Western Cape Government

Health

# The leaky cascade: where exactly are patients lost to follow-up

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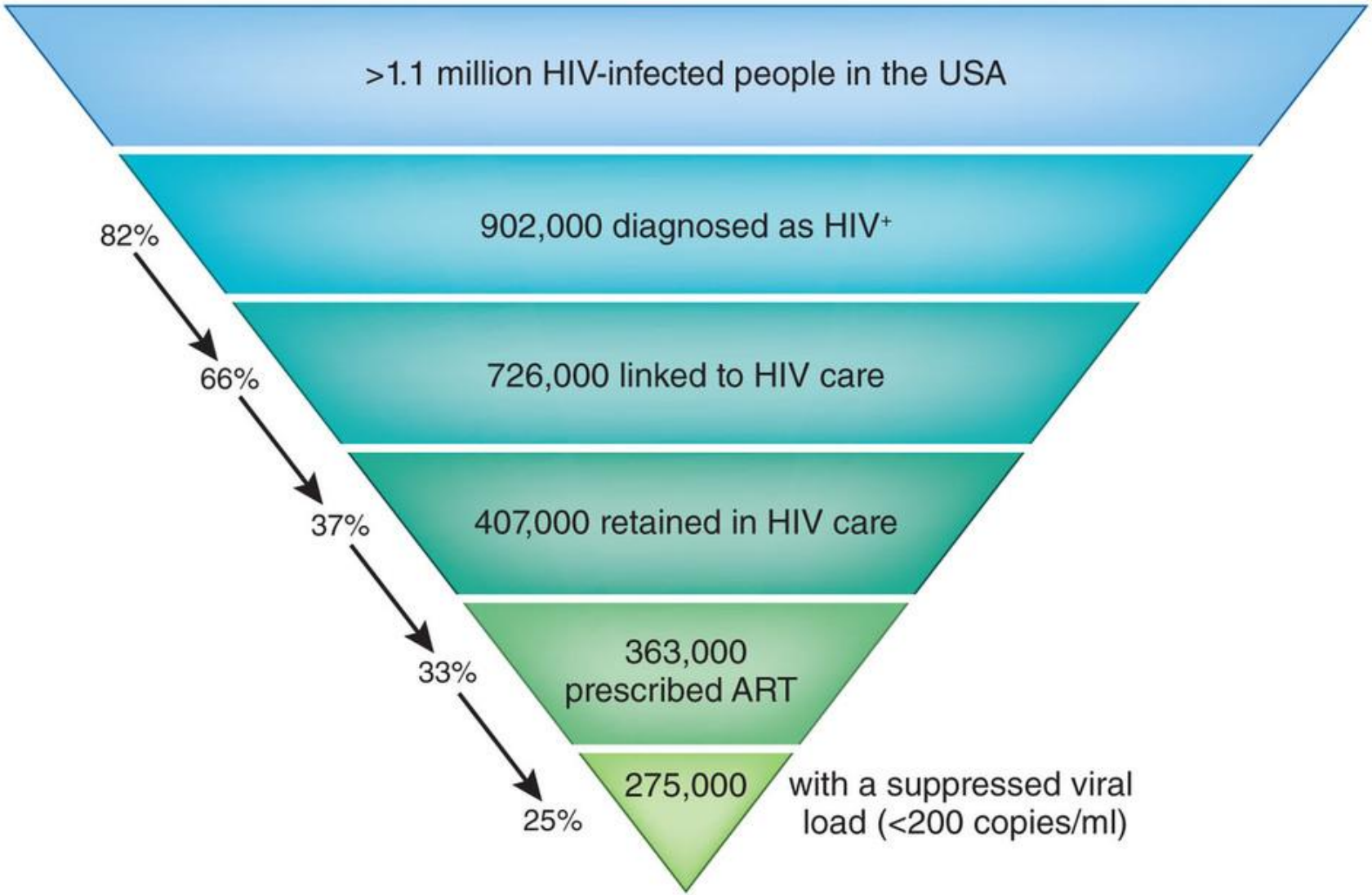
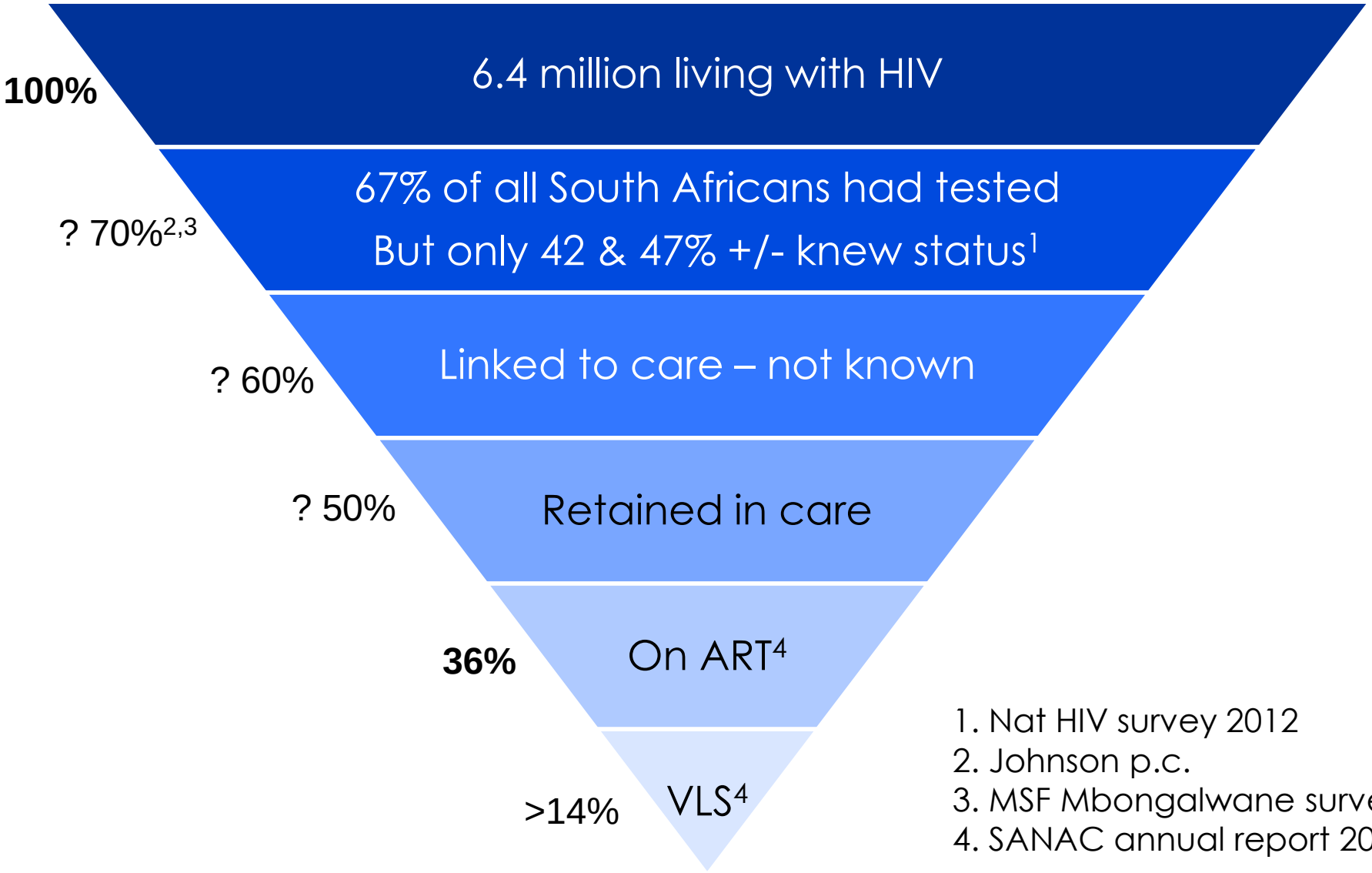
# The cascade as a health system lens: USA 2010



