024

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Introduction & presentation outline

- TB and HIV are major public health conditions in South Africa
  - commonly occur together
  - are driven by similar structural drivers
- This presents opportunities for collaborative and integrated care to maximise positive outcomes

Presentation outline

- Status of TB
  - TB profile
  - Strategies implemented and challenges

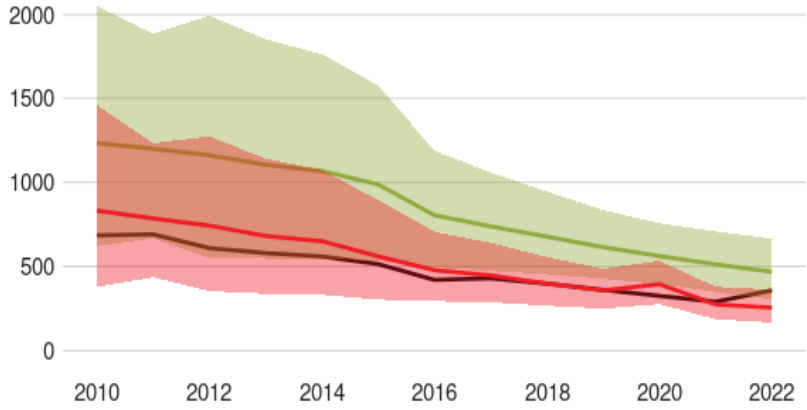
- Status of HIV- Findings from the 6th South African national HIV prevalence, incidence and behaviour survey, 2022
  - Key findings
  - What is working, and areas of challenges

- Addressing the challenges and areas of synergy to maximise positive outcomes

SA TB profile – 2022

	Number	(Rate per 100 000 population)
Total TB incidence	280 000 (182 000-398 000)	468 (304-665)
HIV-positive TB incidence	152 000 (99 000-217 000)	255 (166-362)
MDR/RR-TB incidence**	11 000 (6 700-16 000)	19 (11-26)
HIV-negative TB mortality	23 000 (22 000-24 000)	39 (37-41)
HIV-positive TB mortality	31 000 (9 900-64 000)	52 (17-107)

Incidence, **New and relapse TB cases notified**, **HIV-positive TB incidence** (Rate per 100 000 population per year)



Total Notification: 224 621
New and Relapse: 214 295

- HIV Status known: 88%
- HIV positive: 102 254 (54%)
- PLHIV on ART: 90 363 (88%)
- PLHIV newly enrolled on TPT: 62%

MDR/RR-TB: 6 781 (3%)
Pre-XDR-TB: 809 (0,4%)
TB treatment coverage: 77%
TB case fatality ratio: 20%

Treatment success rate

New and relapse cases registered in 2021	79%
Previously treated cases, excluding relapse, registered in 2021	60%
HIV-positive TB cases registered in 2021	79%
MDR/RR-TB cases started on second-line treatment in 2020	62%
Pre-XDR-TB/XDR-TB cases started on second-line treatment in 2020	53%

Source: Global TB Report, WHO. 2023

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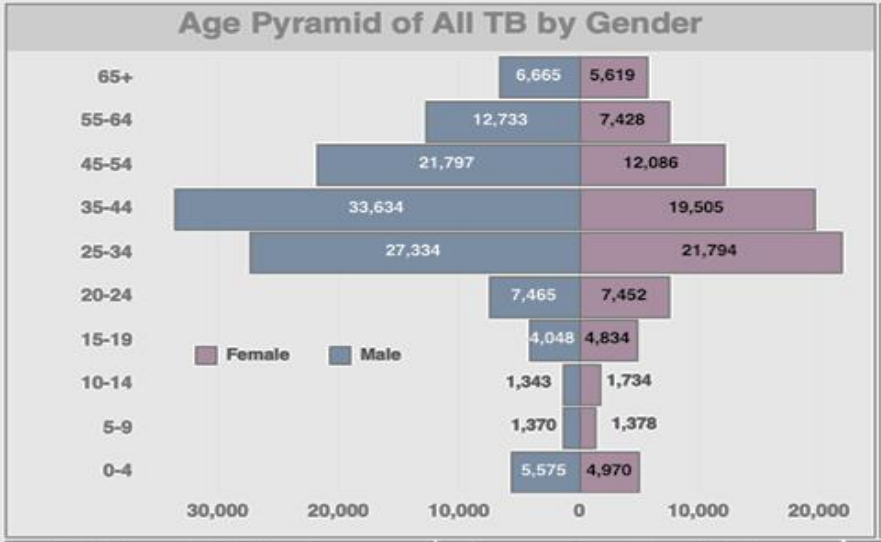
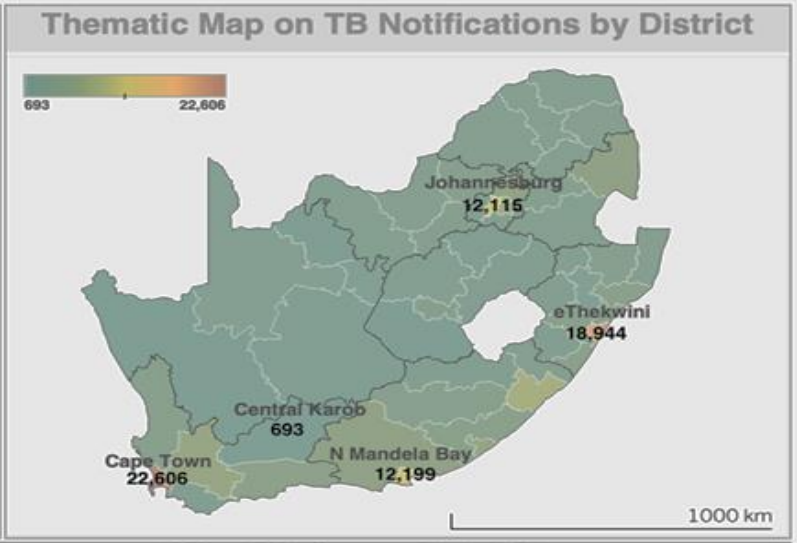
TB notifications by age, sex and province

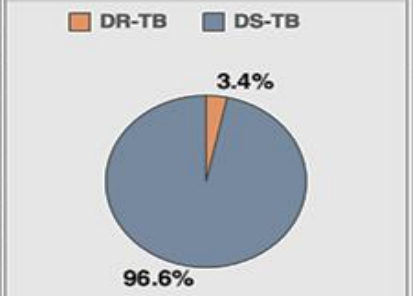




TB Type Notifications

Province	TB Type DR-TB	DS-TB	All TB
Eastern Cape	1,854	45,170	47,024
Free State	287	9,629	9,916
Gauteng	861	30,960	31,821
KwaZulu-Natal	1,797	48,001	49,798
Limpopo	242	13,319	13,561
Mpumalanga	365	11,273	11,638
North West	354	11,695	12,049
Northern Cape	350	6,825	7,175
Western Cape	1,541	40,098	41,639
South Africa	**7,651**	**216,970**	**224,621**

Percentage by TB Type



Patient Category by TB Type

Province	DR-TB New	DR-TB Relapse	DR-TB Retreated	DS-TB New	DS-TB Relapse	DS-TB Retreated
Eastern Cape	876	623	355	37,957	4,037	3,176
Free State	164	79	44	8,314	705	610
Gauteng	590	135	136	28,281	1,230	1,449
KwaZulu-Natal	1,200	390	207	42,554	2,865	2,582
Limpopo	163	27	52	12,236	471	612
Mpumalanga	260	63	42	10,186	438	649
North West	223	55	76	10,535	458	702
Northern Cape	153	117	80	5,472	877	476
Western Cape	866	353	322	32,057	3,754	4,287
South Africa	**4,495**	**1,842**	**1,314**	**187,592**	**14,835**	**14,543**

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Source SA TB Annual Report 2023

