Western Cape Government

Health

HIV treatment: Modelling and Scale up What are the numbers telling us

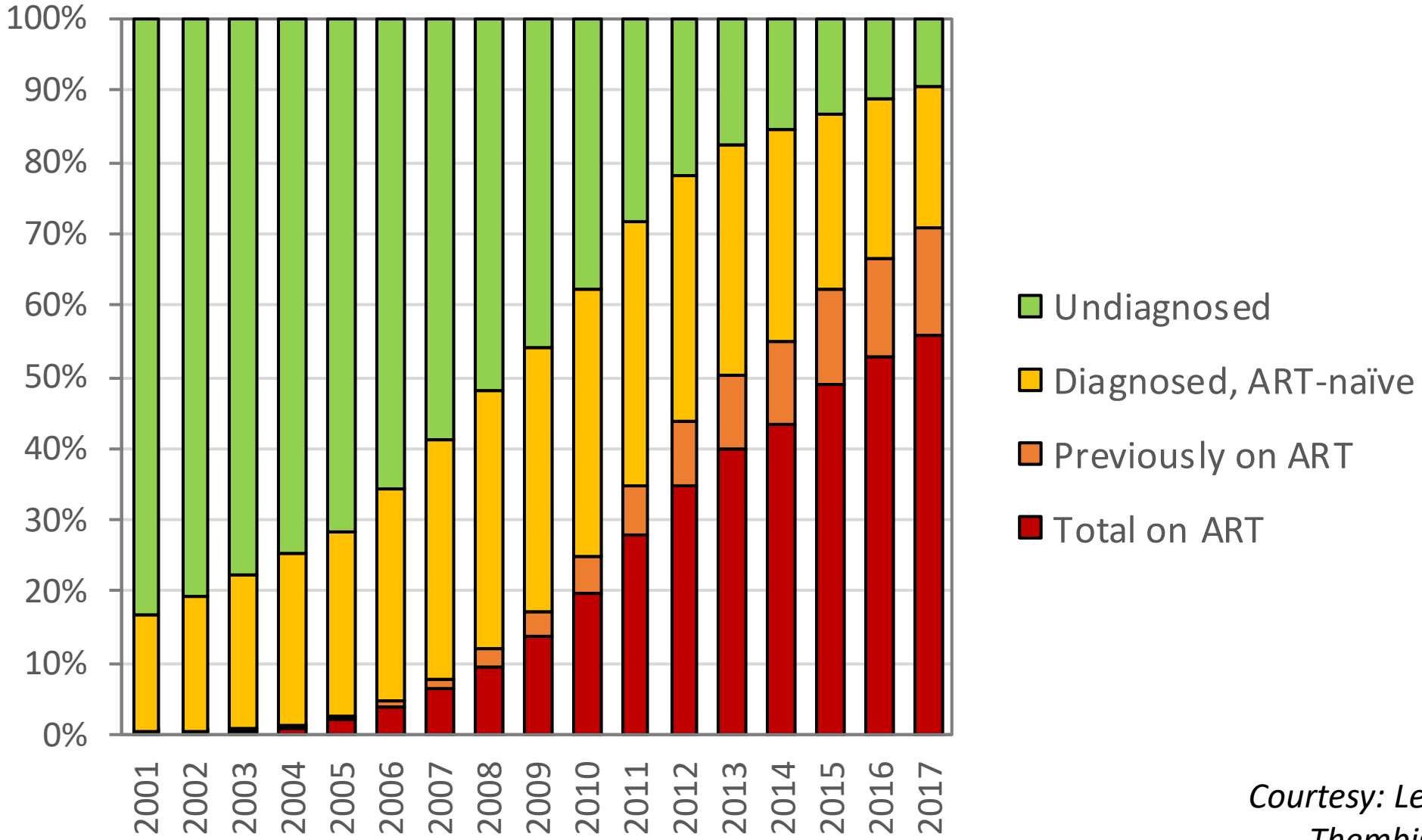
Andrew Boulle

4th Southern African HIV Clinicians Society Conference

Outline

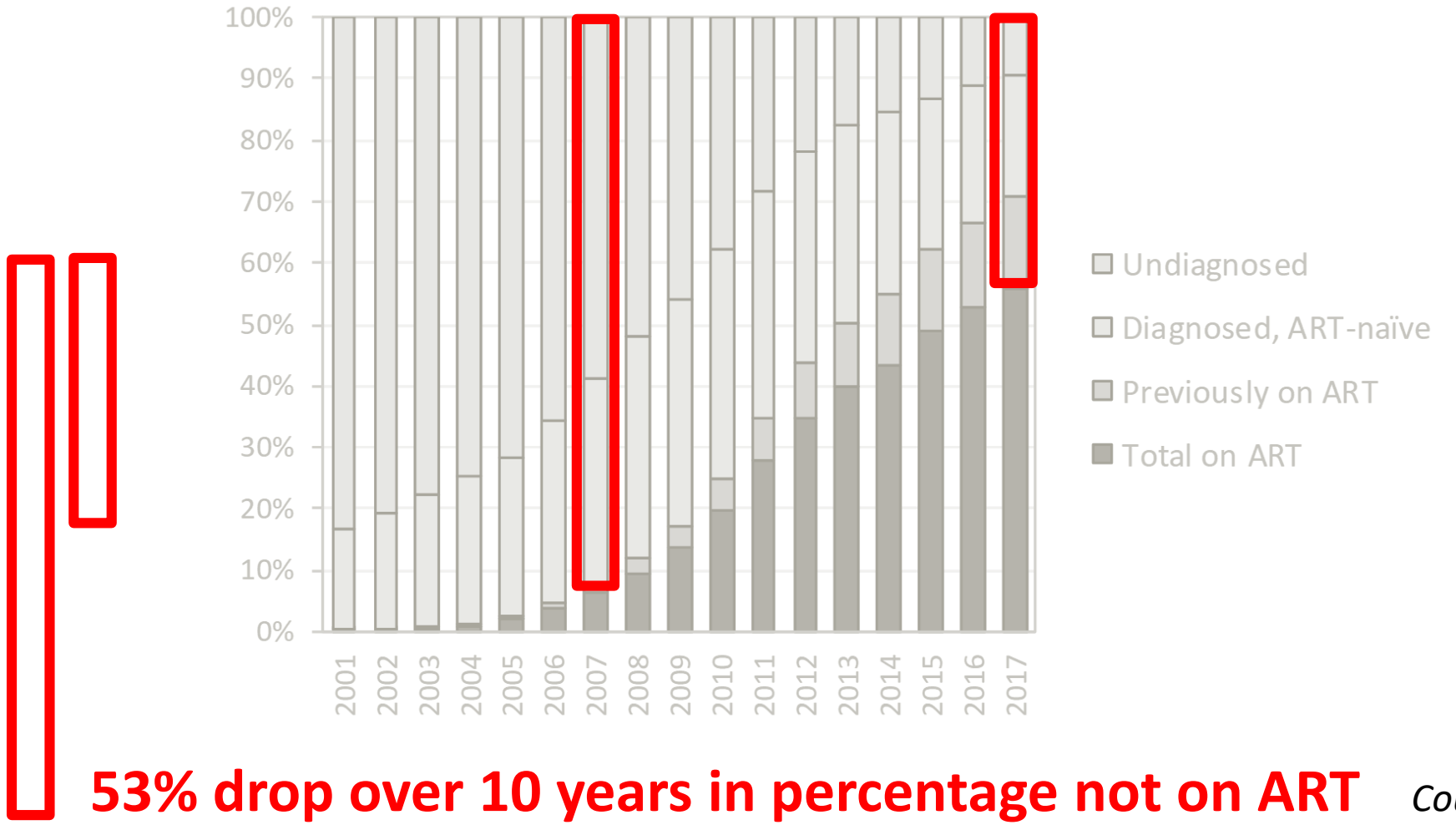
- National HIV population projections and treatment uptake (modelled best estimates)
- Service-based validation of modelling focussed on the Western Cape

% of HIV+ adults at different levels of engagement in HIV care



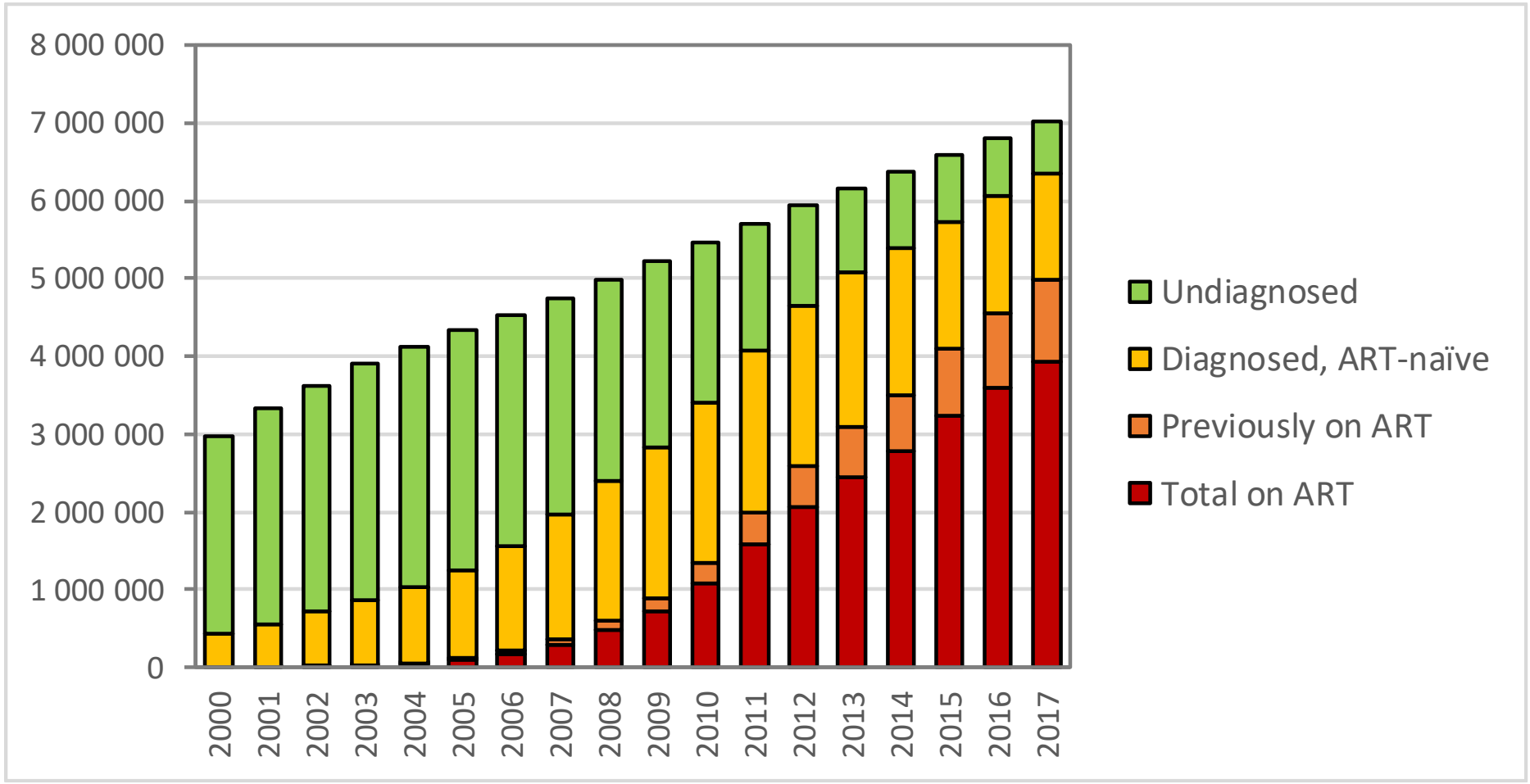
Courtesy: Leigh Johnson
Thembisa Model 4.1