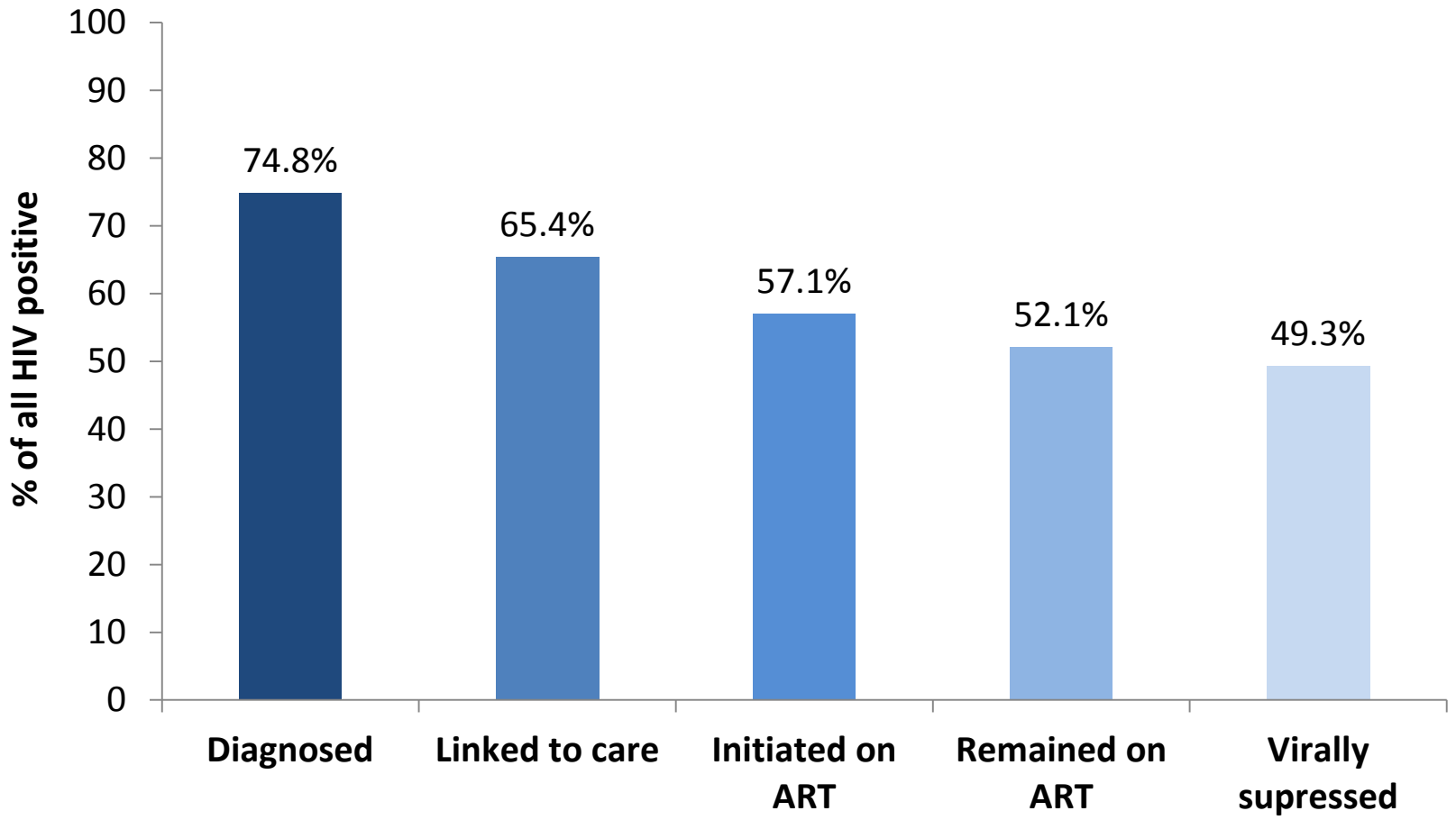

*Fauci, Nature Immunology 2013*

# The cascade in South Africa: 2012

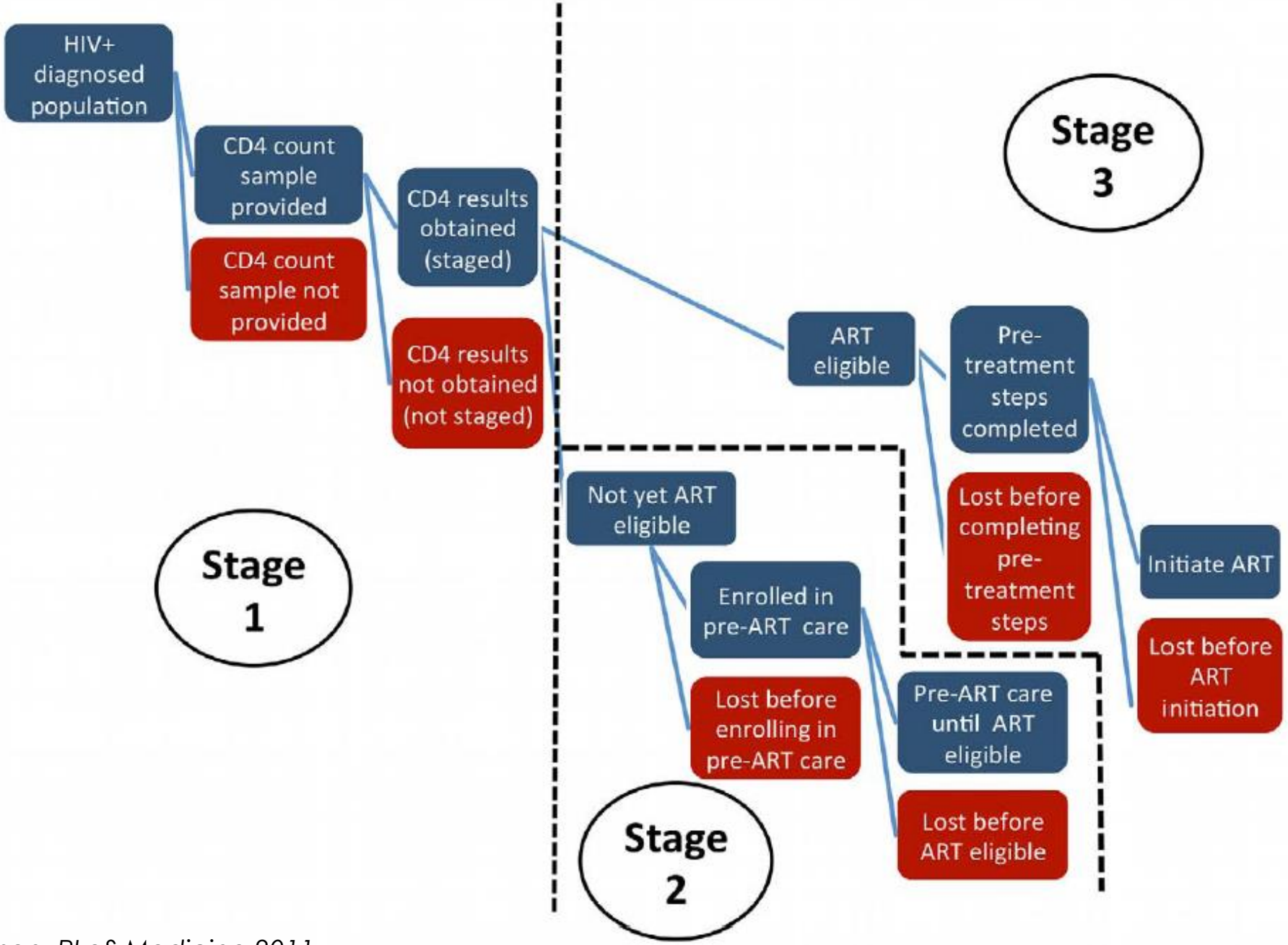