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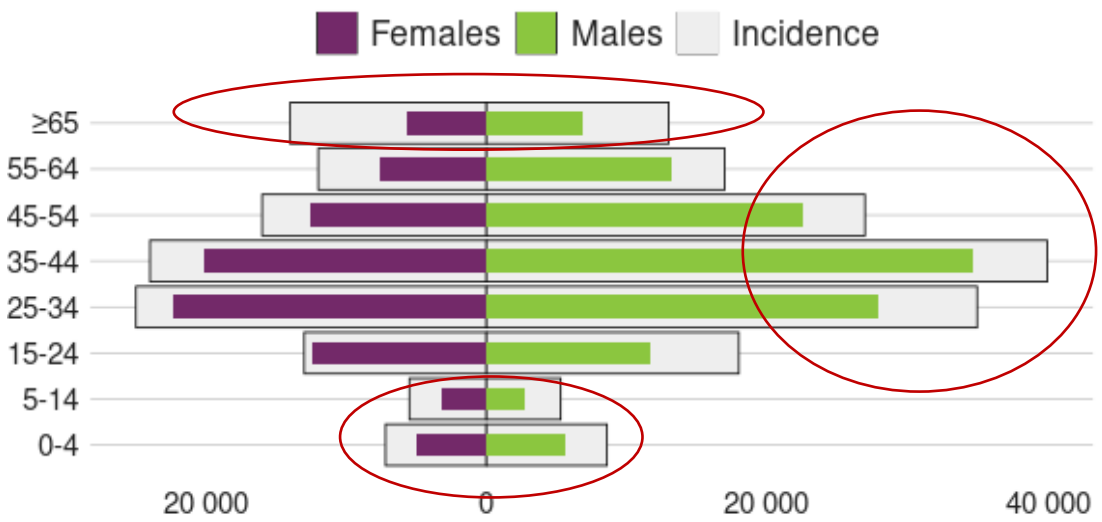
TB incidence and notifications - 2022



Category	P:N ratio
Total	1.75
Male	1.89
Female	1.70
15-24 years	2.91
25-34 years	1.61
35-44 years	1.55
45-54 years	1.66
55-64 years	1.63
≥65 years	2.88

Source: Global TB Report, WHO. 2023

P:N ratios SA TB prevalence survey 2018

Evidence to understand guide interventions

Numerous trials & studies

- Systematic screening
- DR-TB regimens
- Paediatrics regimens
- Adherence support
- Preventive therapy
- Patient pathways
- Modeling work
- Vaccine trials

TB	• PLHIV • Children < 5-years old • Health workers • People in prisons and other closed settings • People living in informal settlements • Mineworkers and peri-mining communities • Sex workers • Migrants, mobile populations, and undocumented individuals	• Contacts of PWTB • People with prior TB • Smokers • People with harmful alcohol- use • The elderly • Adolescents and young people • People with diabetes • Pregnant women • Men • People with disabilities • People with mental health conditions

TB key and priority populations-NSP


PLOS MEDICINE

RESEARCH ARTICLE

Evaluating systematic targeted universal testing for tuberculosis in primary care clinics of South Africa: A cluster-randomized trial (The TUTT Trial)

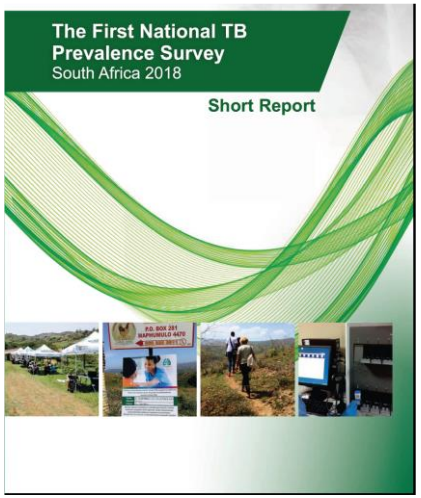
Abstract

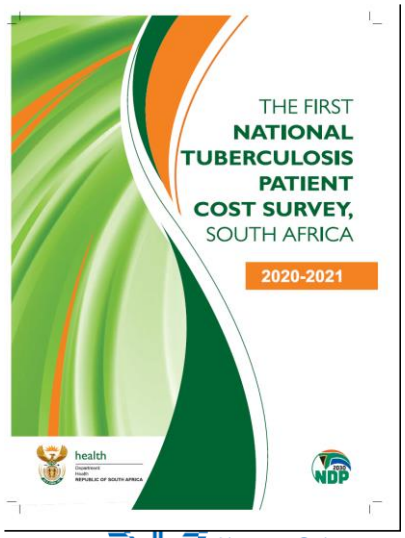
Background

The World Health Organization (WHO) recommends systematic symptom screening for tuberculosis (TB). However, TB prevalence surveys suggest that this strategy does not identify millions of TB patients, globally. Undiagnosed or delayed diagnosis of TB contribute to TB transmission and exacerbate morbidity and mortality. We conducted a cluster-randomized trial of large urban and rural primary healthcare clinics in 3 provinces of South Africa to evaluate whether a novel intervention of targeted universal testing for TB (TUTT) in high-risk groups diagnosed more patients with TB per month compared to current standard of care (SoC) symptom-directed TB testing.

Methods and findings

Sixty-two clinics were randomized; with initiation of the intervention clinics over 6 months from March 2019. The study was prematurely stopped in March 2020 due to clinics restricting access to patients, and then a week later due to the Coronavirus Disease 2019 (COVID-





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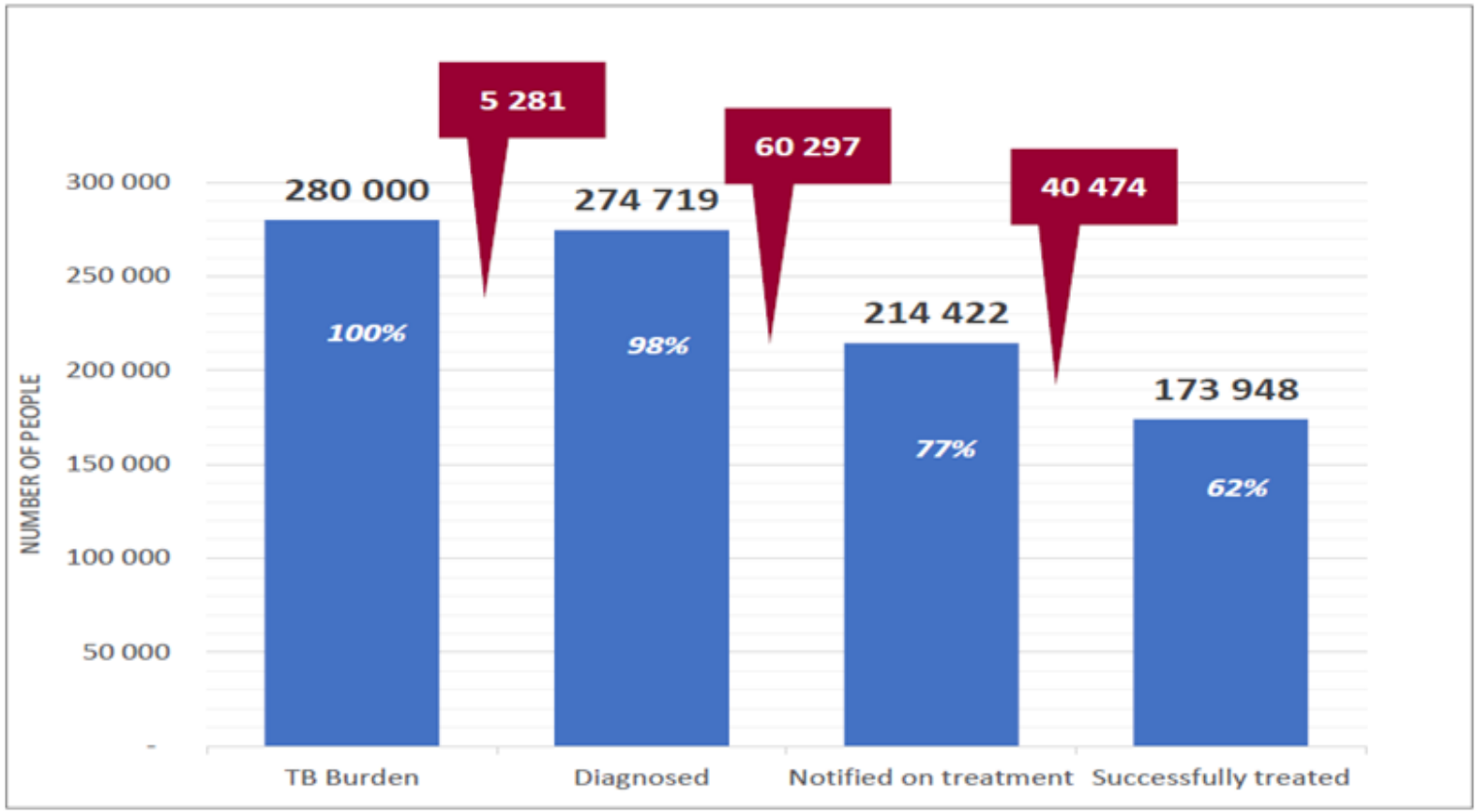
TB care cascade - 2023