% of HIV+ adults at different levels of engagement in HIV care



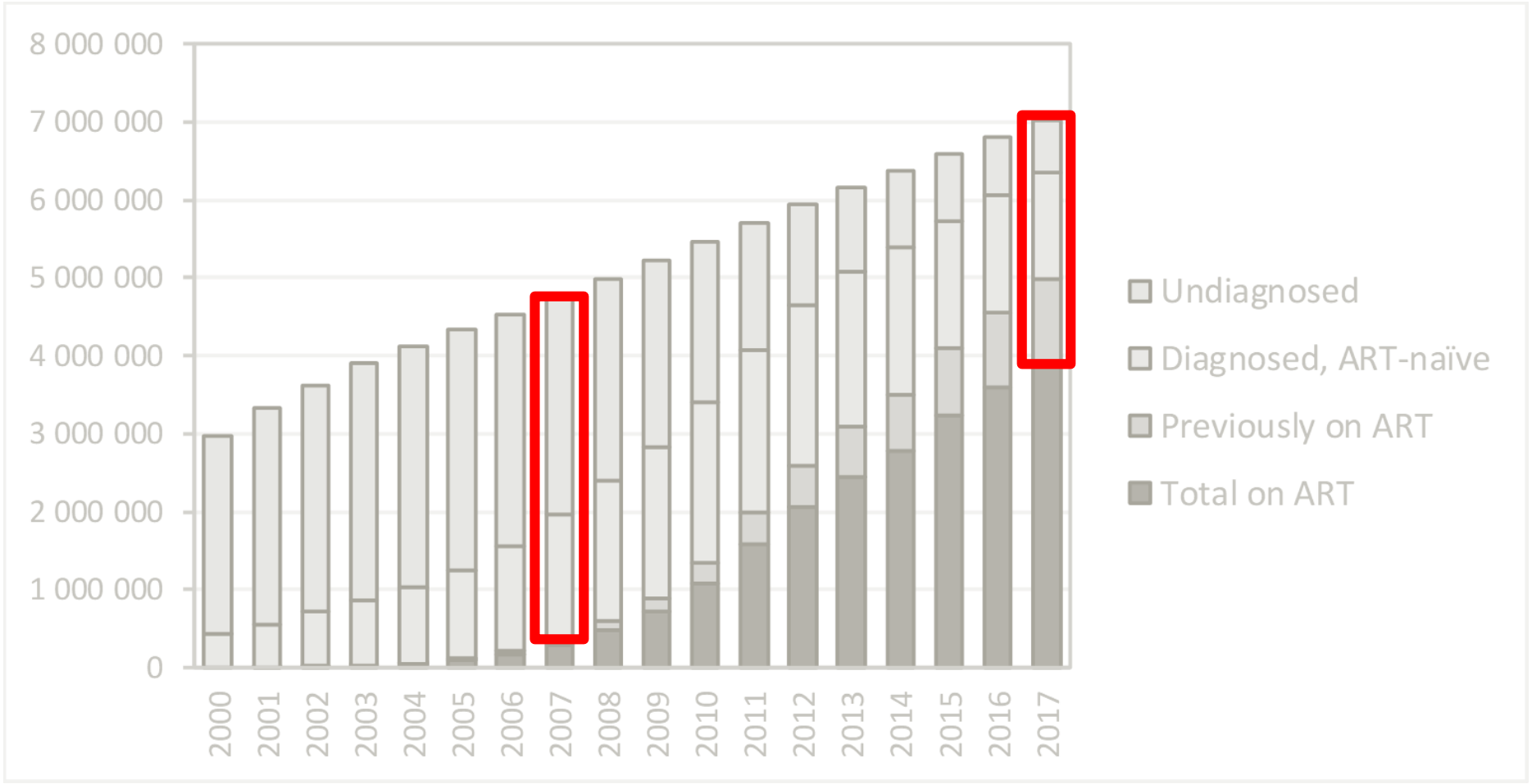
53% drop over 10 years in percentage not on ART

Courtesy: Leigh Johnson
Thembisa Model 4.1



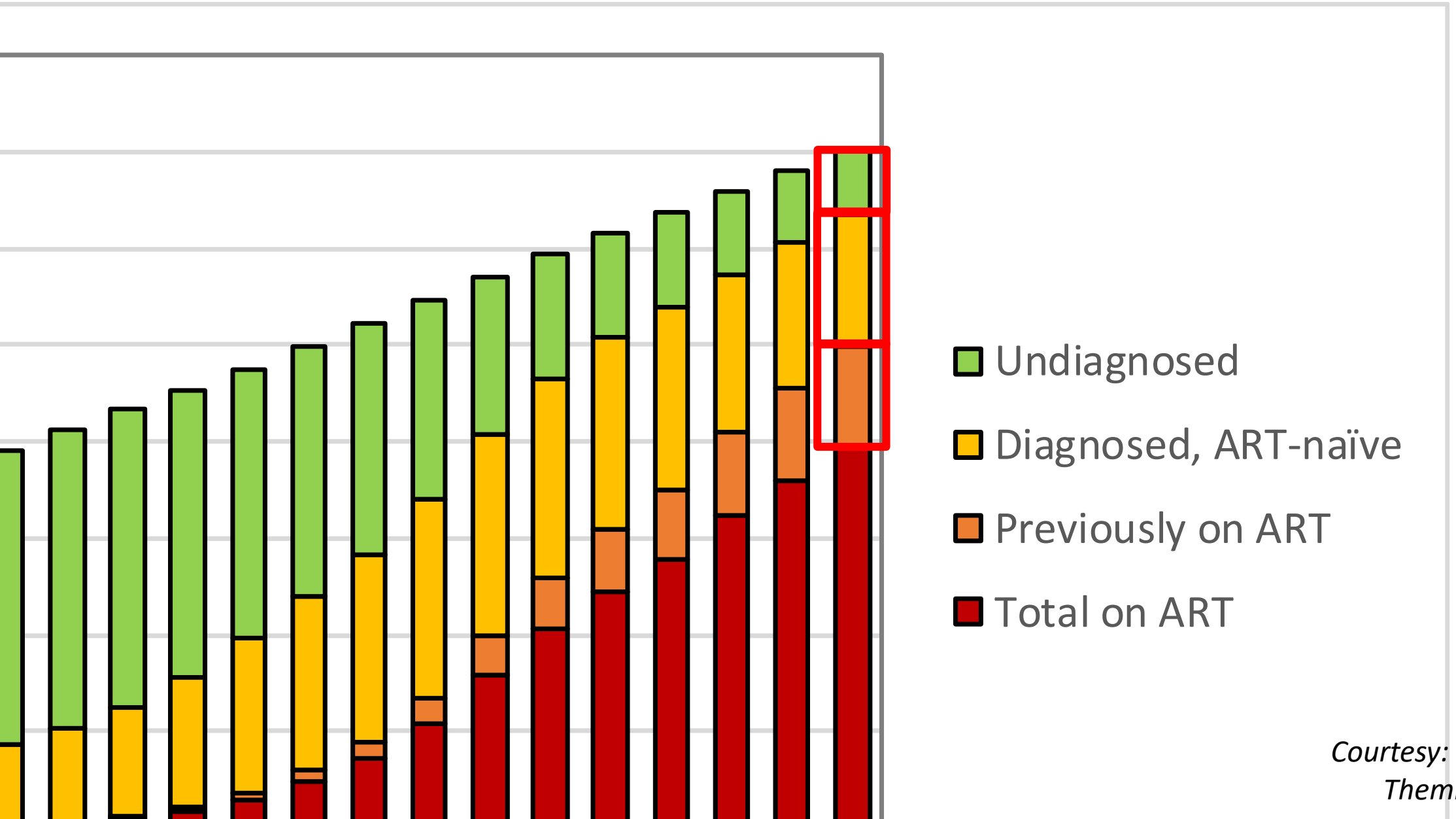
50% increase in HIV-infected population over 10 years

Courtesy: Leigh Johnson
Thembisa Model 4.1



30% drop over 10 years in absolute numbers not on ART

Courtesy: Leigh Johnson
Thembisa Model 4.1



Courtesy: Leigh Johnson
Thembisa Model 4.1

HCT: Original data flow pathway

Counsellor completes HIV testing form

Original form placed in patient folder

Patient sticker placed in counsellor's logbook

Submitted to counsellor NPO

Patient sticker with result forwarded to MOU HIV clinic for capturing in MOU HIV Register

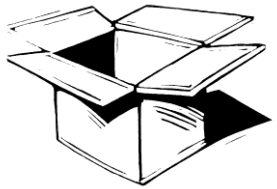
Aggregate data submitted to Information Management

Courtesy: Nisha Jacob

HCT digitisation PoC: Revised data flow pathway

Counsellor completes HIV testing form in duplicate

Original form placed in patient folder

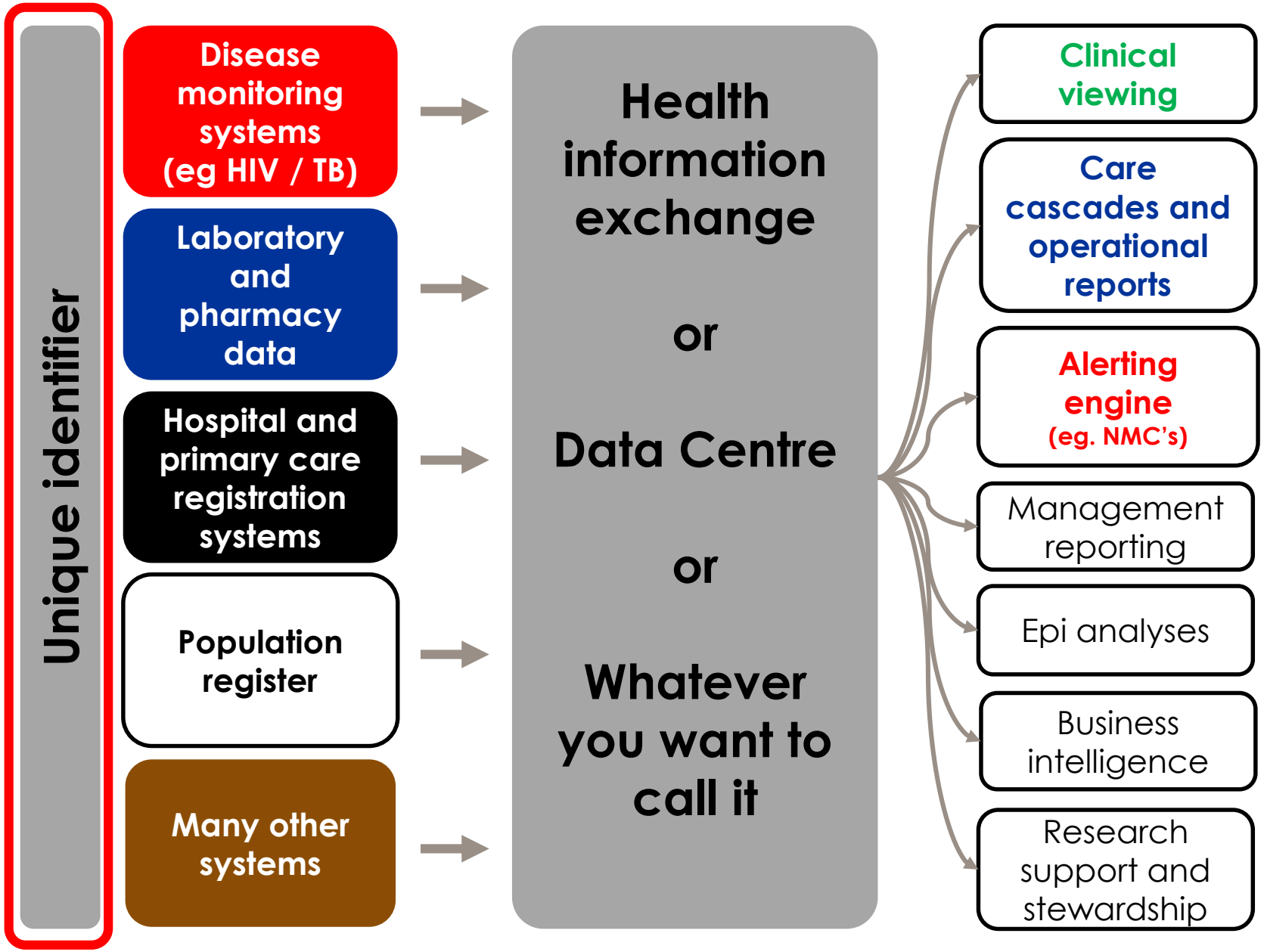


Duplicate form placed at facility lab collection point

Forms collected by lab transport service for transfer to lab

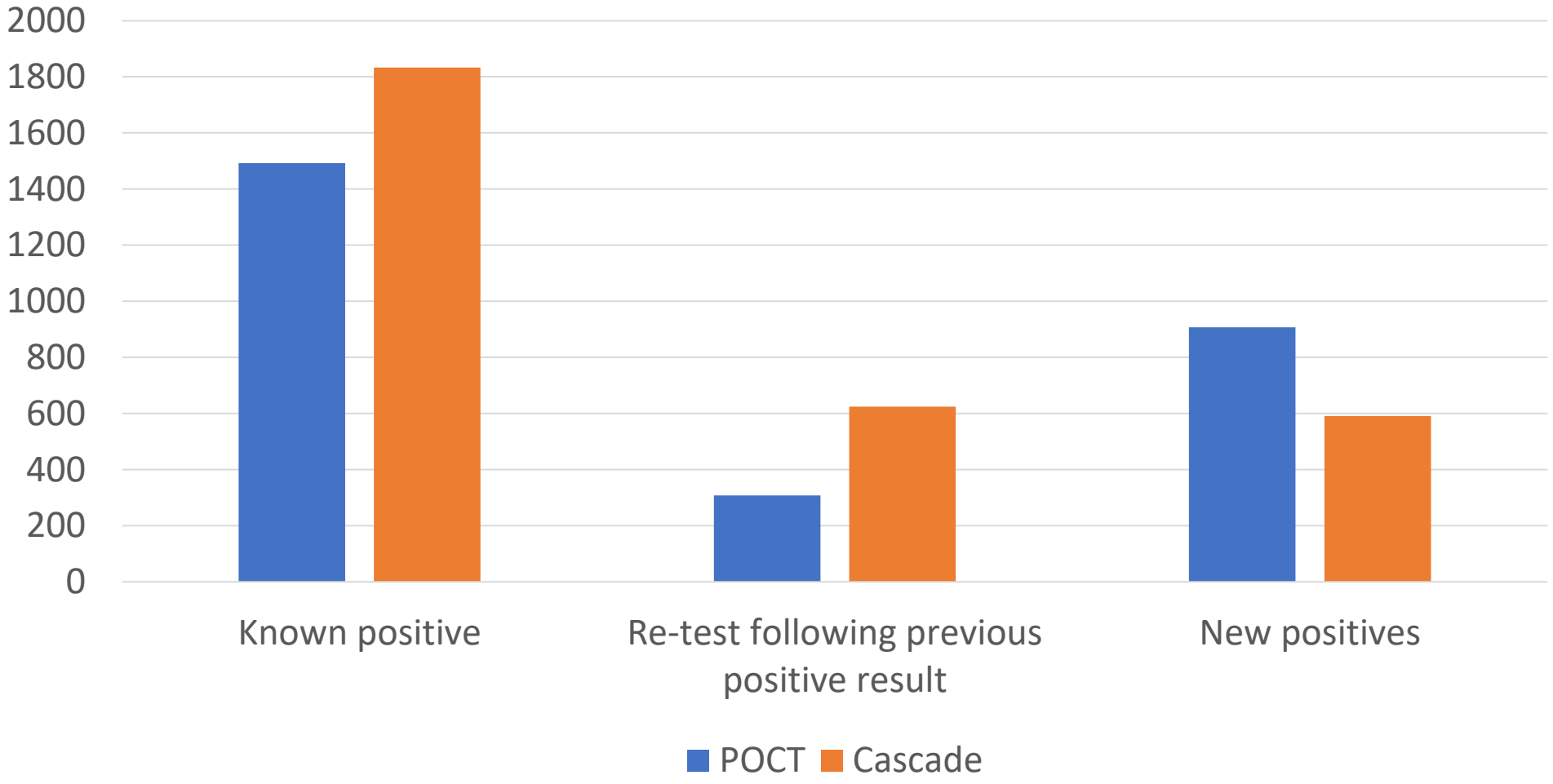
Forms received at lab/provincial office for capturing into integrated database