1. Nat HIV survey 2012
2. Johnson p.c.
3. MSF Mbongalwane survey
4. SANAC annual report 2014

# MSF Mbongolwane survey 2013

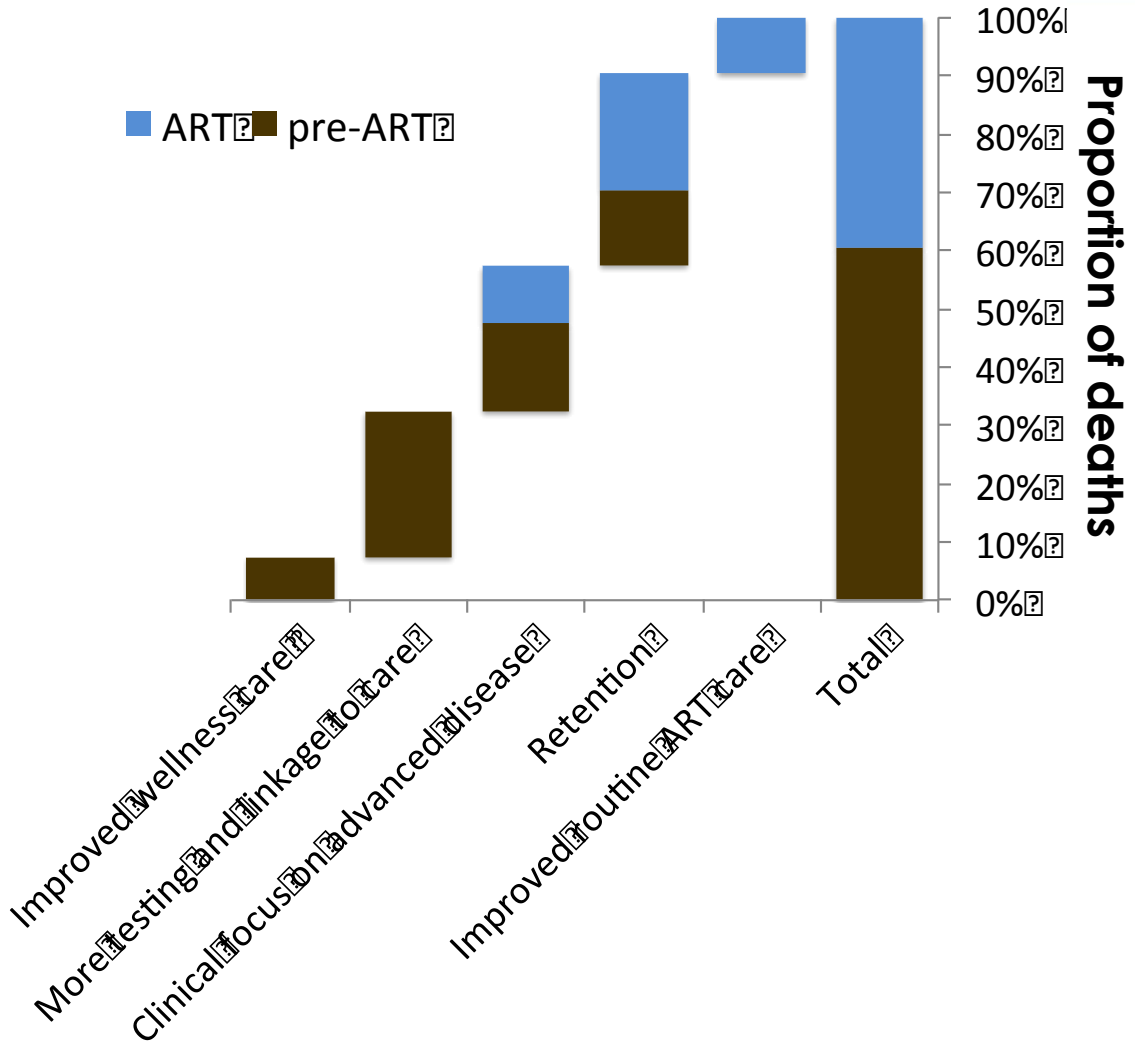