Source NDoH, NTP

TB detection

Detection strategies implemented

- Routine testing of at-risk groups irrespective of symptoms
  - People living with HIV
  - Household contacts of people diagnosed with DS-TB/DR-TB
  - People previously treated for TB in the past year
- TB symptom screening and testing of symptomatic people
- DCXR Screening and testing people with abnormal x-rays with or without symptoms
- Targeting high burden areas- hotspots
- Options for testing e.g.:- Urine LF-LAM assay for eligible symptomatic people living with HIV
- Increasing capacity to detect TB in children

Challenges/what is not working

- Eligibility unknown for TUTT
- Poor clinical skill/poor application- hx taking
- Limited resources – human, equipment
- Poor tracing of contacts and community linkages
- Poor integrations of services even with HIV services (PLHIV newly enrolled on TPT: 62%)
- No dedicated staff to sort lab results
- Staff attitudes
- Poor recording/record keeping/record flow
- Lack of integration of services
- Poor health education to clients
- Limited knowledge about TB in communities

Treatment initiation & retention in care

Strategies implemented

- Integrated patient centered care
- Package of services for TB
  - Health education and counselling
  - Social and nutritional support
  - Mental health support
  - Treatment support
  - Contact Management
- Support for linkage to care- ↓ ILTFU and ↑retention in care
- Decentralized, home/community-based models of TB care
- Introduction of shorter treatment regimens – 9 and 6 month

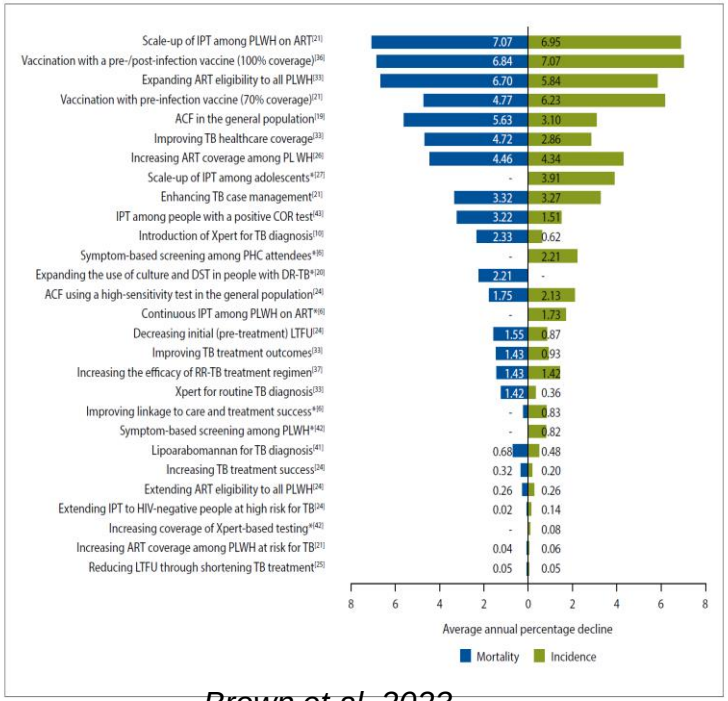
Challenges/what is not working

- Package of care not implemented
- Staff attitude - ? resistance to change
- Lack of integration of services
- Stigma
- Fear/ denial/ myths & misconceptions
- Alcohol and substance abuse
- Structural factors, competing demands
- Pill burden (with comorbidities)
- Treatment fatigue
- Poor recording/record keeping/record flow
- Long patient wait times

TB preventive treatment - TPT

Strategies implemented

- TPT guidelines for all eligible people
- 'family-centred'/'household-centred' approach to integrated TB treatment and TPT
- Social support



Brown et al, 2023

Challenges/what is not working

- Training not yet cascaded to all health facilities
- Poor implementation of contact management
- Poor integration of TB and HIV
- Package of services for TB services not fully implemented
- Stockouts
- Limited knowledge about TPT in communities
- Low demand

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Closing gaps in the TB care cascade

- Utilize our evidence better e.g. hotspot targeting, TUTT
- Allocate adequate resources/use resources more efficiently to address the basics
  - Contact management
  - Clinical skills- history taking
  - CE and training esp for adoption pf guidelines
  - Record keeping
  - Staff attitudes
- Integrate TB care and services with that of other conditions especially with HIV (54% co-infection)
- Promote correct knowledge about TB and what to do about it/what to do about TB symptoms- rapid roll out of the SBCC strategy & entrench screening and testing for TB in healthcare settings,
- Adopt and roll out innovations more rapidly e.g. improved diagnostics, new drugs
- Adopt a multisectoral approach for prevention, and treatment
  - Collaborate with other departments to address structural drivers,
  - e.g. for nutrition support, other social support

HIV IN SOUTH AFRICA: FINDINGS FROM THE SIXTH SOUTH AFRICAN NATIONAL HIV PREVALENCE, INCIDENCE, AND BEHAVIOUR SURVEY (SABSSM VI)

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Survey aim and data collection

- **AIM:** To estimate at national and provincial level:
  - HIV prevalence (adults and children)
  - Exposure to ART
  - Viral load suppression
  - HIV incidence- national level
  - HIV drug resistance- national level

- To investigate behavioural drivers of HIV
  - Condom use
  - Sexual debut
  - Multiple sexual partners
  - Age disparate sexual relationships
  - Medical circumcision