Courtesy: Nisha Jacob


Unique identifier
Disease monitoring systems (eg HIV / TB)
Laboratory and pharmacy data
Hospital and primary care registration systems
Population register
Many other systems
Health information exchange
or
Data Centre
or
Whatever you want to call it
Clinical viewing
Care cascades and operational reports
Alerting engine (eg. NMC's)
Management reporting
Epi analyses
Business intelligence
Research support and stewardship

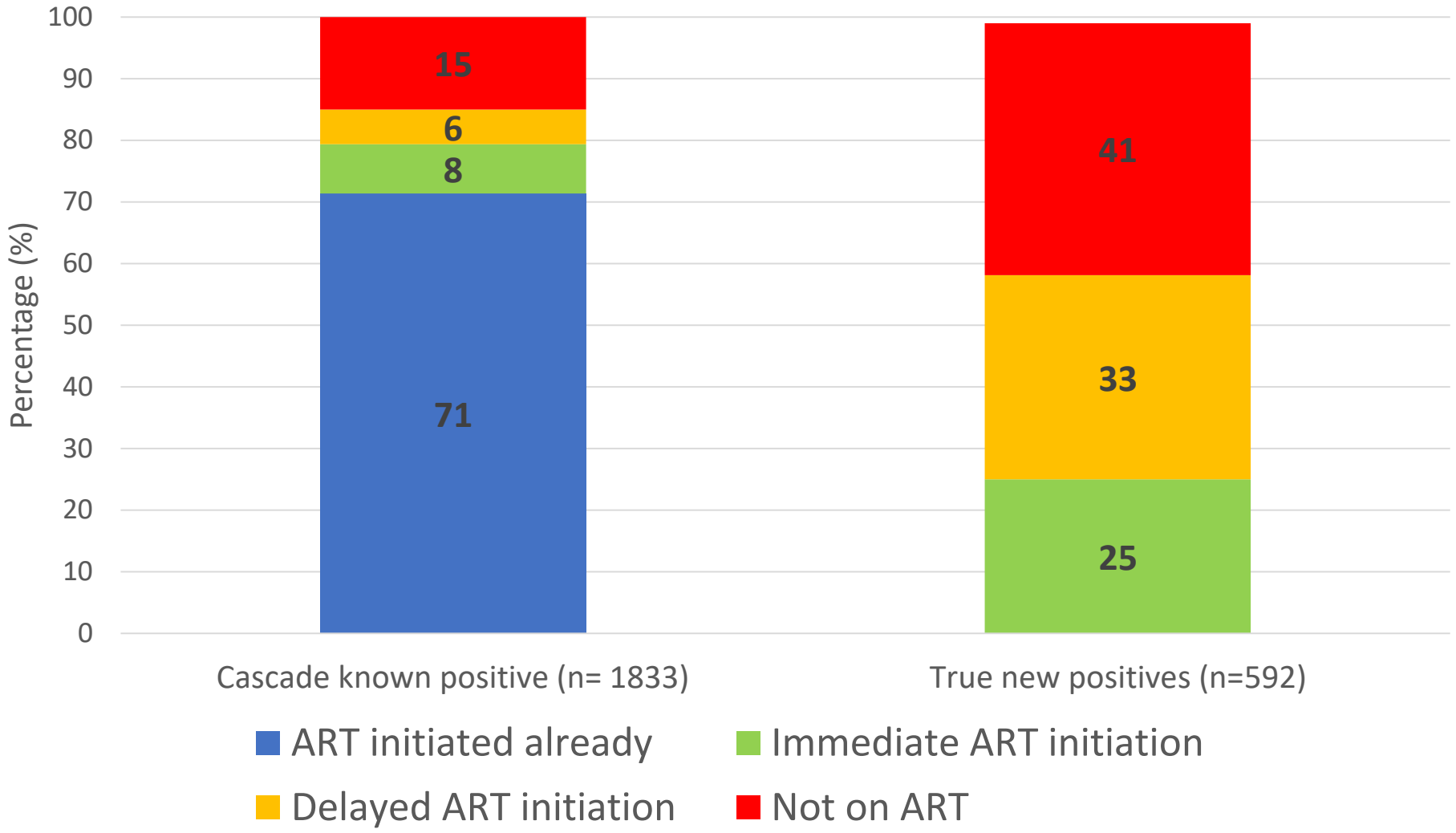
PoCT vs Data Centre HIV Cascade Results for HIV+

(n=11,000, 1200 tested positive)



Courtesy: Nisha Jacob, UCT SPHFM Research Day presentation, September 2018

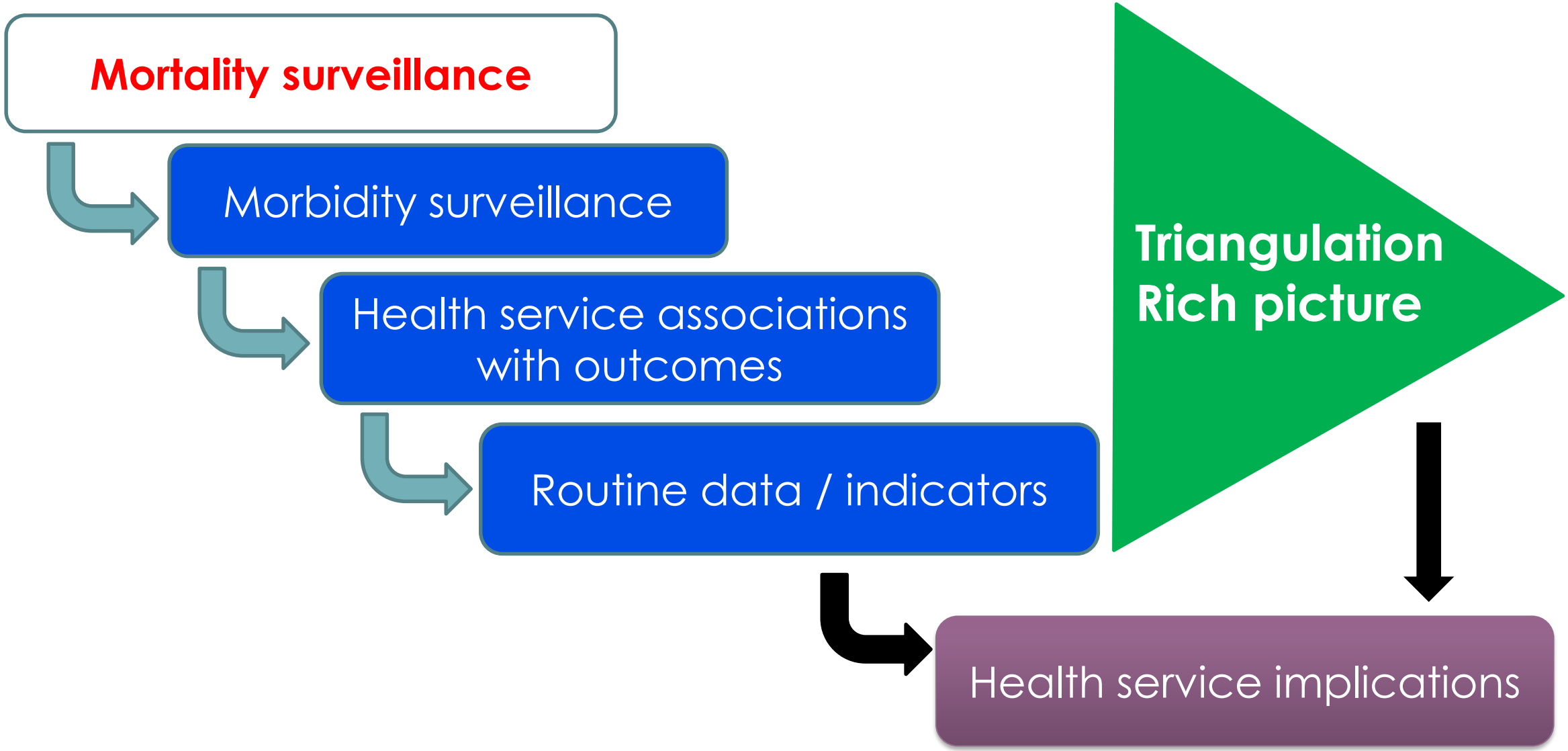
ART Status of patients testing HIV positive in primary care



Courtesy: Nisha Jacob, UCT SPHFM Research Day presentation, September 2018

Triangulating the modelling with real data Western Cape Province

Approach


Mortality surveillance
Morbidity surveillance
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Western Cape: YLLs

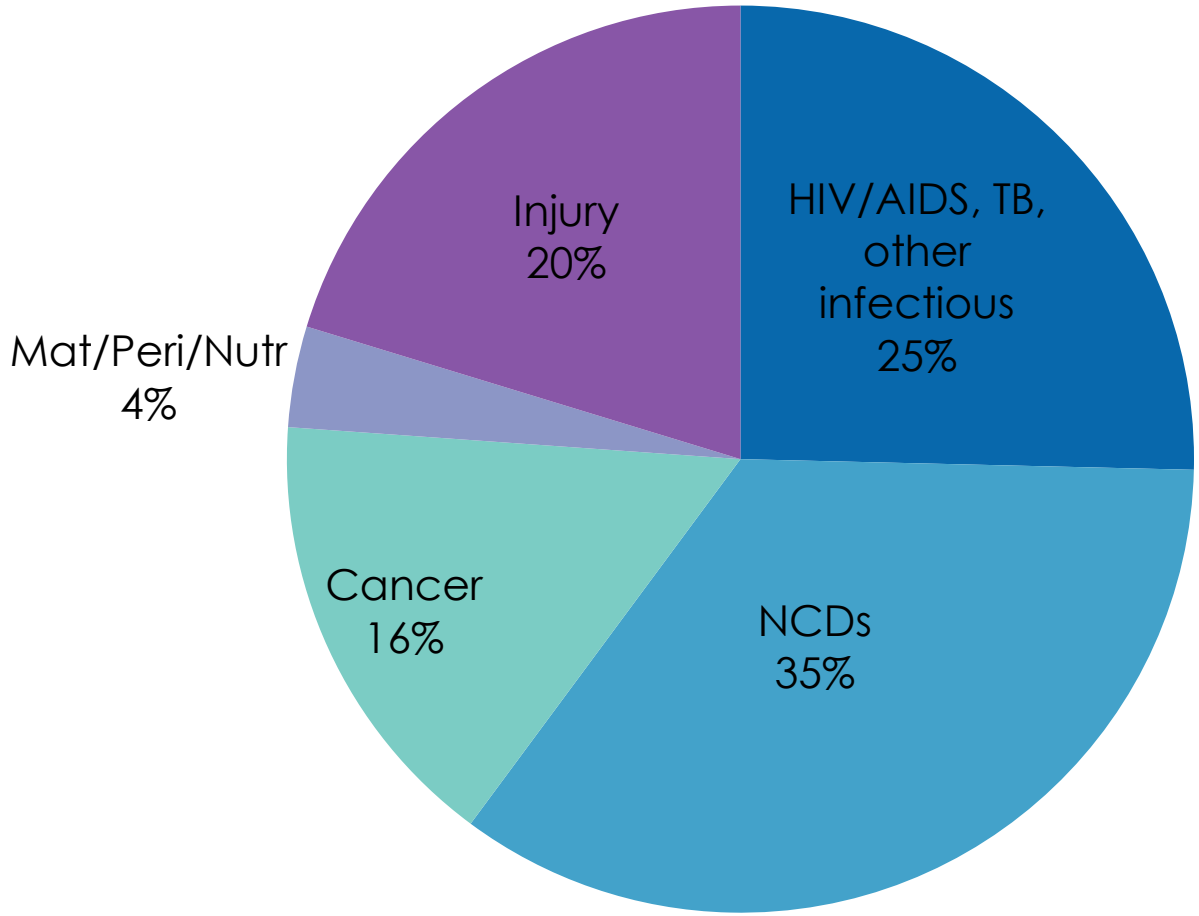
Top 10, ranked per 2015 (%)