*Heurga CROI 2014*




*Rosen, PLoS Medicine 2011*

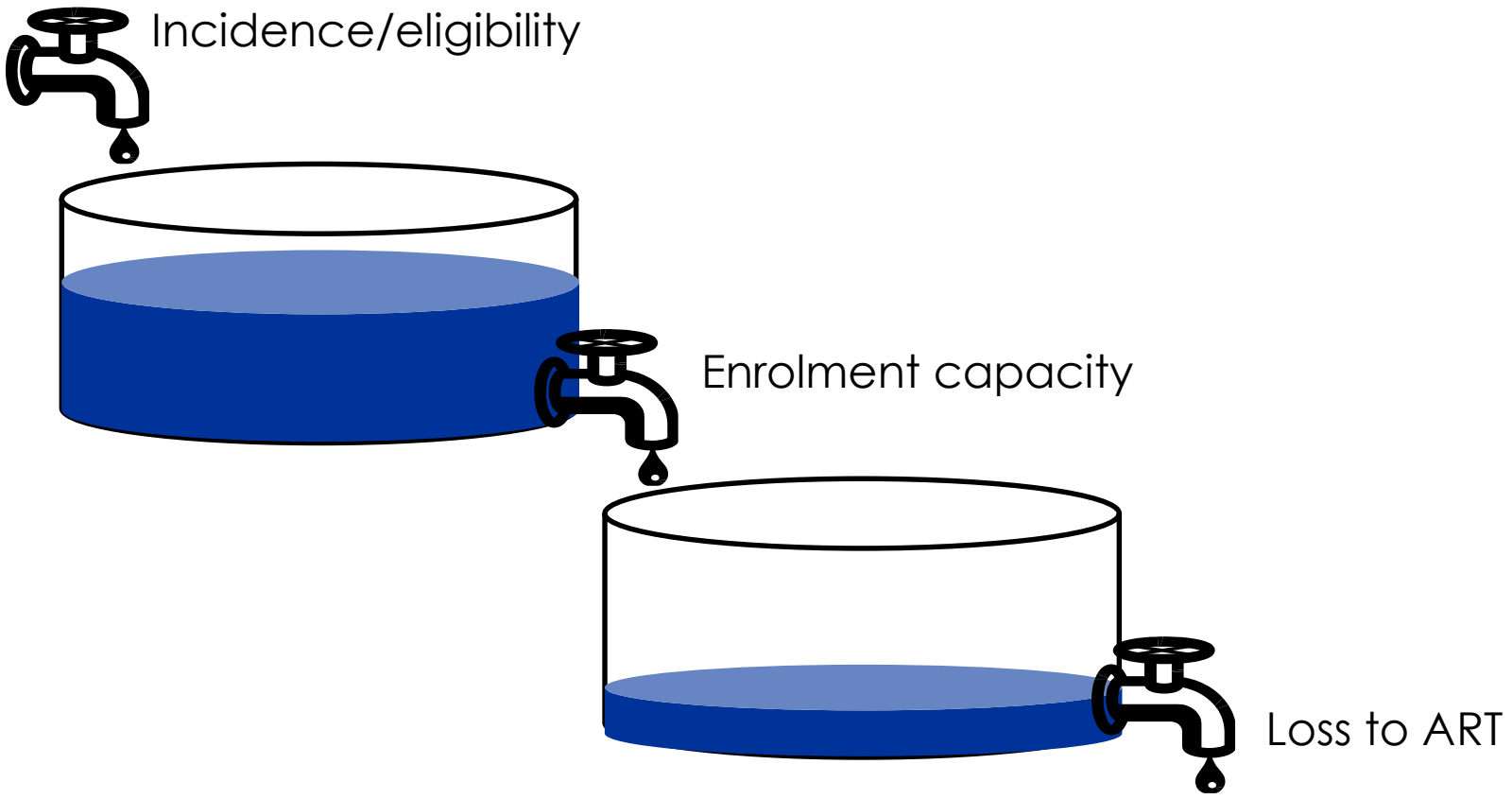
# Components of the cascade for averting mortality