Data collection

Questionnaires

Household level

Individual level

–Children 0 -11 years parent/guardian

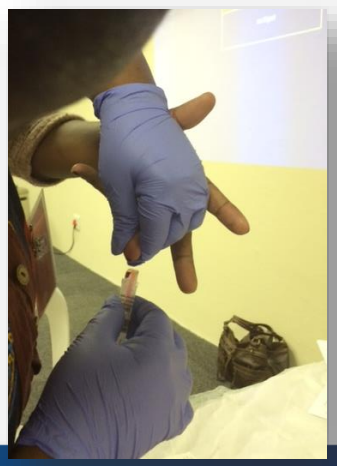
–Adolescents 12 to 14 years

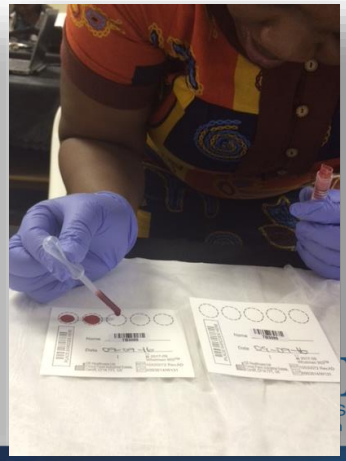
–Persons aged 15 years and older

–Offered HIV testing

Blood samples

Dried blood spot (DBS) specimens



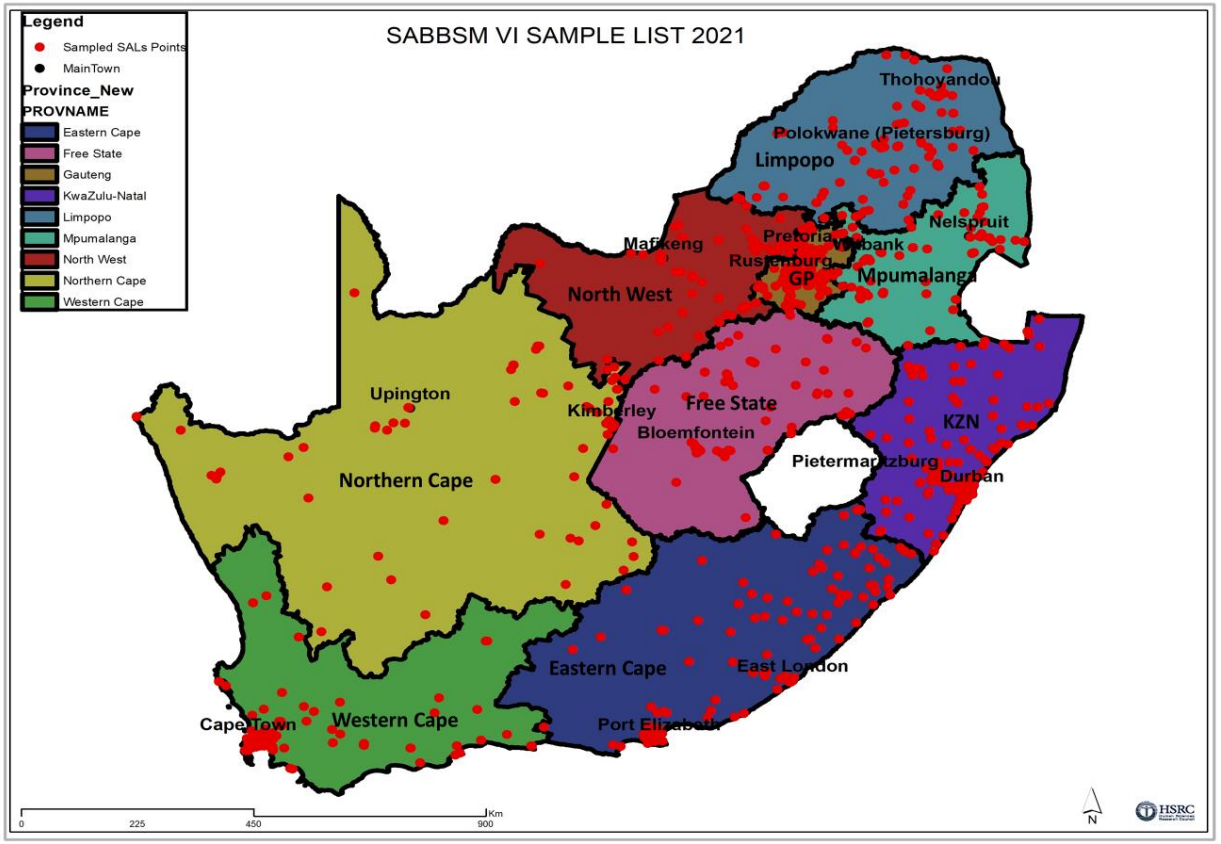


Design and sampling

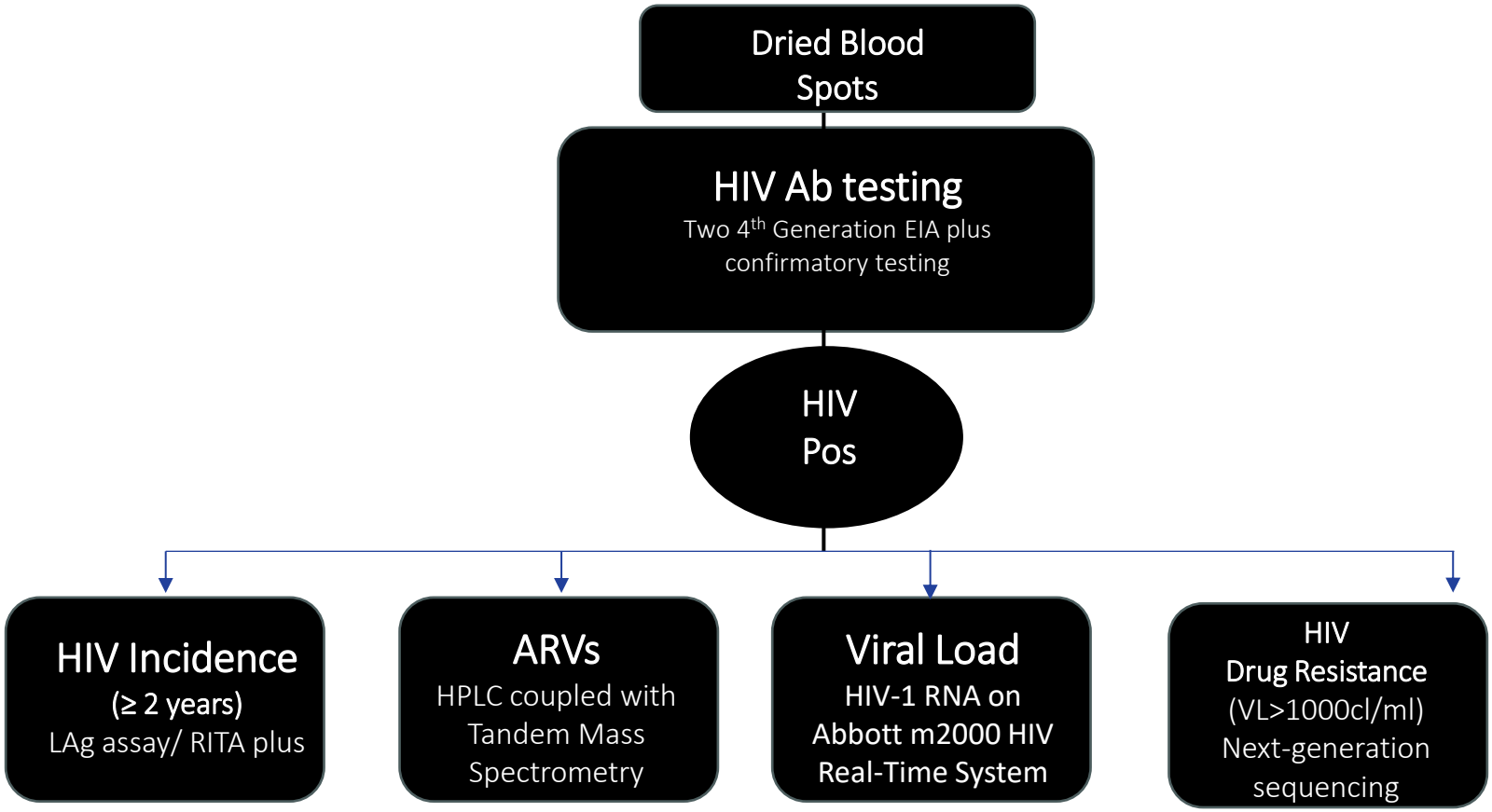
Design
- Cross-sectional, household
- Multi-stage stratified cluster random sampling

Geographic scope
- National level
- Additional sampling in 33 districts

Population
- Persons of all ages living in South Africa at the time of the survey