Causes of death	2009	2010	2011	2012	2013	2014	2015
HIV/AIDS	13.7	13.2	12.4	11.7	11.3	10.5	11.7
Interpersonal violence	7.6	8.3	8.3	9.2	10.3	11.3	10.5
Tuberculosis	10.9	8.6	8.6	7.4	6.8	8	8
Diabetes mellitus	4.3	4.6	4.5	4.3	4.3	5.5	5.9
Ischaemic heart disease	5.3	5.9	6.6	6.7	6.6	5.5	5.7
Cerebrovascular disease	4.6	4.8	5.1	5.2	5.2	4.7	4.7
Trachea/bronchi/lung CA	3.4	3.5	3.8	3.7	4.1	3.9	4.1
Road injuries	4.8	5.1	4.5	4.6	4.3	4.3	4
COPD	3.2	3.2	3.5	3.8	3.9	3.5	3.8
Lower respiratory infections	4.1	4.1	4.8	4.2	4.2	2.7	2.9

Courtesy: Evans/Morden

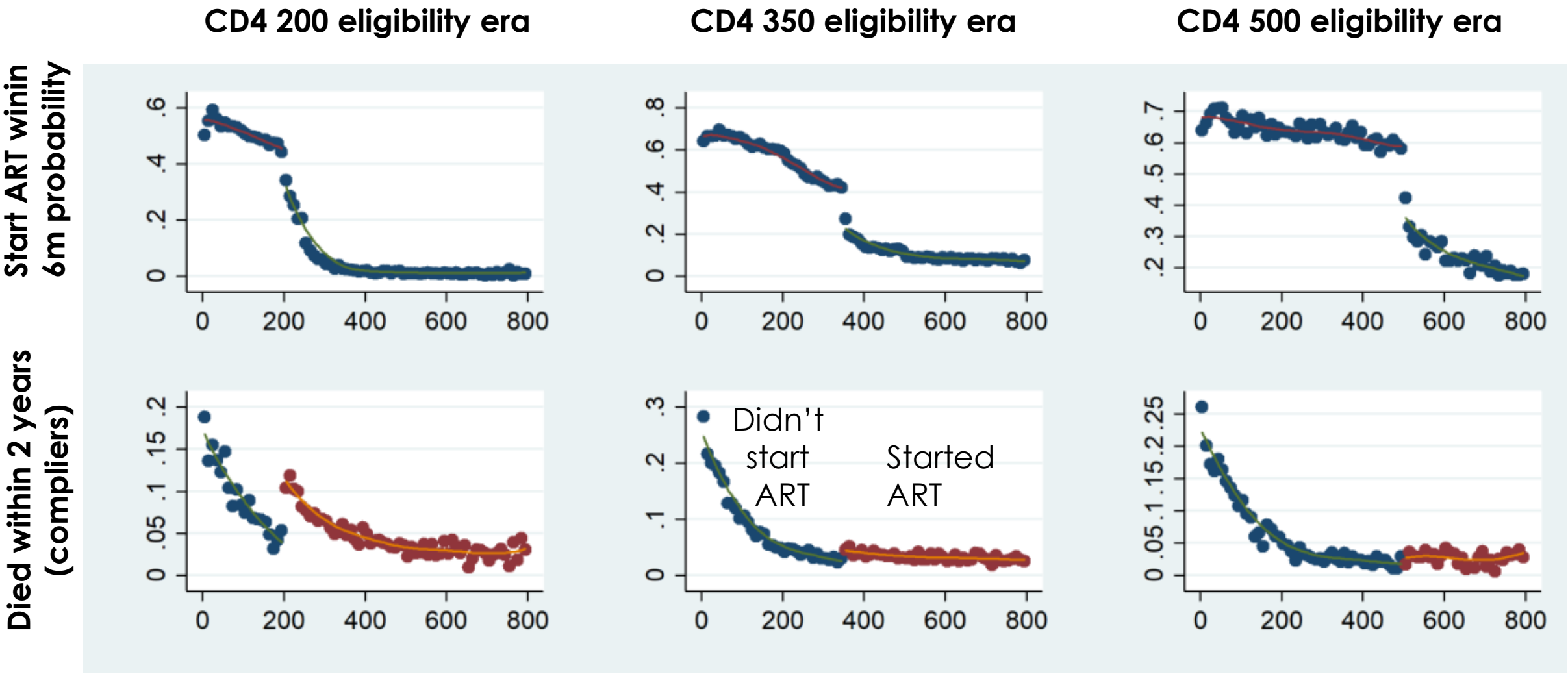
Broad causes of morbidity (using Years of Life Lost)

Pie chart showing that health conditions requiring sustained support from the health service because of their chronicity (HIV/AIDS and NCDs) are the largest contributors to the burden of disease in the province



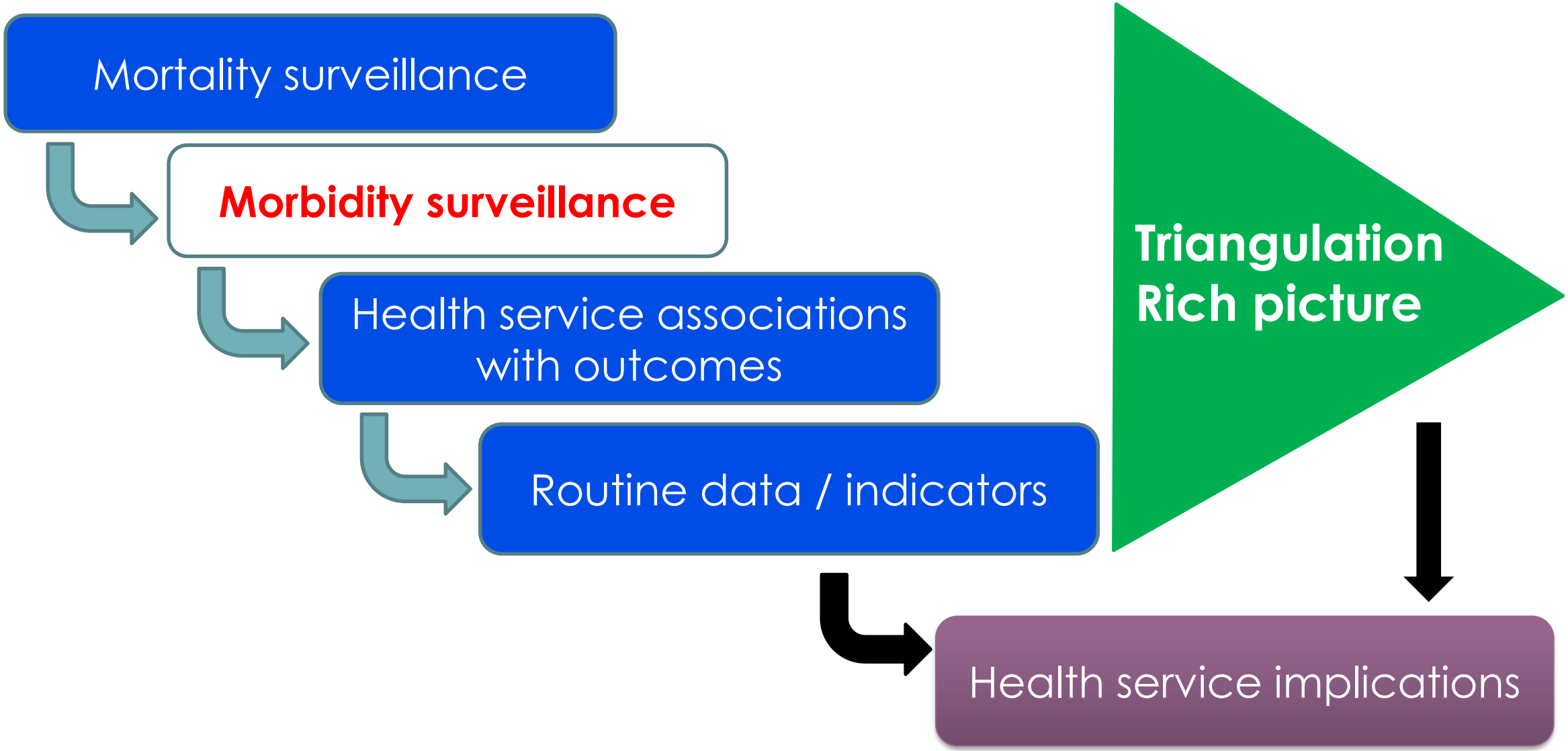
Courtesy: Evans/Morden

Impact of ART eligibility guidelines on 24m mortality (natural causes)



Courtesy: Meg Osler, unpublished

Approach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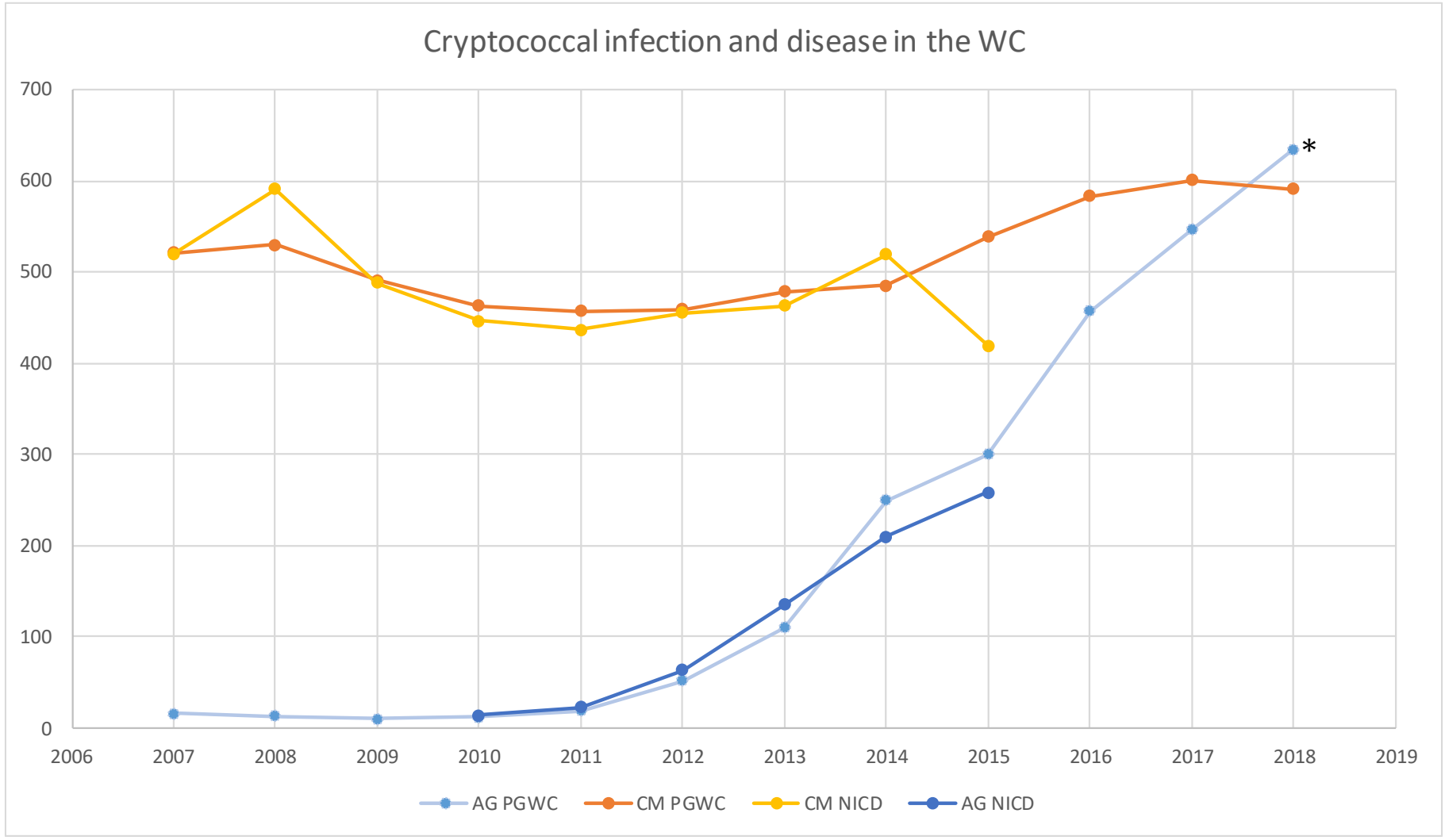
HIV status among people admitted to medical wards in province and selected hospitals

- Meintjes demonstrated that more than half of medical admissions at GF Jooste were HIV-associated in 2013, higher than in 2003.