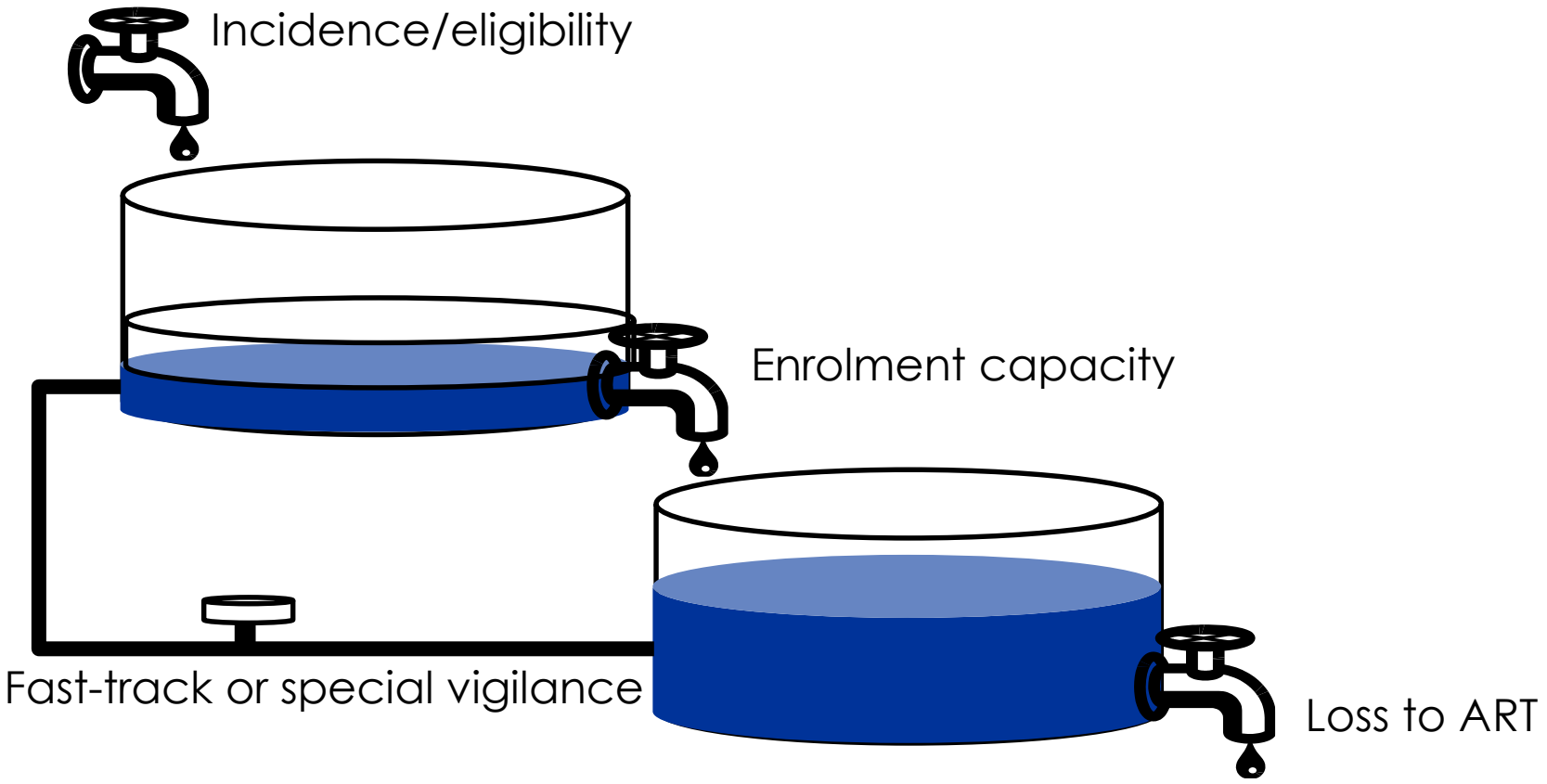

**Category of potential preventive intervention**

*Boulle, World Congress of Epidemiology 2014*

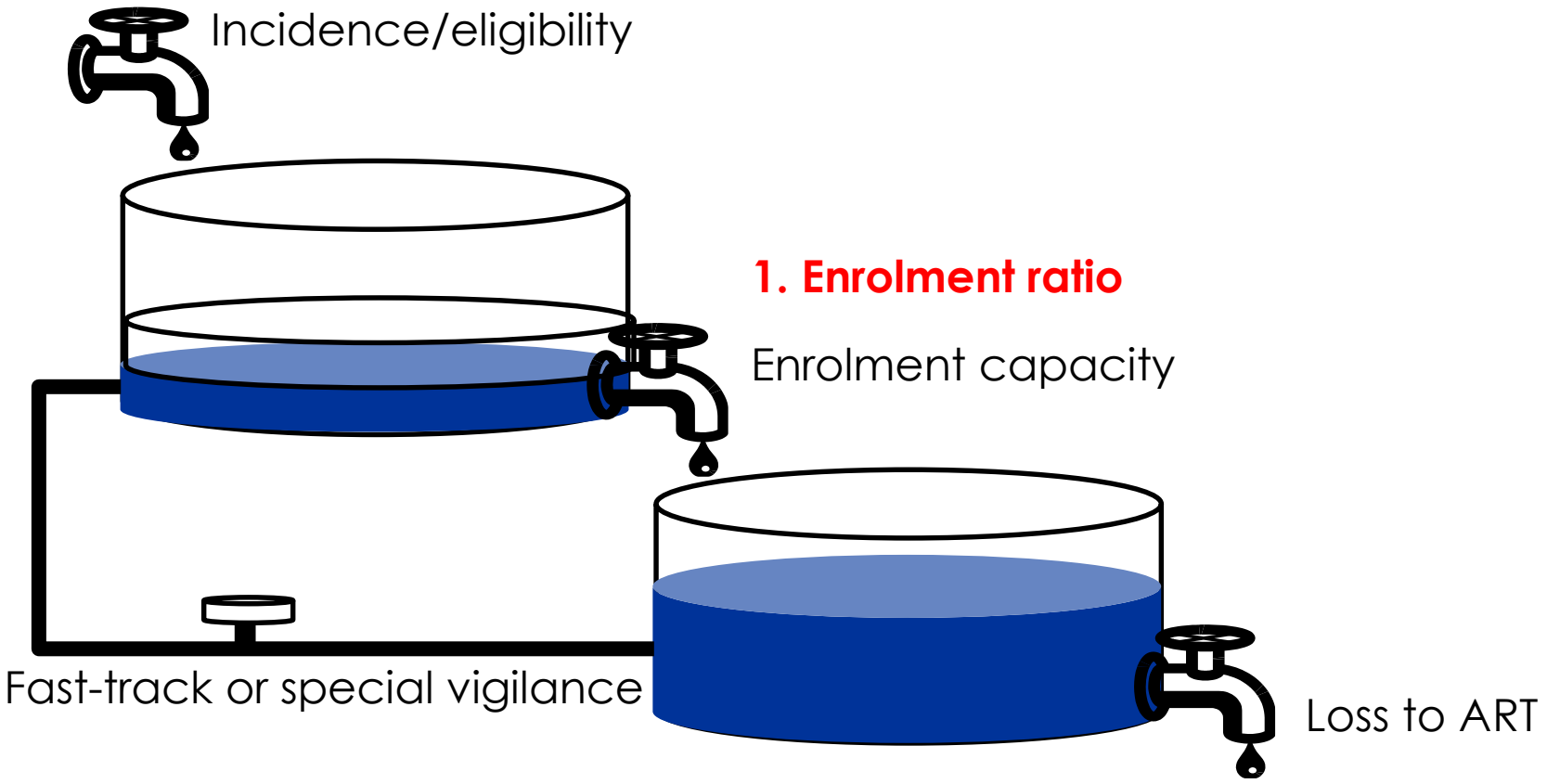
# Key concepts in a dynamic system



# 3 concepts – show mortality slide



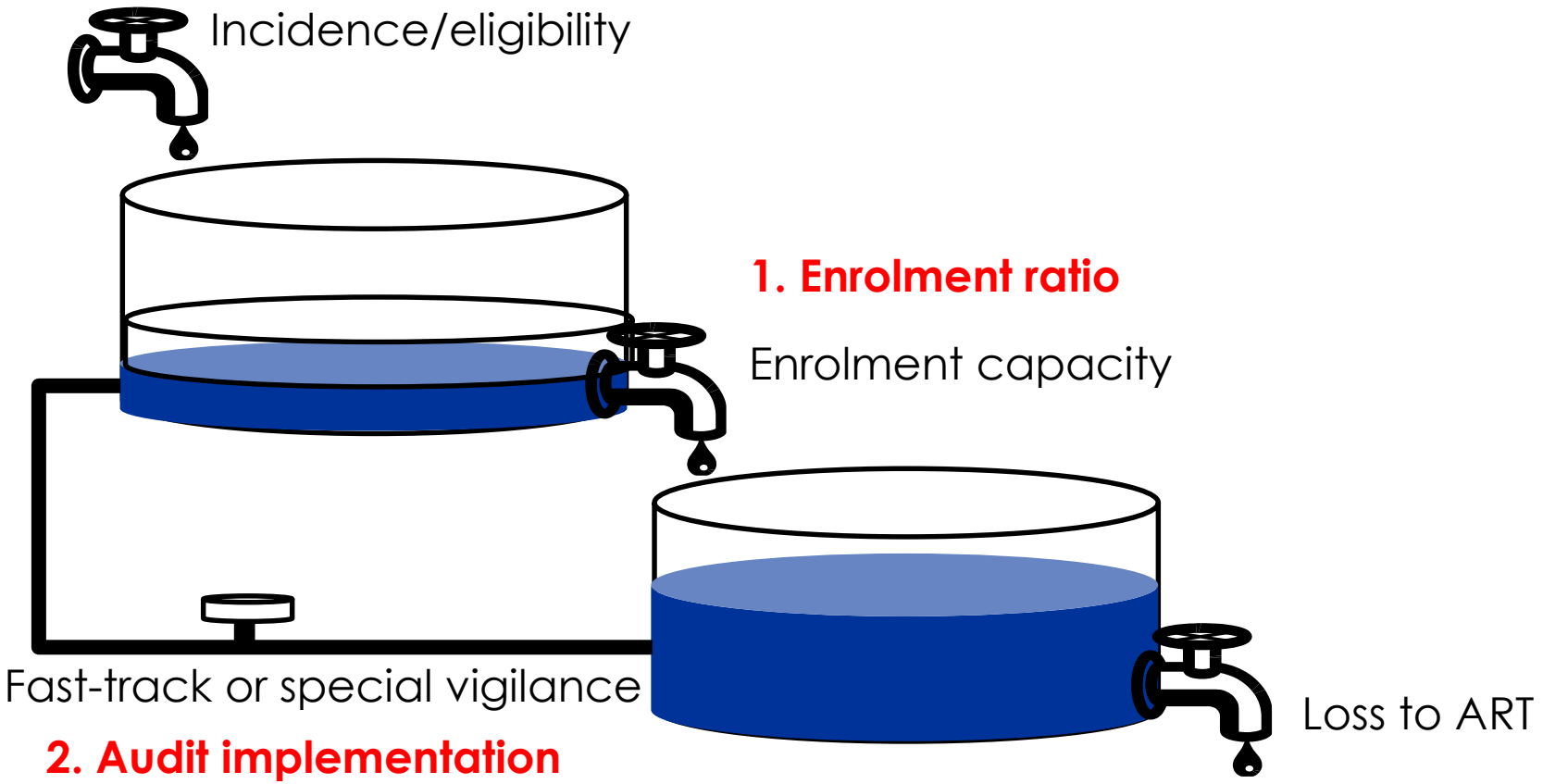
# 3 concepts – show mortality slide



# Enrolment ratio

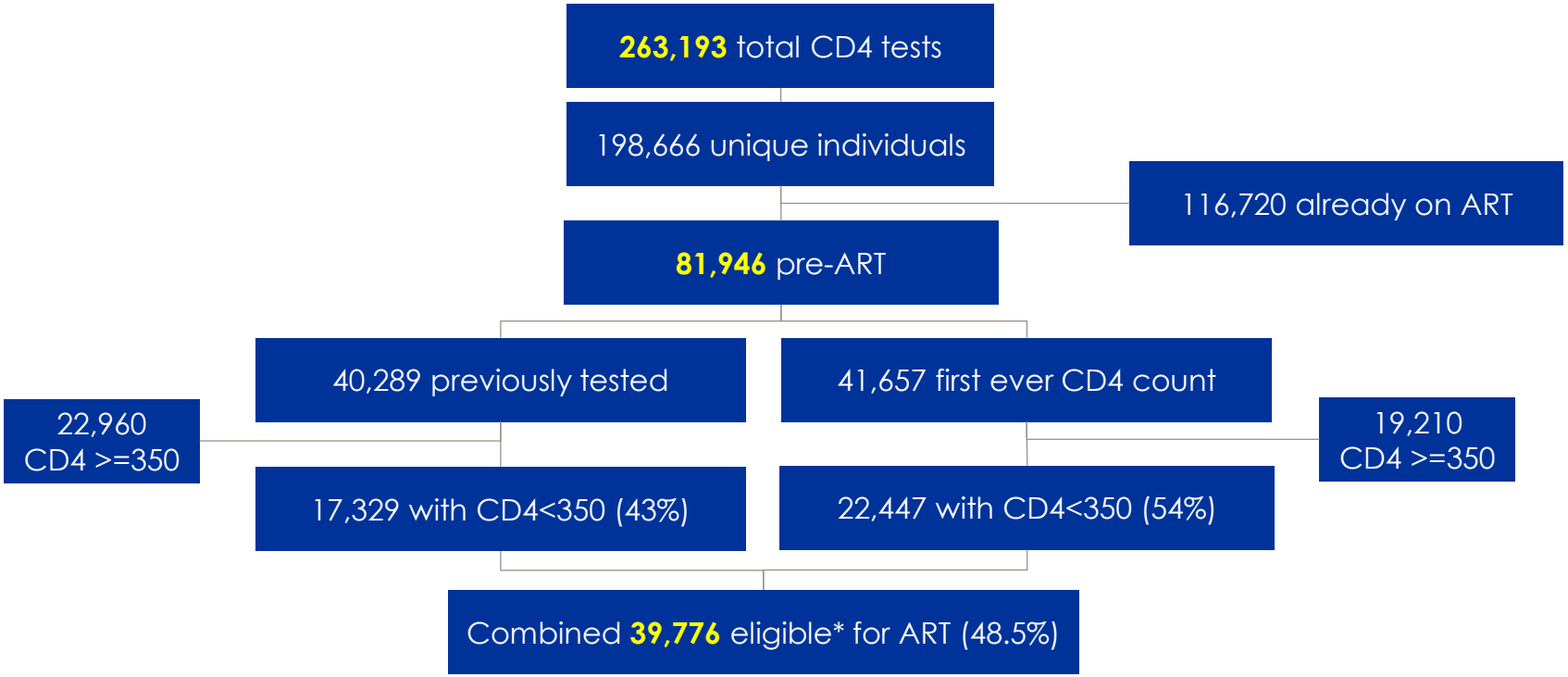
| Year | Numbers initiating ART ('000) | | | | ART enrolment ratio | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Males 15+ | Females 15+ | Children | Total | Males 15+ | Females 15+ | Children |
| 2000/01 | 6.7 | 2.7 | 3.5 | 0.5 | 0.02 | 0.02 | 0.02 | 0.01 |
| 2001/02 | 10.4 | 4.3 | 5.5 | 0.7 | 0.02 | 0.03 | 0.02 | 0.01 |
| 2002/03 | 12.2 | 4.9 | 6.5 | 0.8 | 0.02 | 0.03 | 0.03 | 0.01 |
| 2003/04 | 24.7 | 8.4 | 13.7 | 2.6 | 0.05 | 0.05 | 0.05 | 0.03 |
| 2004/05 | 71.2 | 22.4 | 42.6 | 6.2 | 0.14 | 0.12 | 0.16 | 0.08 |
| 2005/06 | 139.9 | 43.1 | 84.0 | 12.9 | 0.26 | 0.23 | 0.31 | 0.16 |
| 2006/07 | 171.4 | 52.3 | 104.2 | 15 | 0.32 | 0.27 | 0.39 | 0.2 |
| 2007/08 | 242.2 | 74.5 | 148.1 | 19.5 | 0.45 | 0.38 | 0.55 | 0.28 |
| 2008/09 | 380.2 | 118.0 | 233.7 | 28.4 | 0.72 | 0.61 | 0.86 | 0.44 |
| 2009/10 | 453.1 | 137.5 | 272.2 | 43.5 | 0.88 | 0.72 | 1.01 | 0.84 |
| 2010/11 | 582.9 | 190.6 | 346.0 | 46.4 | 1.18 | 1.01 | 1.29 | 1.17 |
| 2011/12 | 681.4 | 207.5 | 413.8 | 60.1 | 1.42 | 1.13 | 1.57 | 1.81 |