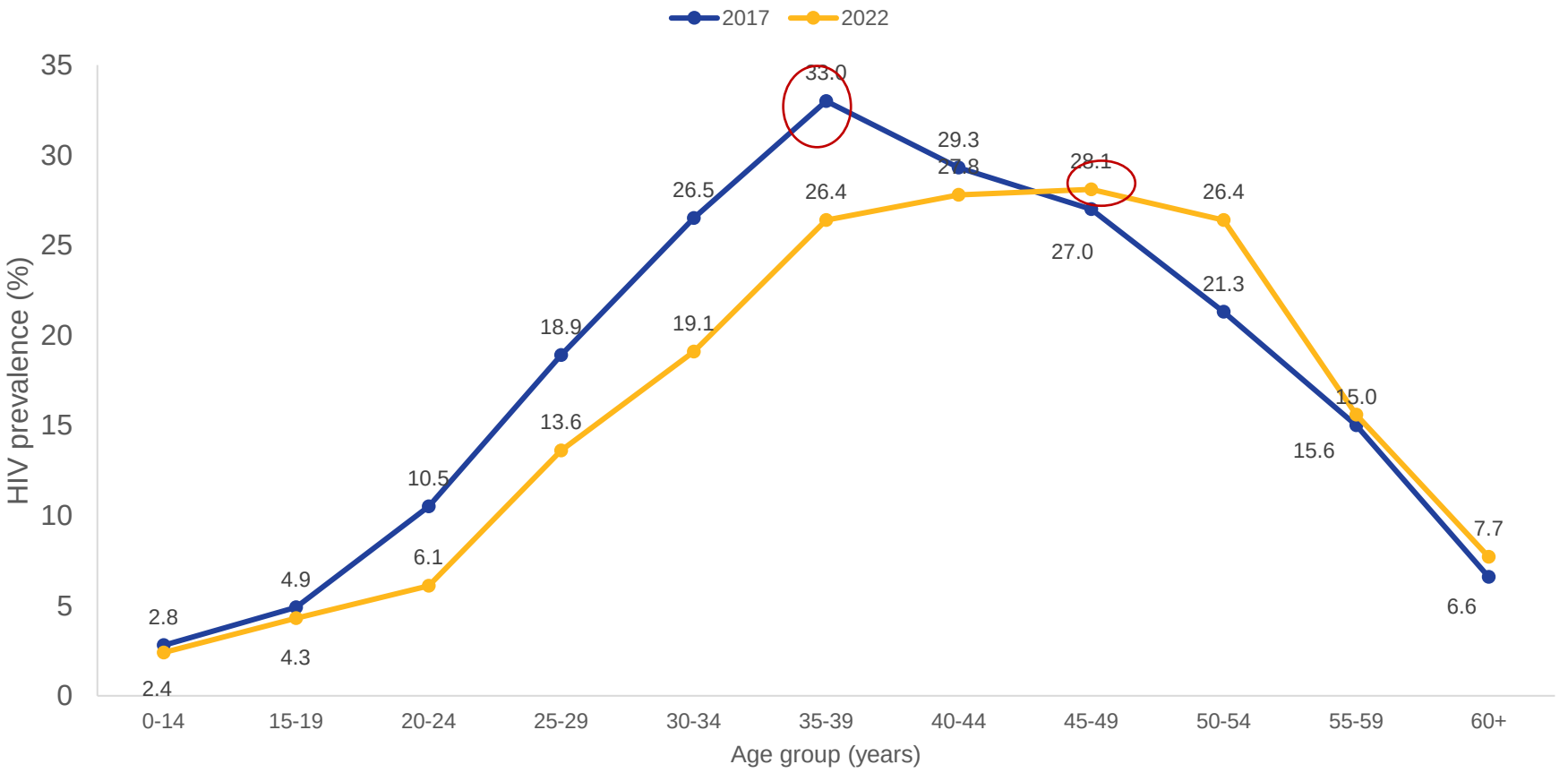
Specimen testing



Estimated HIV prevalence by age & sex 2017 & 2022

Age group (years)	2017		2022	
	HIV prevalence (%)	Number of PLHIV	HIV prevalence (%)	Number of PLHIV
Total	14.0 [13.2–14.8]	7 900 000	**12.7 [12.0–13.4]**	**7 800 000**
Male	10.8 [10.0–11.7]	3 000 000	**8.8 [8.1–9.5]**	**2 600 000**
Female	17.1 [16.0–18.3]	4 900 000	**16.4 [15.2–17.5]**	**5 200 000**
0–14	2.8 [2.4–3.4]	470 000	**2.4 [1.9–3.2]**	**390 000**
15–24	7.8 [6.9–8.8]	750 000	**5.2 [4.5–6.0]**	**530 000**
25–49	26.3 [24.8–27.9]	5 600 000	**22.1 [20.8–23.5]**	**5 300 000**
50+	12.4 [10.8–14.2]	1 100 000	**14.0 [12.5–15.6]**	**1 600 000**
15–49	20.6 [19.4–21.8]	6 300 000	**17.0 [16.1–18.0]**	**5 800 000**
15+	18.7 [17.6–19.9]	7 400 000	**16.3 [15.4–17.2]**	**7 400 000**

Estimated HIV prevalence by age, 2017 & 2022



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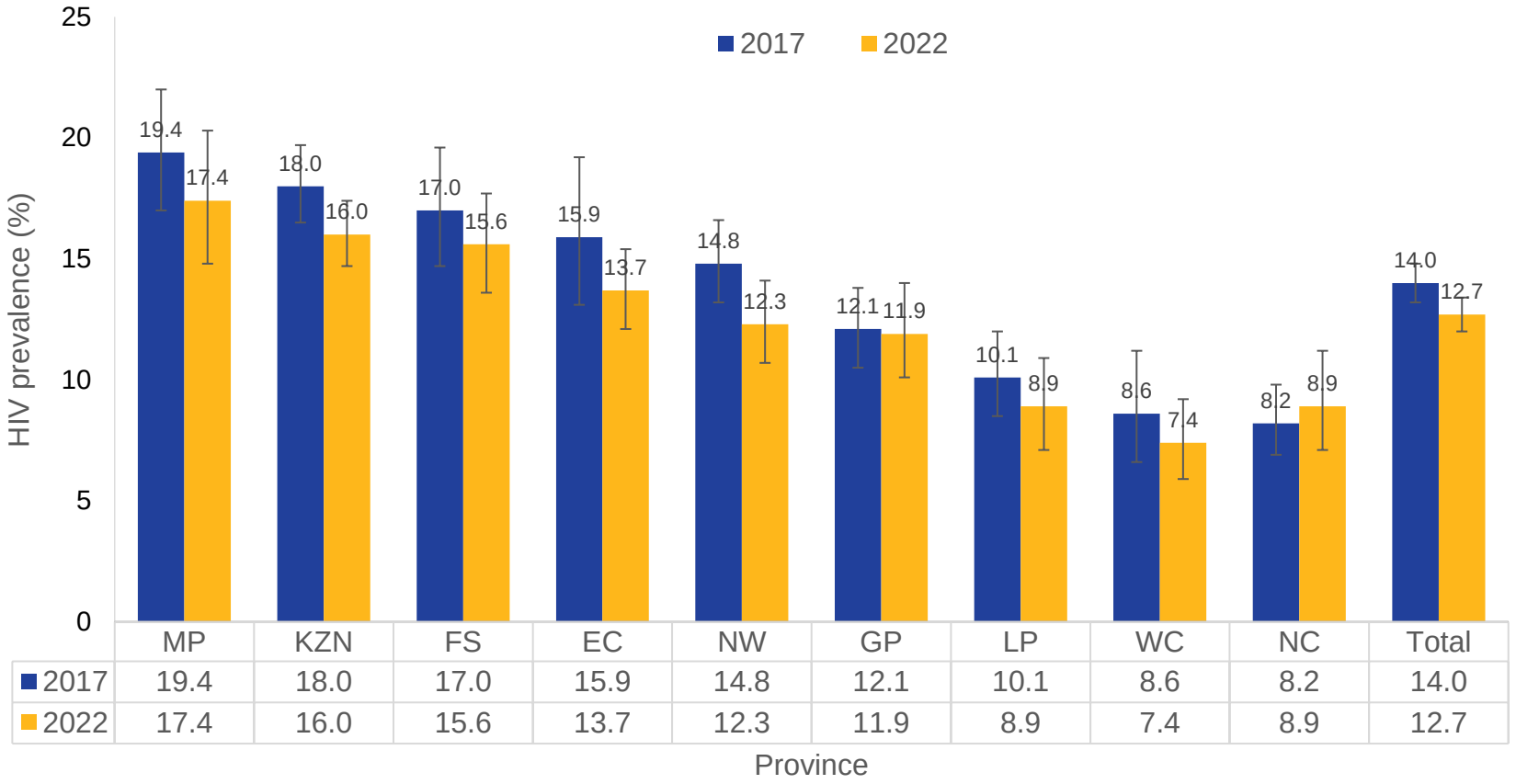
Estimated HIV prevalence by province 2017 & 2022



	MP	KZN	FS	EC	NW	GP	LP	WC	NC	Total
2017	19.4	18.0	17.0	15.9	14.8	12.1	10.1	8.6	8.2	14.0
2022	17.4	16.0	15.6	13.7	12.3	11.9	8.9	7.4	8.9	12.7