- HIV-associatedness of medical admissions seems not to have changed from 2013 to 2018, and the majority of those admissions are now in ART-experienced patients

- Using a different methodology based just on routine data, this proportion is as high as 50% in high burden facilities (eg. KDH)

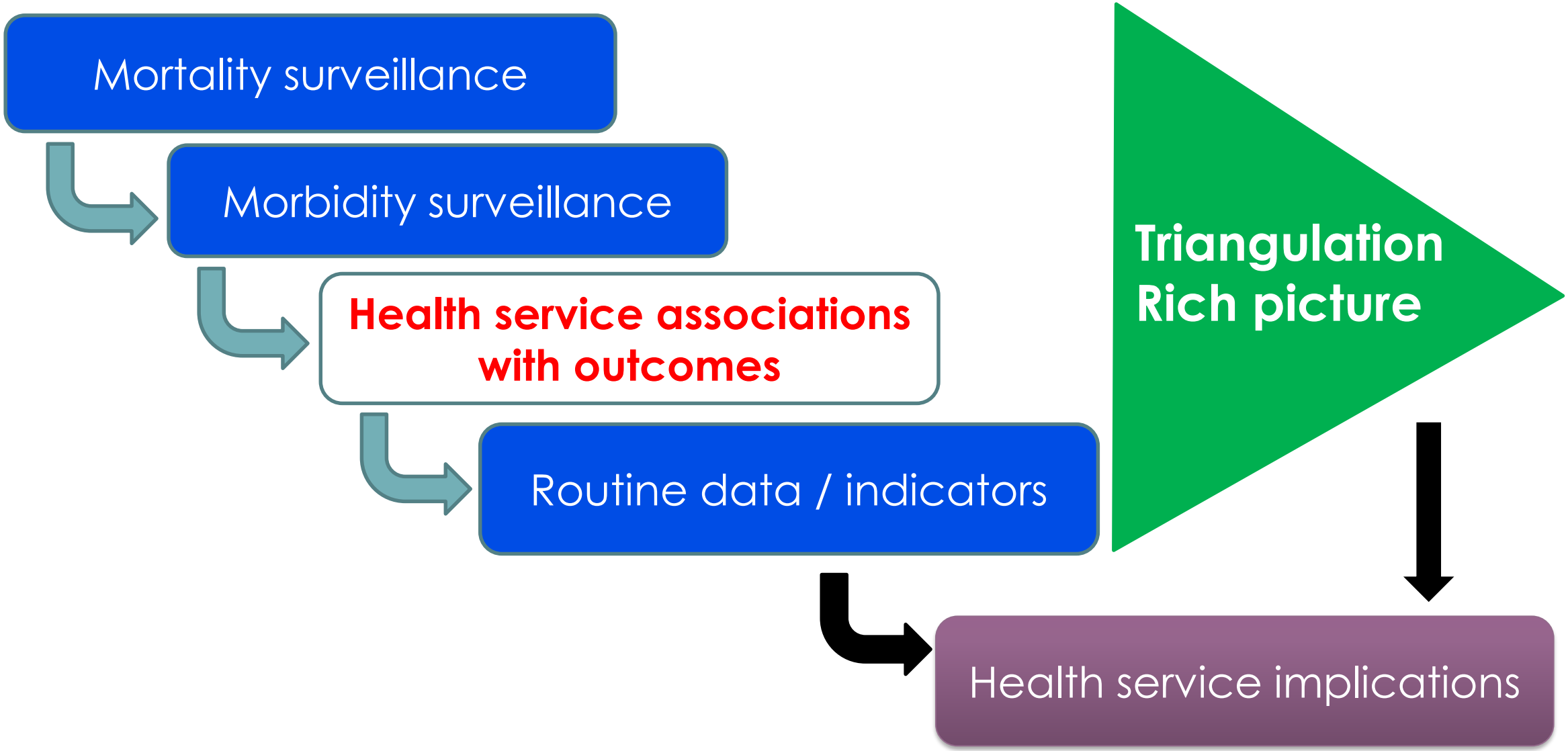
Cryptococcal meningitis updated to 2018



** 2018 half-year data doubled*

Courtesy Mariette Smith

Approach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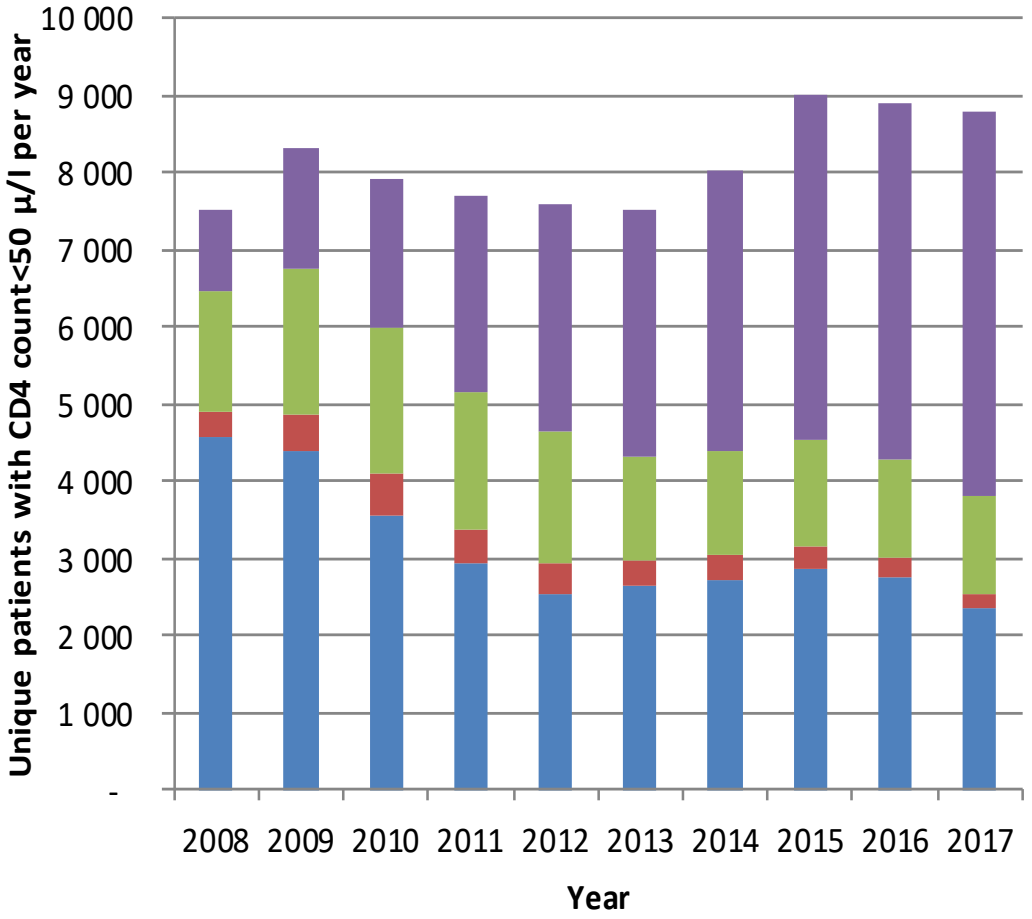
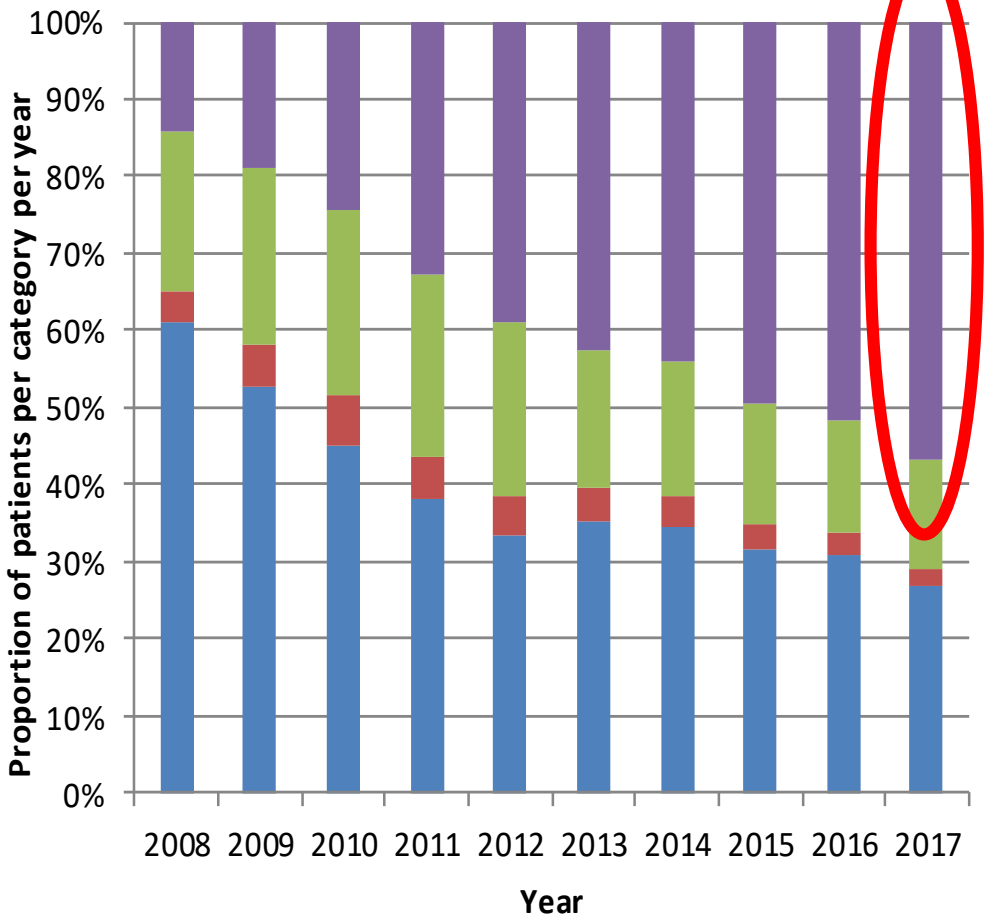
Advanced HIV proxied by CD4 counts < 50 cells/ul

Unique patients with CD4<50 cells/µl per year



Proportion of patients per category per year

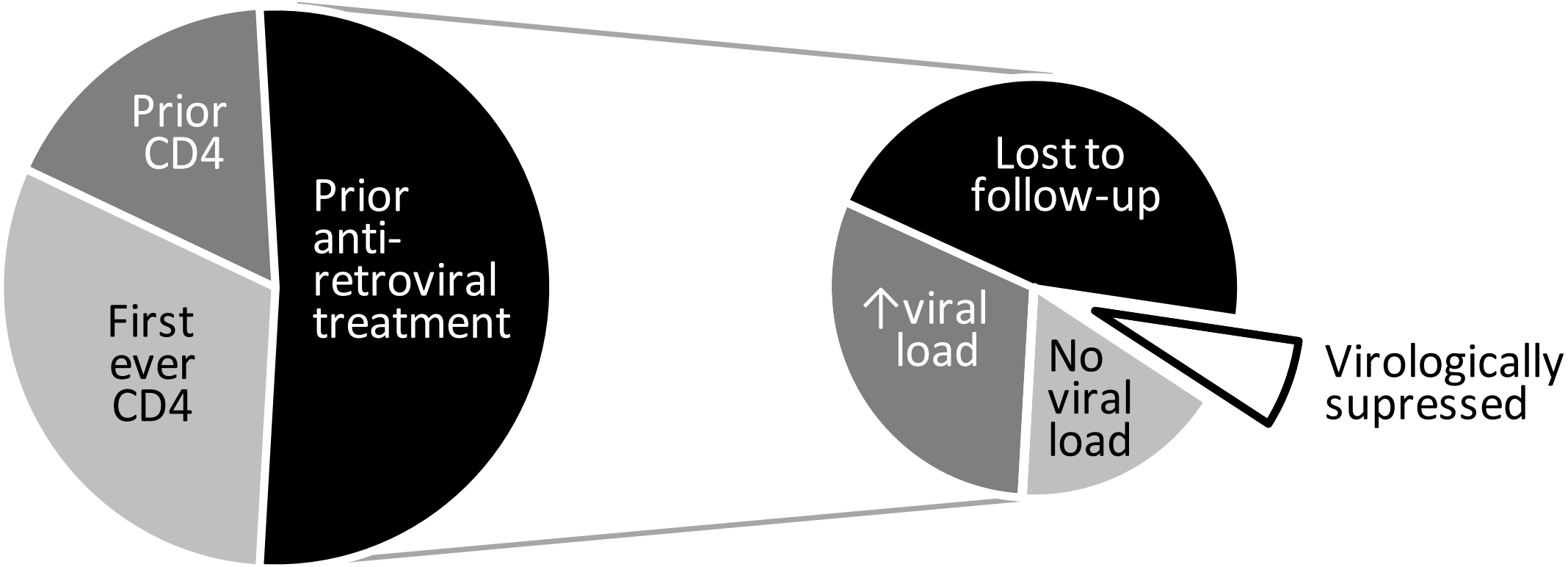


> 50% of all CD4<50 in ART-experienced

- N(%) had started ART before
- N (%) previously ART eligible, never on ART
- N(%) previously ART ineligible
- N(%)first ever presentation for CD4 count