Estimated HIV prevalence by *locality 2017 & 2022

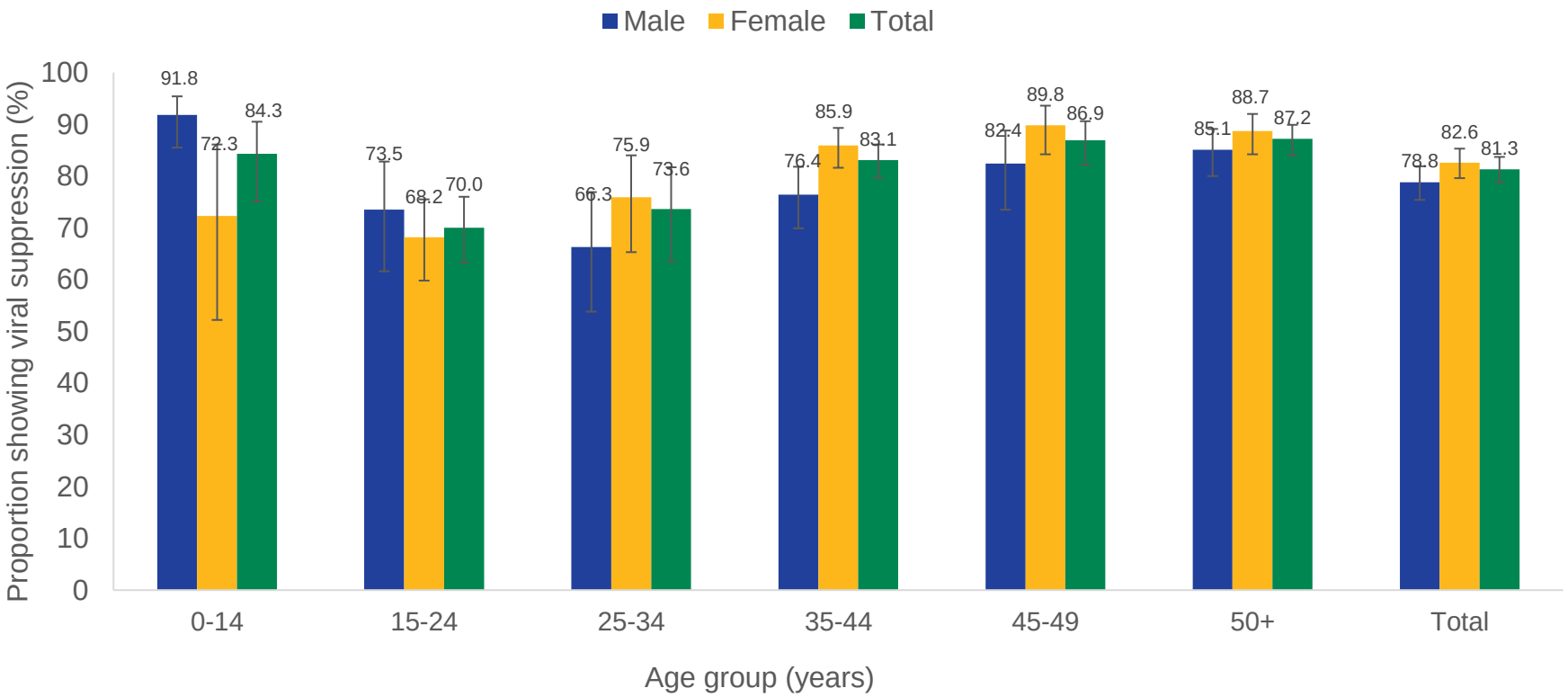
Variables	2017		2022	
	HIV-positive (%)	Number of PLHIV	HIV-positive (%)	Number of PLHIV
Locality type				
Urban	13.0 [12.0–14.1]	4 600 000	12.3 [11.4–13.2]	4 800 000
Rural informal/tribal areas	15.3 [14.0–16.7]	2 700 000	13.0 [11.8–14.3]	2 400 000
Rural formal/farm areas	17.8 [5.4–20.5]	580 000	14.8 [12.7–17.2]	600 000

*as defined by STASSA

Antiretroviral treatment by sex and age, 2017 & 2022

Age group (years)	2017		2022	
	PLHIV on ART % [95% CI]	Estimated number of PLHIV on ART	PLHIV on ART % [95% CI]	Estimated number of PLHIV on ART
Total	**63.7 [61.3–66.0]**	**4 500 000**	**80.9 [78.1–83.5]**	**5 700 000**
Male	58.6 [54.5–62.6]	1 500 00	76.2 [71.5–80.3]	1 800 000
Female	66.5 [64.0–68.9	3 000 000	83.2 [80.2–85.9]	4 000 000
0–14yrs	54.5 [43.2–65.3]	170 000	79.0 [66.8–87.5]	280 000
15–24yrs	41.4 [35.0–48.1]	280 000	63.2 [56.1–69.7]	270 000
25–49yrs	64.5 [61.5–67.5]	3 300 000	82.1 [78.0–85.6]	3 900 000
50+yrs	77.5 [73.4–81.2]	770 000	82.8 [77.0–87.4]	1 200 000
15–49trs	61.8 [59.2–64.3]	3 600 000	80.5 [76.7–83.8]	4 200 000

Viral load suppression by sex and age, 2017 & 2022



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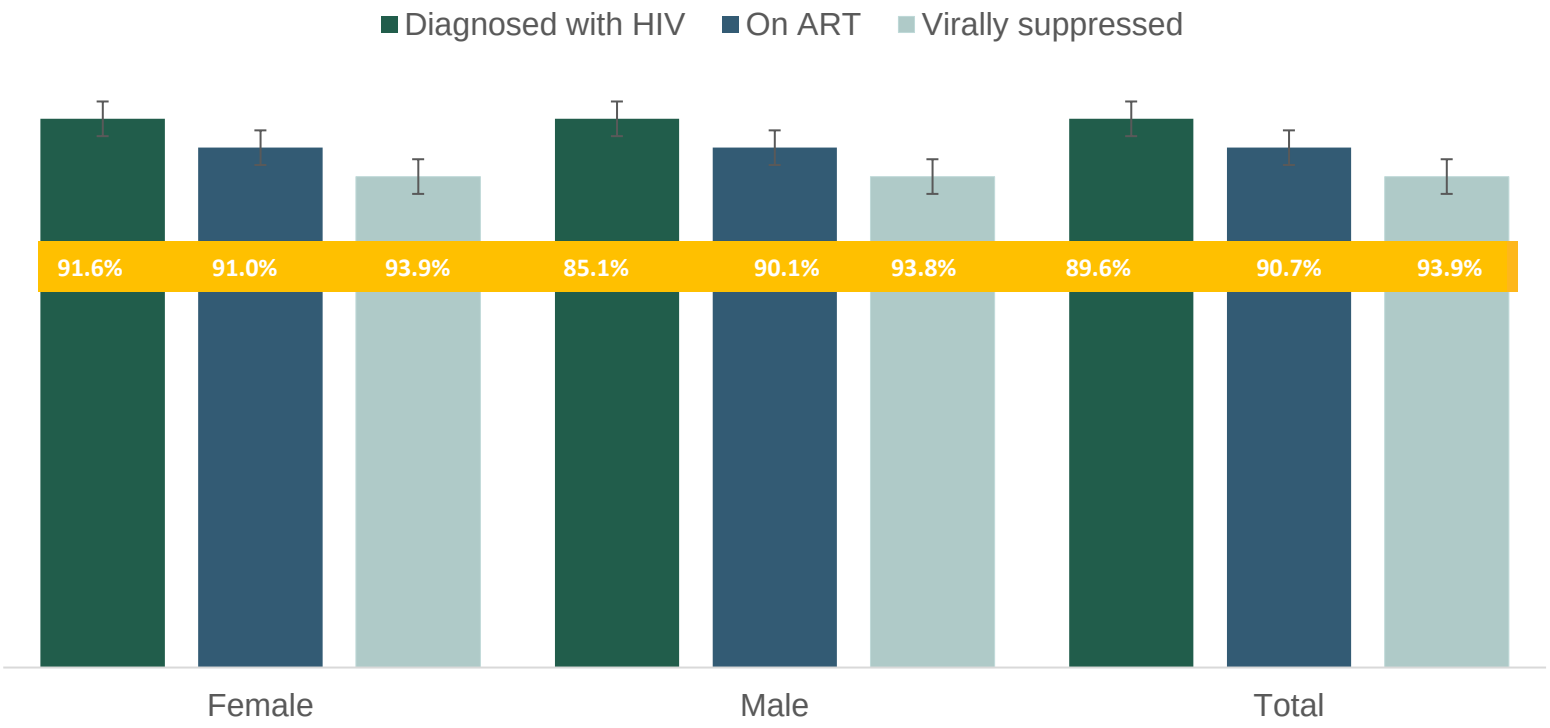
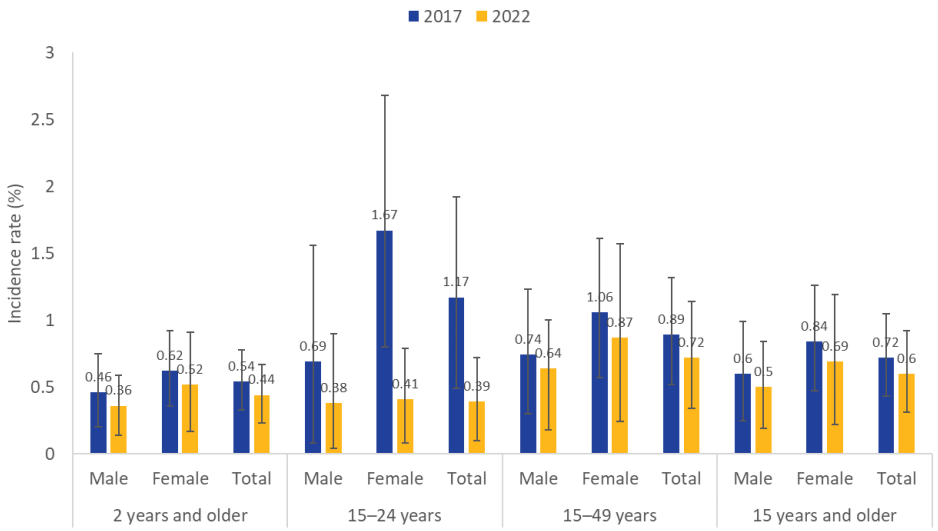
95-95-95 targets for people aged 15+ years living with HIV by sex, South Africa, 2022