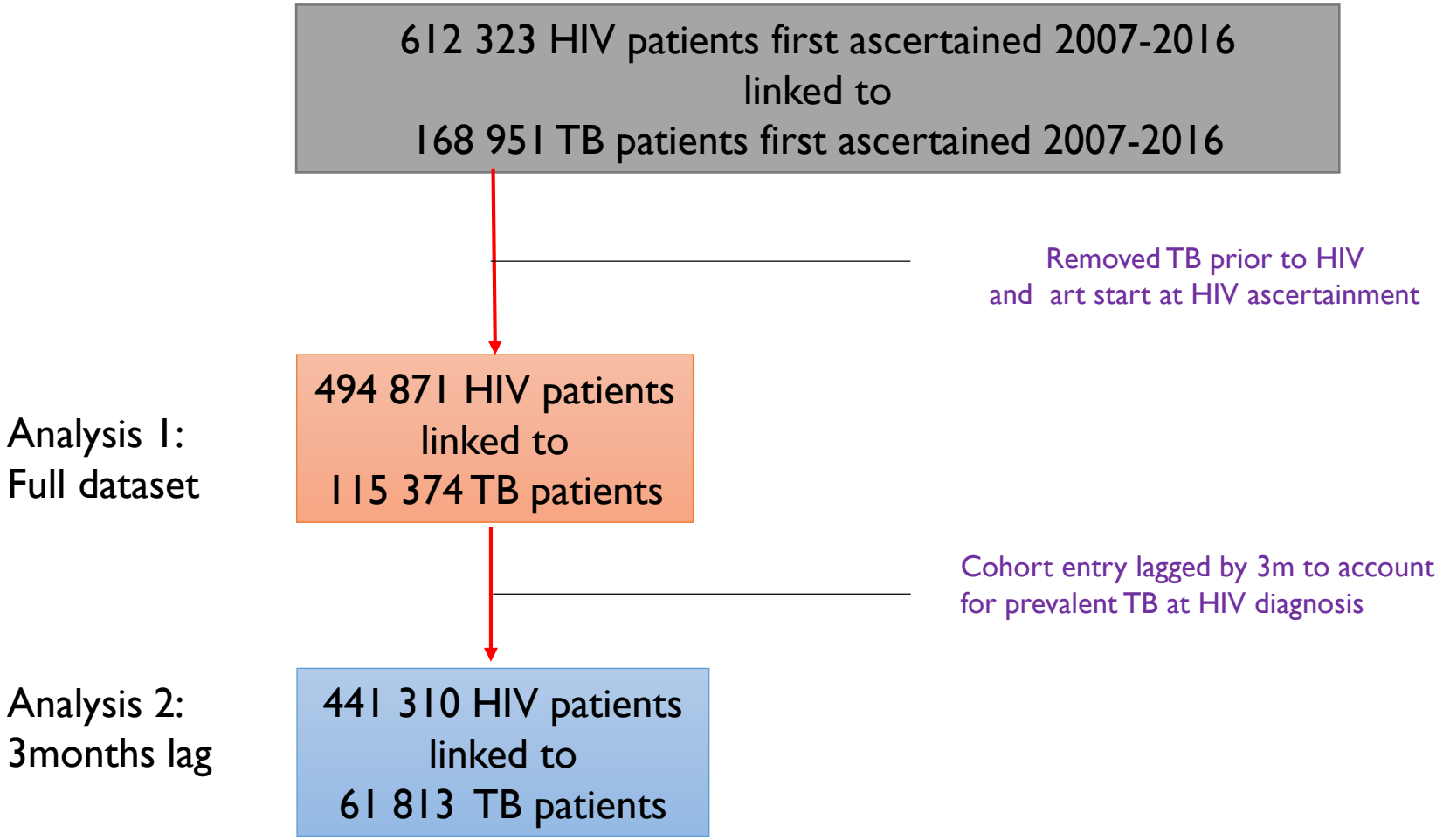
Osler. Clinical Infectious Diseases, Volume 66

Advanced HIV in 2016, proxied by CD4 < 50 cells/ul



Osler. Clinical Infectious Diseases, Volume 66

Analysis cohorts for HIV-associated TB

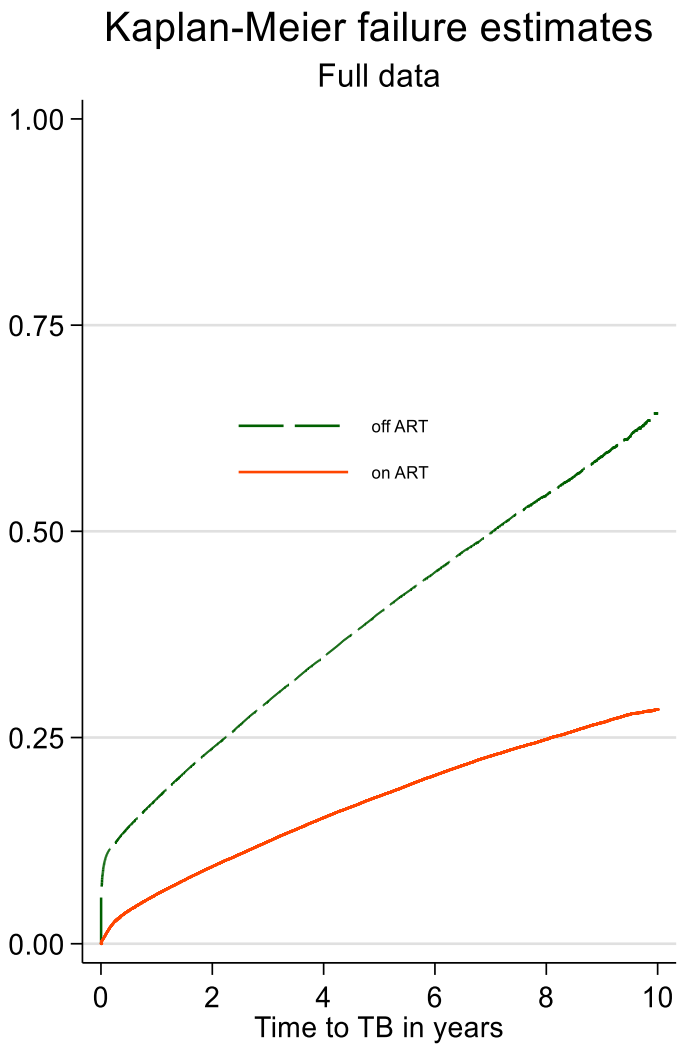


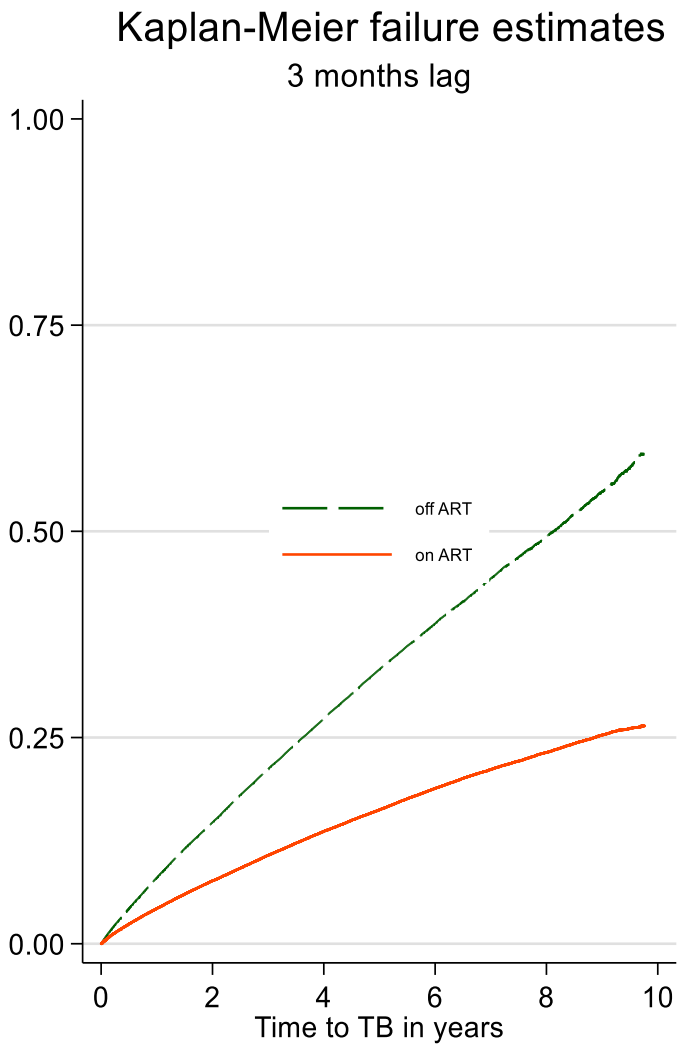
Source of TB cases

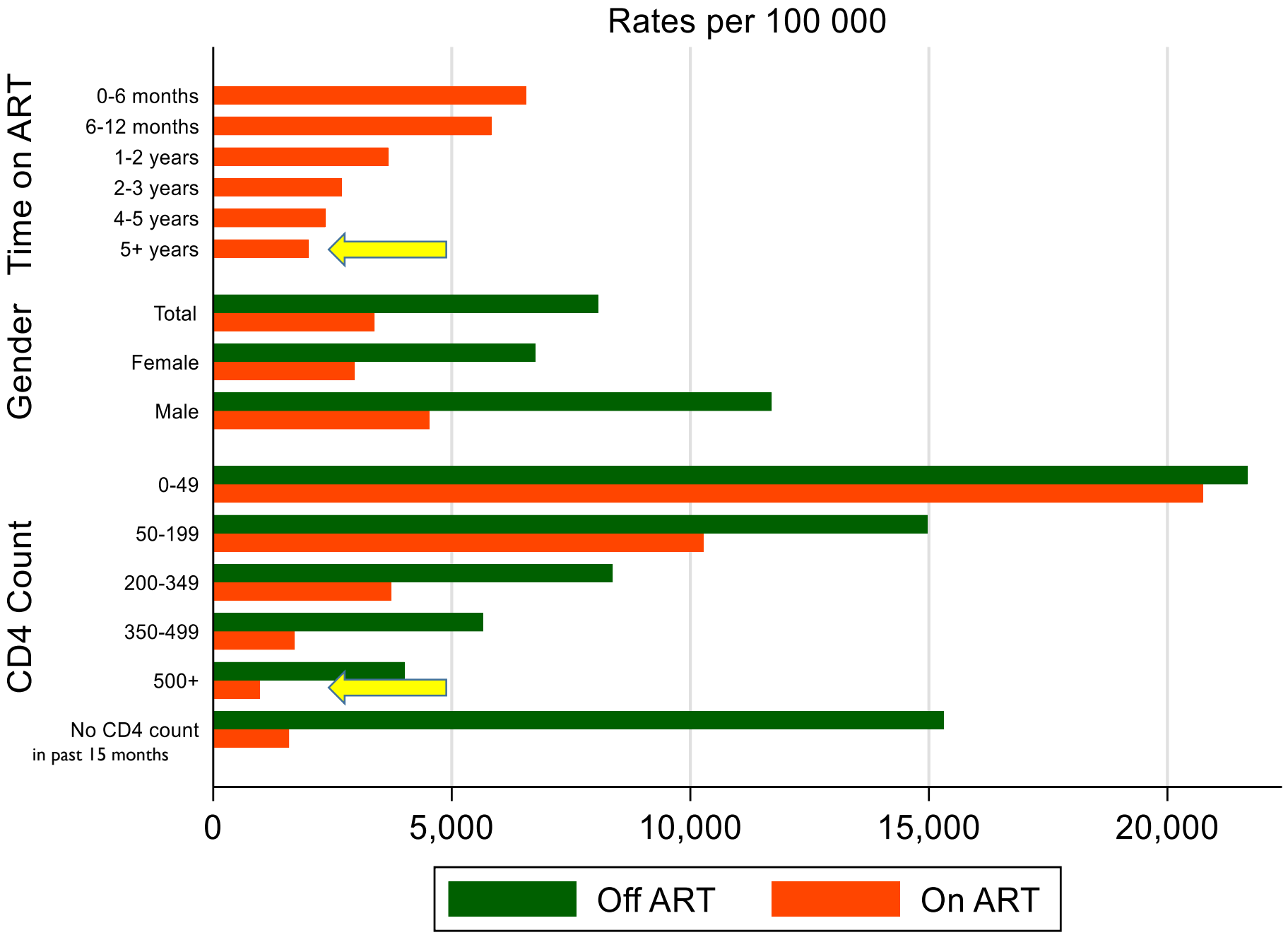
1. ETR/EDR register
2. Lab
3. Hospital diagnosis
4. Other e.g. drugs