Care along the cascade presents opportunities for TB screening, testing, prevention, detection and treatment



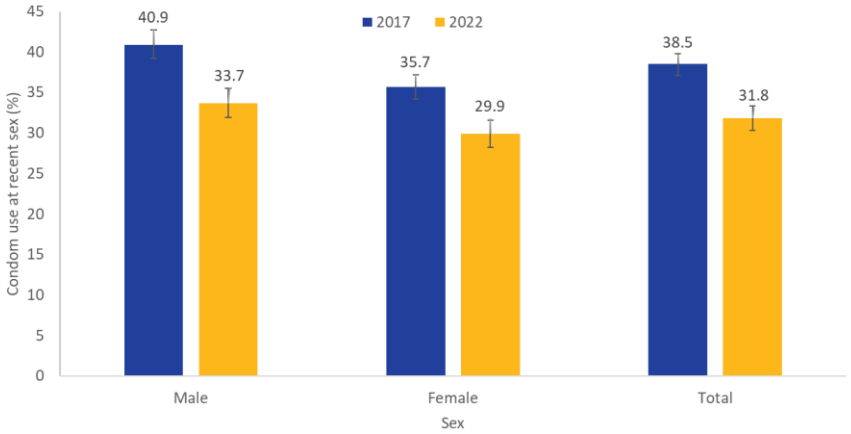
Estimated HIV incidence by age and sex, 2017 & 2022



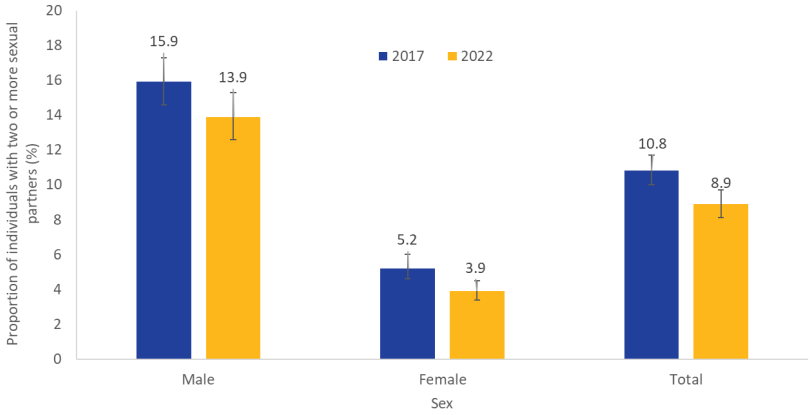
Age groups (years)	Sex	2017		2022	
		Estimated number of new infections per year	95% CI	Estimated number of new infections	95% CI
2 and older	Total	259 700	161 600–386 700	229 400	117 600–347 000
	Male	112 600	47 900–183 000	93 700	35 200–152 300
	Female	147 100	84 400–215 100	135 700	44 300–236 000
15–24	Total	104 100	44 300–172 100	36 300	9 600–66 200
	Males	31 700	3 700–70 800	17 600	1700–42 300
	Females	72 400	34 700–116 100	18 700	4 300–36 400
15–49	Total	225 800	129 000–331 300	202 400	96 400–318 000
	Males	99 900	39 000–165 500	78 700	25 700–139 800
	Females	125 900	67 100–190 200	123 600	35 800–221 200
15 and older	Total	241 100	140 000–350 000	225 600	112 800–256 000
	Males	101 700	41 100–166 200	90 300	33 600–151 200
	Females	139 400	76 400–208 200	135 400	43 600–238 600

Behavioural drivers of HIV

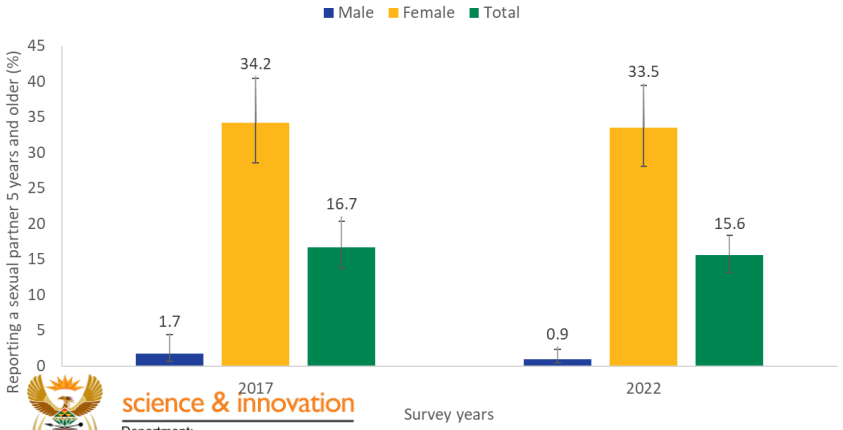
Condom use among those 15+yrs



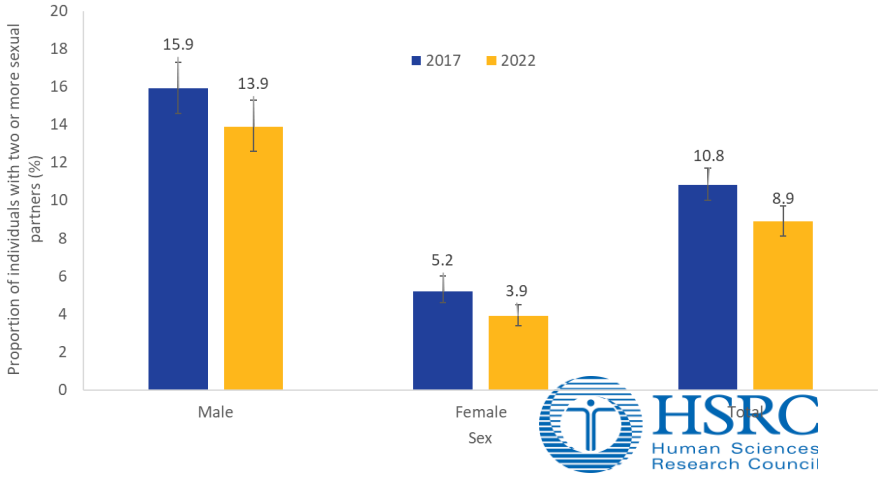
Multiple sexual partners among those 15+yrs



Age disparate sexual relationships among adolescents 15–19yrs



Sexual debut before15 years among youth 15–24yrs



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Conclusions

- There is stabilization of HIV prevalence in SA , increased ART coverage and viral load suppression (VLS)
- Women still disproportionately affected by HIV- higher prevalence
- Only three provinces had HIV prevalence <10%
- Higher prevalence in people living on farm areas, but high ART coverage
- Fewer men in care
- High risk behaviours that drive HIV persist
- Continued efforts are required to reach the objective of ending HIV as a public health threat by 2030