Zinyakatira, IWHOD 2018

HIV-associated TB incidence on and off ART







Zinyakatira, IWHOD 2018

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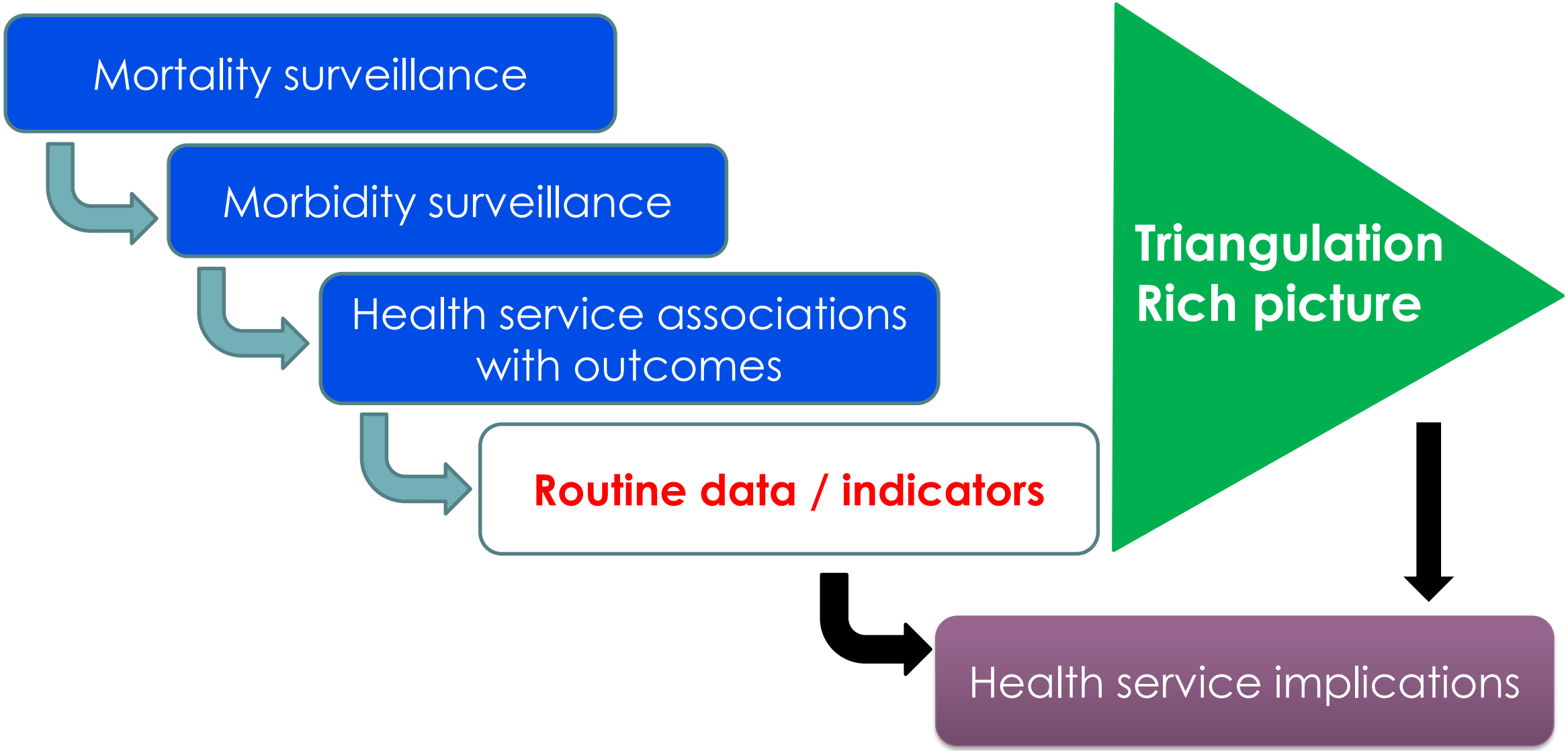
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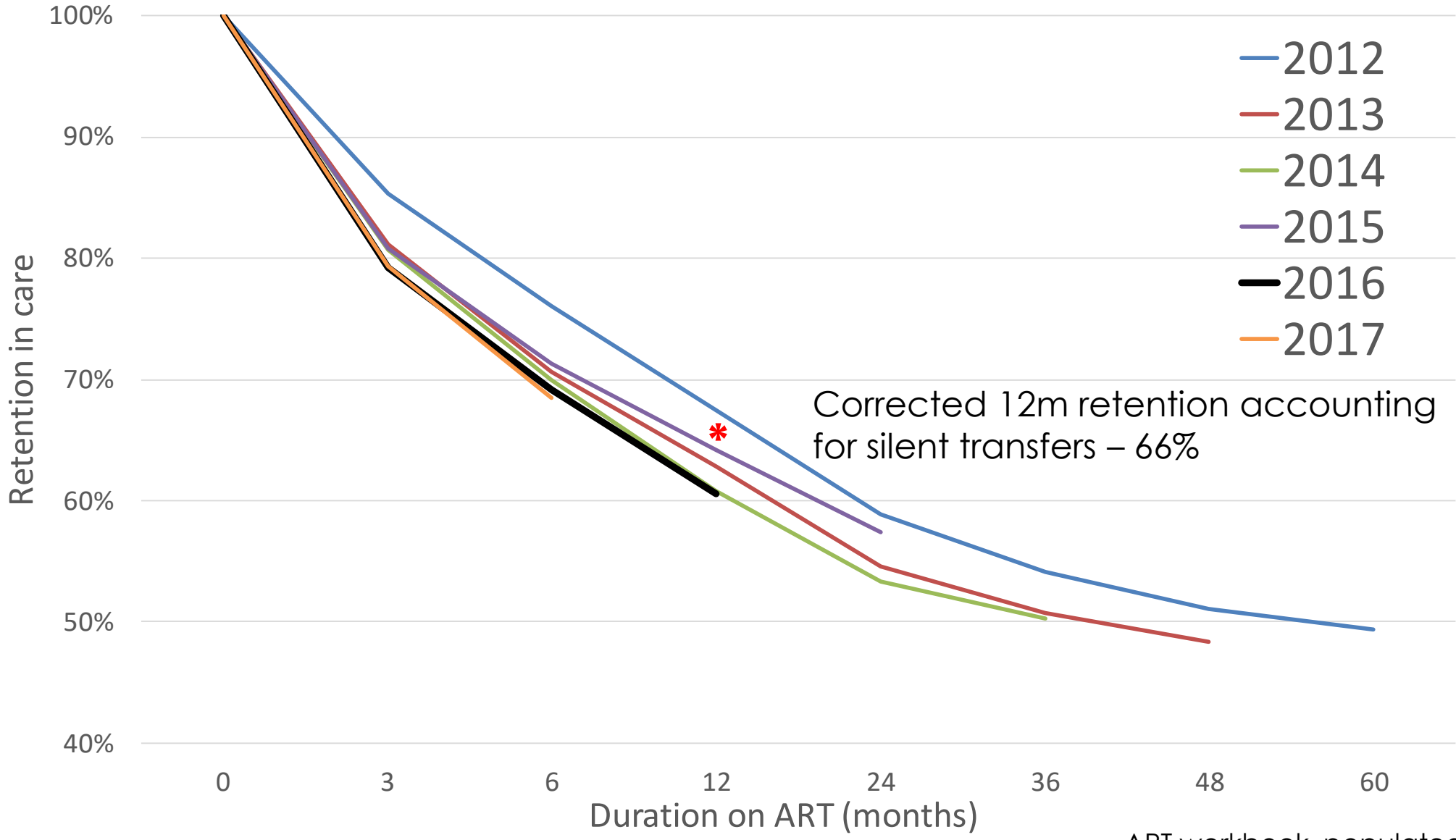
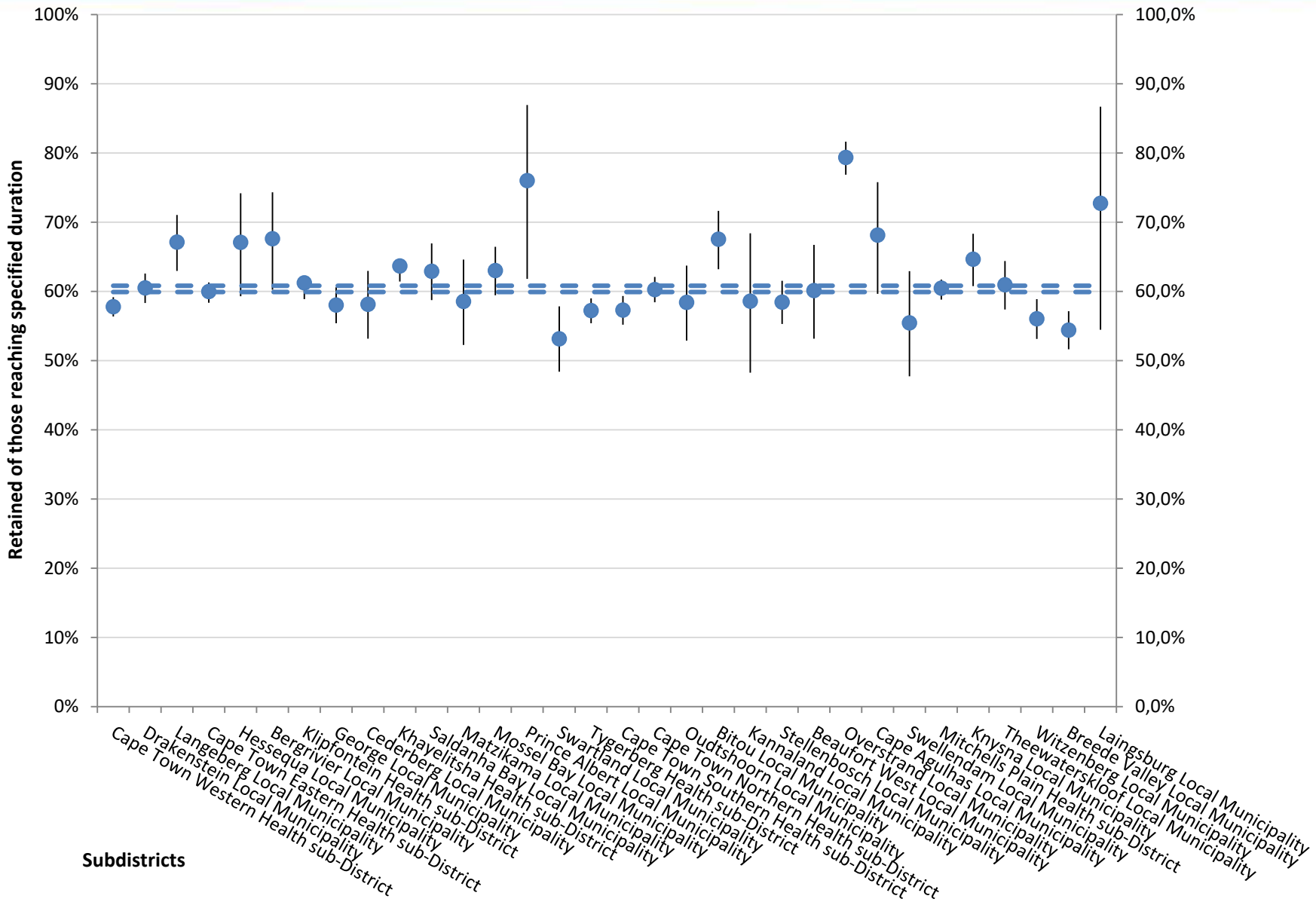
Retention in care for patients starting ART



ART workbook, populated through Sinjani

Variation in 12m ART retention by subdistrict



Live HIV 90 90 90 Cascade for 01/01/2018

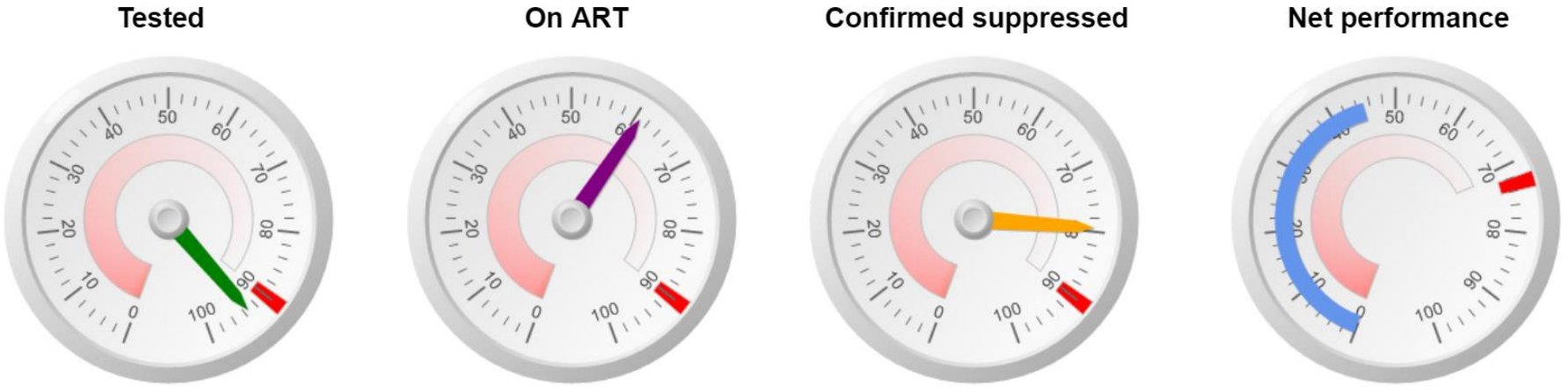
Health BI > Clinical BI > Data Centre > Reports > Management Reports