Closing the gaps in the HIV care cascade

Prevention

- Address high risk behaviours especially among young people
- Increase awareness and access to PreP

Reach more men

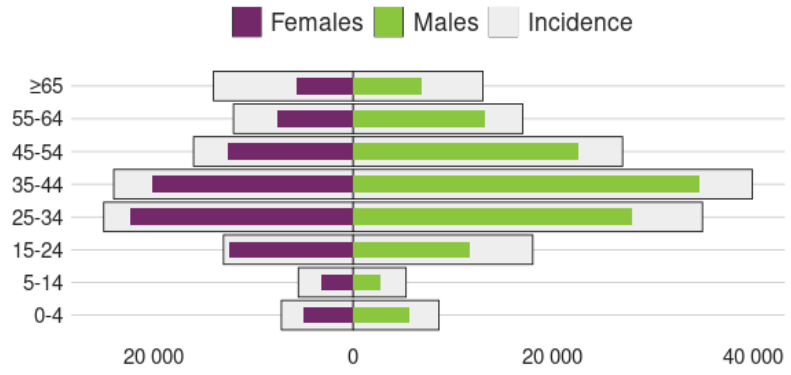
- Intensify efforts to bring men into care and to retain them in care

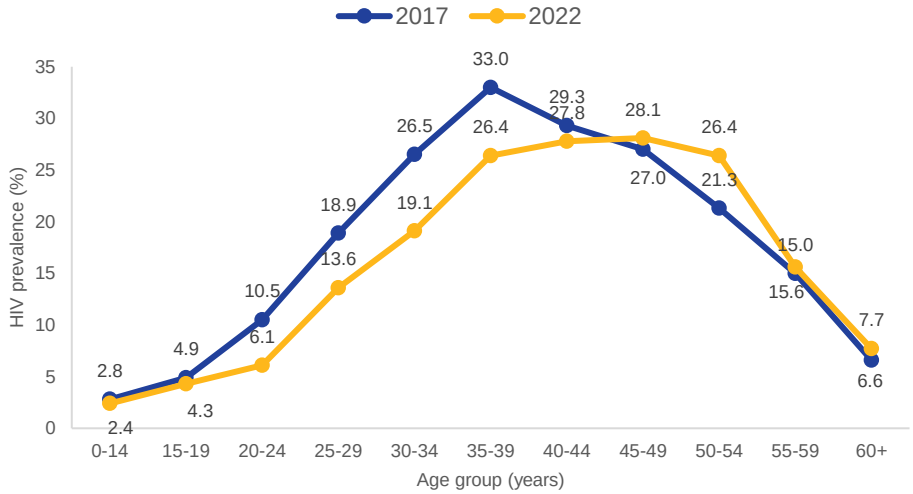
Increase and improve access to care

- Intensify testing and linkage to care
- Support retention on ART- such as heightened focus on campaigns such as U=U
- Integrate services (TB and HIV, and other conditions)
- HIV care offers many opportunities for contact with people use these contact points to address healthcare needs holistically

Closing the gaps

Overlap of the TB and HIV epidemics offers opportunities to optimize interventions





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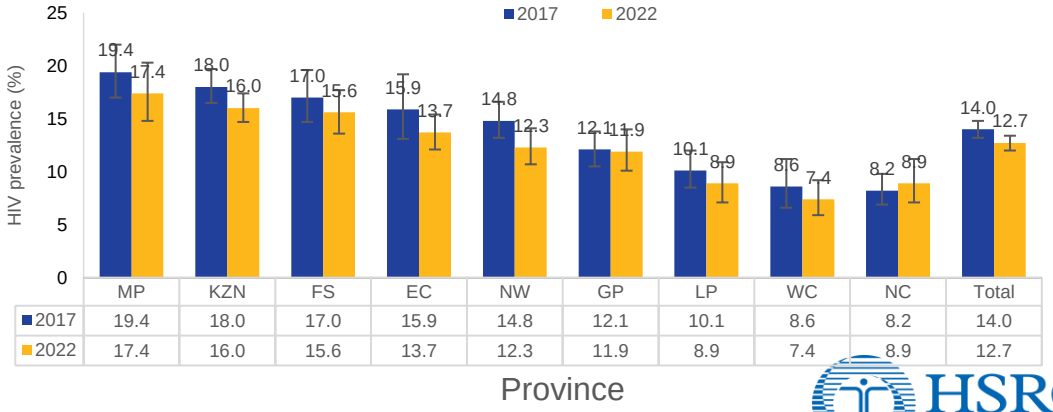
Western Cape	1,541	40,098	41,639
South Africa	**7,651**	**216,970**	**224,621**

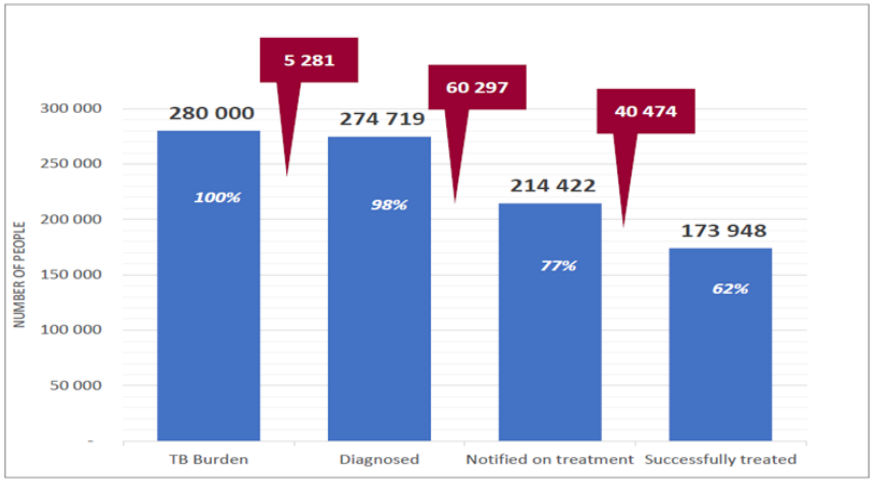


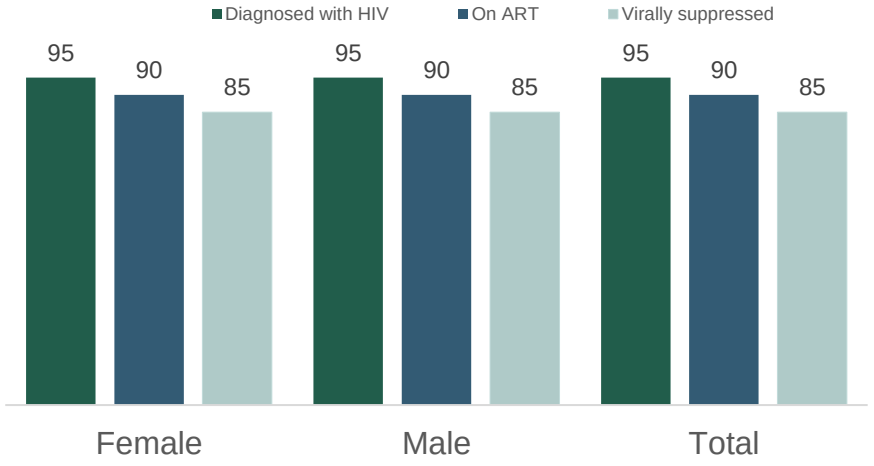
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

HSRC
Human Sciences
Research Council

Closing the gaps

Care along the TB and HIV cascade presents opportunities for screening, testing, prevention, detection and treatment





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SABSSMV consortium, partners and funding source

- U.S. Centers for Disease Control and Prevention (CDC)
- South African Medical Research Council (SAMRC)
- National Institute for Communicable Diseases (NICD)
- University of Cape Town (UCT)
- National Department of Health (NDoH)
- South African National AIDS Council (SANAC)
- United Nations Children's Fund (UNICEF)
- United States Agency for International Development (USAID)
- Joint United Nations Programme on HIV/AIDS (UNAIDS)

FUNDING SOURCE

- President's Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention (CDC).

Thank you