Actions | 1 of 1 | Find | Next

Western Cape Government

Western Cape Provincial Health Data Centre

HIV 90-90-90 Report by Province



PROVINCE WIDE 90-90-90

Modelled* HIV+

451648

Tested Known HIV**

421660 (93.4%)

On ART***

256206 (60.8%)

VL in the past 15 months

221739 (88.5%)

VL < 1000

203498 (91.8%)

Confirmed suppressed

203498 (79.4%)

Overall control

203498 (45.1%)

2017 TB case-finding in the Western Cape

Report on TB/HIV Collaborative Activities

WESTERN CAPE ()

Quarter 1 to Quarter 4 of 2017

Created By: ADMIN ONE

Created Date: 03/07/2018 23:28:21

ETR.Net The Electronic Tuberculosis Register

Total number of TB patients: 41,549 **41549**

Proportion of registered TB patients with known HIV status	40420	97.3 %
Proportion of all TB patients known to be HIV positive	15997	38.5 %
Proportion of all TB patients known to be HIV positive on CPT	13796	86.2 %
Proportion of all TB patients known to be HIV positive on ART	13651	85.3 %

WESTERN CAPE ()

Quarter 1 to Quarter 4 of 2012

Created By: ADMIN ONE

Created Date: 03/07/2018 23:36:40

ETR.Net The Electronic Tuberculosis Register

Total number of TB patients: 45,722 **45722**

Proportion of registered TB patients with known HIV status	43171	94.4 %
Proportion of all TB patients known to be HIV positive	17807	38.9 %
Proportion of all TB patients known to be HIV positive on CPT	15945	89.5 %
Proportion of all TB patients known to be HIV positive on ART	12420	69.7 %

Western Cape Province

2017 TB case-finding

56,789

Total TB cases	56 789	**Initiated treatment**	43 005 (75.7%)
In TB register*	38 923 (68.5%)	**Lab confirmed**	29 214 (67.9%)
Lab confirmed	42 959 (75.6%)	**Not in register**	4 921 (11.4%)
Retreatment cases	17 618 (31.0%)		
Extra-pulmonary TB cases	6 149 (10.8%)		

Drug susceptibility	**N= 56 789**
MDR	1 682 (3.0%)
XDR	60 (0.1%)
RIF	215 (0.4%)
Mono/Poly	457 (0.8%)
Sensitive	29 870 (52.6%)
Not tested	24 505 (43.2%)

Previous TB episodes	**N= 56 789**
None	40 752 (71.8%)
1	10 613 (18.7%)
2	3 561 (6.3%)
3	1 259 (2.2%)
>3	604 (1.1%)

Duration between repeat TB episodes	**N= 16 037**
<1 yrs	3 762 (23.5%)
<2 yrs	3 574 (22.3%)
<3 yrs	2 036 (12.7%)
<4 yrs	1 488 (9.3%)
<5 yrs	1 174 (7.3%)
>5 yrs	4 003 (25.0%)

Ascertainment basis	**N= 56 789**
In register	38 923 (68.5%)
Lab confirmed	15 737 (27.7%)
Xpert	21 297 (49.6%)
Culture	19 862 (46.2%)
LPA	15 (0.0%)
Microscopy	1 785 (4.2%)
Drug specimen	1 532 (2.7%)
ICD10 code	147 (0.3%)
TB Hospital admission	450 (0.8%)
Other	(0.0%)

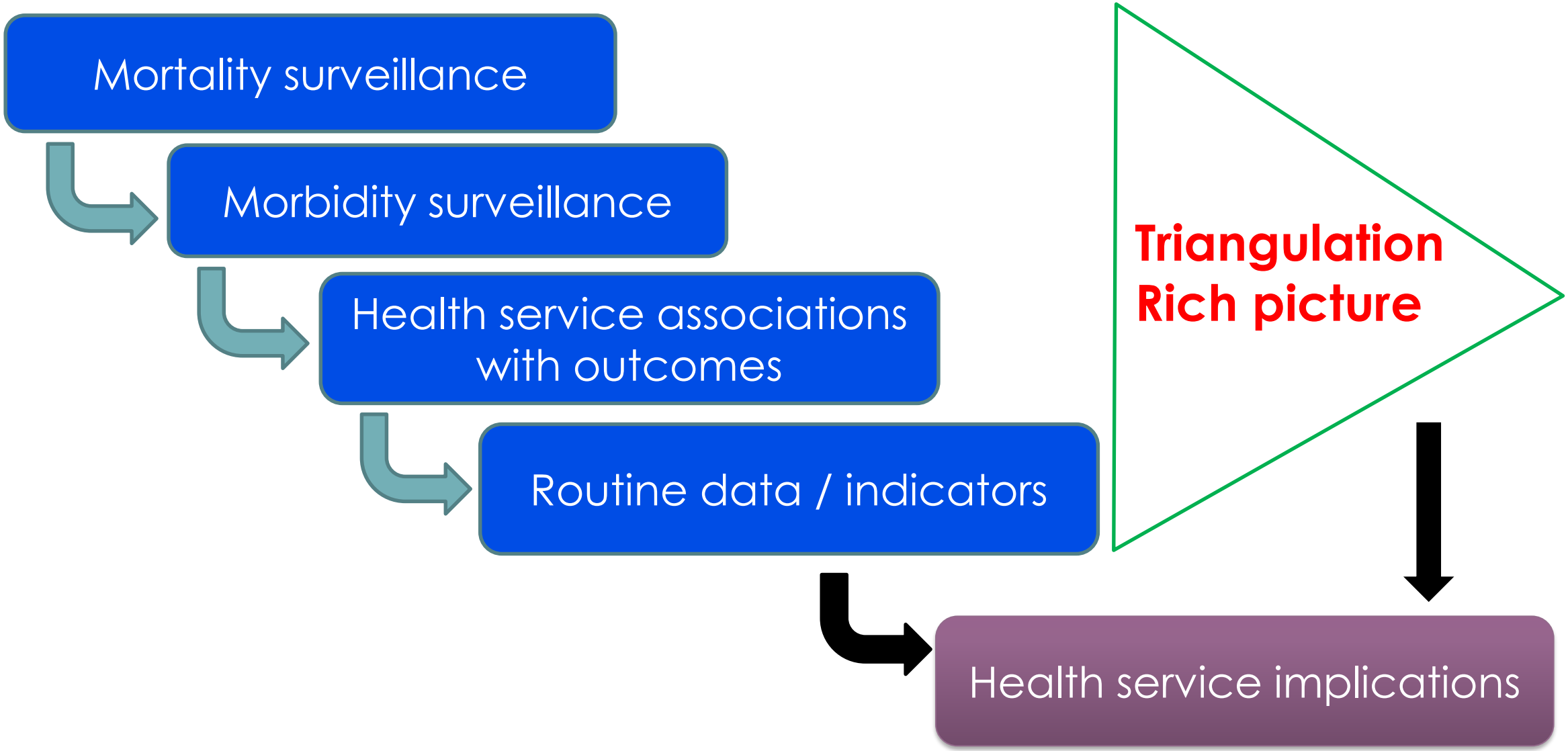
Treatment	**N= 43 005**
Initiation	
first evidence	18 889 (43.9%)
<7d	16 544 (38.5%)
<14d	3 049 (7.1%)
<28d	1 898 (4.4%)
>28d	2 625 (6.1%)

Demographics	**N= 56 789**
Age	
0 to 14	5 533 (9.7%)
15 to 24	7 697 (13.6%)
25 to 34	15 285 (26.9%)
35 to 44	13 090 (23.1%)
45 to 54	9 114 (16.0%)
55 to 64	4 216 (7.4%)
> 65	1 839 (3.2%)
Sex	
Females	24 273 (42.7%)
Males	32 363 (57.0%)
HIV status	
HIV Positive	23 653 (41.7%)
Started ART	20 111 (85.0%)
Pre TB	12 932 (64.3%)
Post TB	7 179 (35.7%)

Outcomes	**N= 38 923***
With outcome	20 935 (53.8%)
Cured	6 468 (16.6%)
Completed	10 806 (27.8%)
Died	1 119 (2.9%)
On treatment	(0.0%)
Failed	111 (0.3%)
DR	109 (0.3%)
Defaulter	2 322 (6.0%)
LTF - with visit	16 158 (41.5%)
LTF - no visit	1 830 (4.7%)

Courtesy Alexa Heekes, new Sharepoint report

Approach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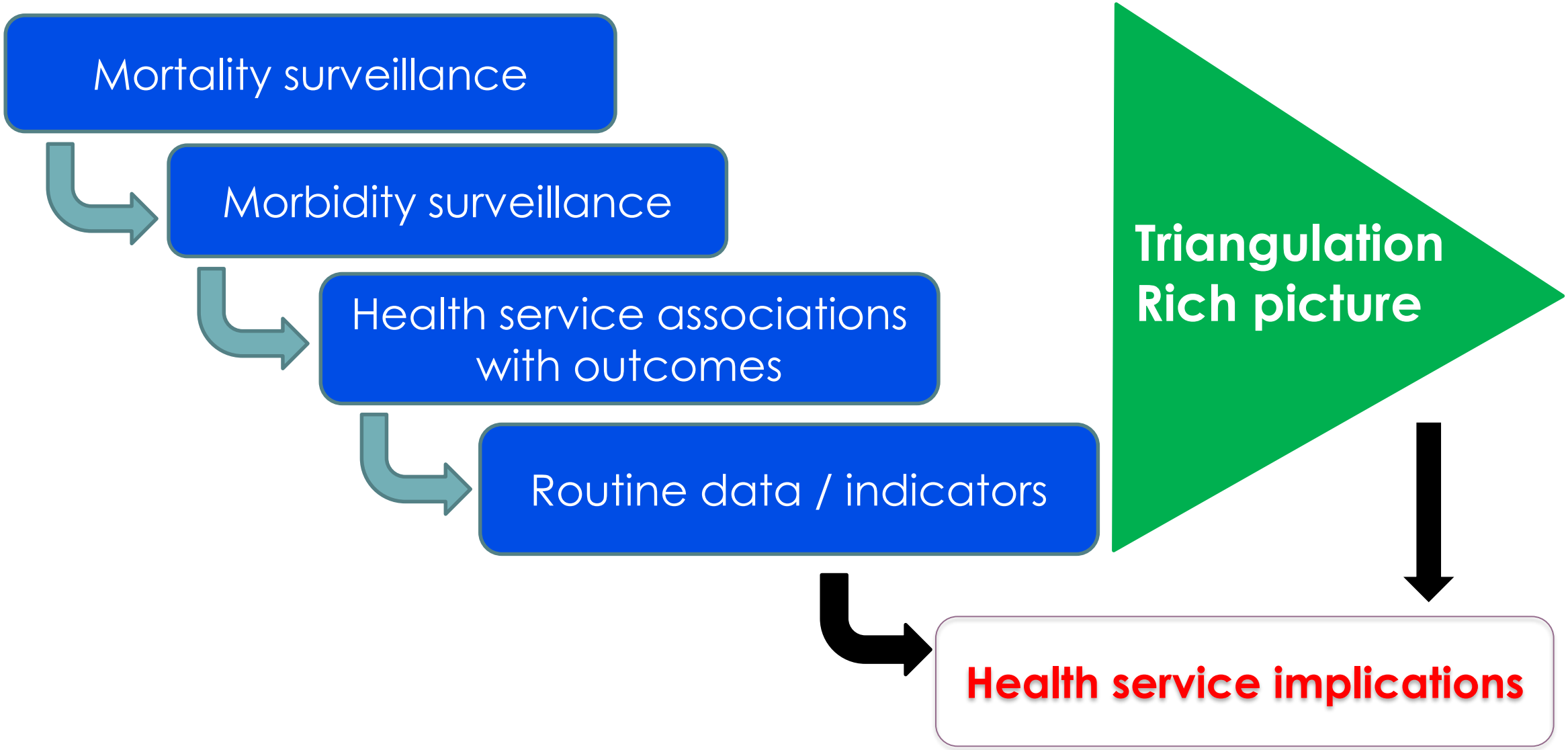
Summary

- In spite of treatment, there is an ongoing or possibly even increasing burden of advanced HIV disease due to
  - Doubling of HIV population, with patients deteriorating quickly if stopping treatment
  - Poor retention in care of those who do start treatment

- Evidenced by ongoing or increasing
  - HIV mortality
  - Admission to medical wards that is HIV-associated
  - Presentation with low CD4 counts
  - Cryptococcal meningitis
  - HIV-associated tuberculosis

- For each of the above, data clearly show that the majority of affected patients had previously accessed treatment

Approach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Summary

- From a morbidity and mortality perspective, re-engaging those previously started on ART and initiating those known to the service likely the most impactful approach
- 2nd generation routine data systems which are actionable at person-level should be pursued
- New approaches to long term care focussed on supported self-management – move beyond HIV clubs and CCMDD to patient driven vs. system driven differentiated care.
- Identify where in the system the responsibility lies for worrying about the people who are not in care but should be.

Acknowledgements

- Leigh Johnson
- Nisha Jacob
- Juliet Evans, Erna Morden, Kirsten Bobrow
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- Graeme Meintjes

Western Cape Government

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Measurement & Surveillance of HIV Epidemics

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National Institute of Child Health & Human Development

CIDER
Centre for Infectious Disease Epidemiology and Research