# 3 concepts – show mortality slide




**2. Audit implementation of guidelines for priority patients at high risk of mortality**

# CD4 counts and ART initiation in the WC RSA, 2012



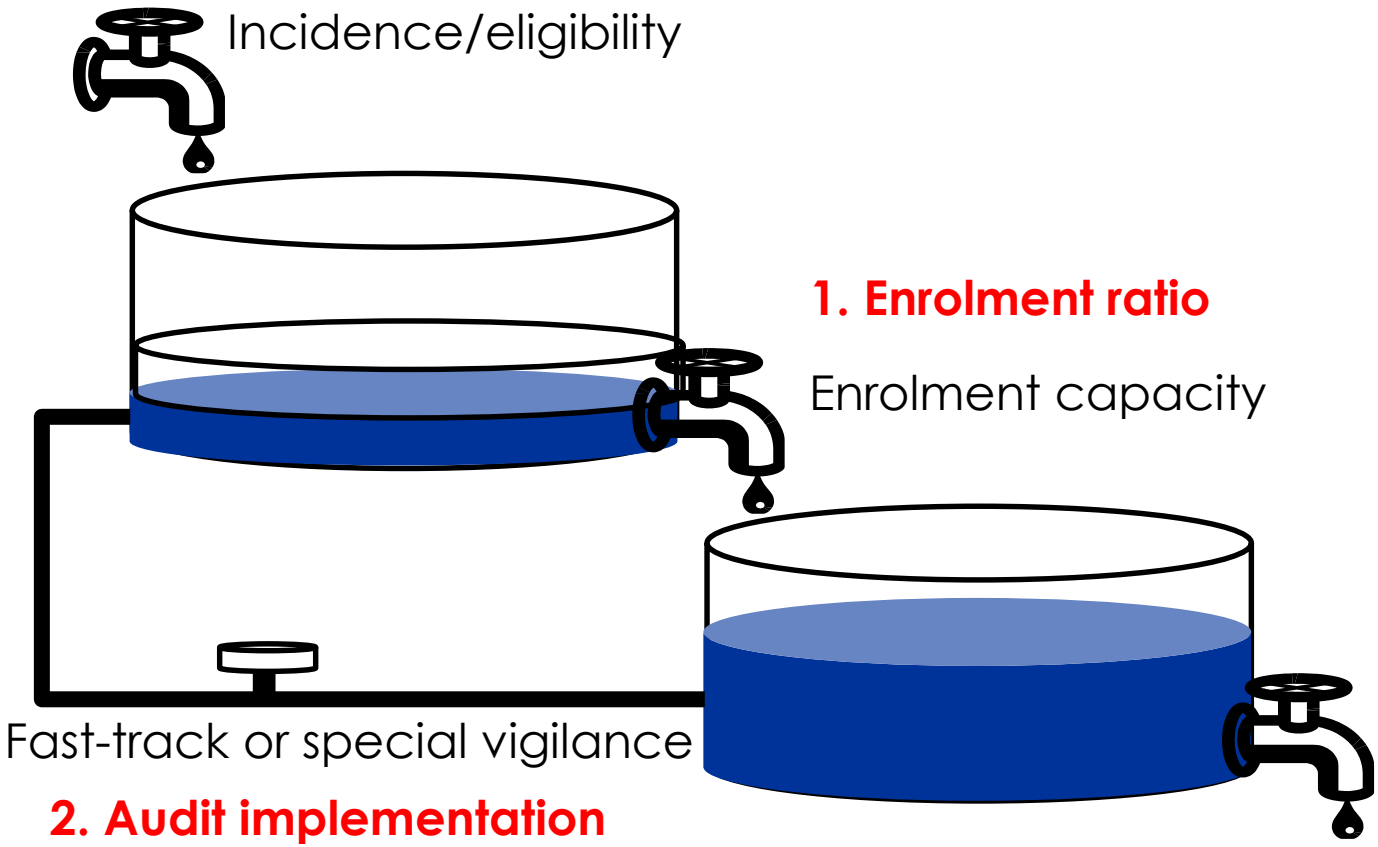

Linkage to ART

| CD4 | N (%) | ART | Days to ART – median (IQR) |
|---|---|---|---|
| <50 | 3807 (4.6%) | 63% | 33 (20-69) |
| 50-99 | 4157 (5.1%) | 68% | 42 (23-92) |
| 100-199 | 10,650 (13.0%) | 65% | 51 (28-126) |
| 200-349 | 21,162 (25.8%) | 62% | 63 (33-155) |
| 350-499 | 19,221 (23.5%) | 30% | 309 (181-465) |
| >=500 | 22,949 (28.0%) | 14% | 397 (237-538) |



* Still need to account for patients with TB and pregnant with CD4 counts >=350 cells/µl

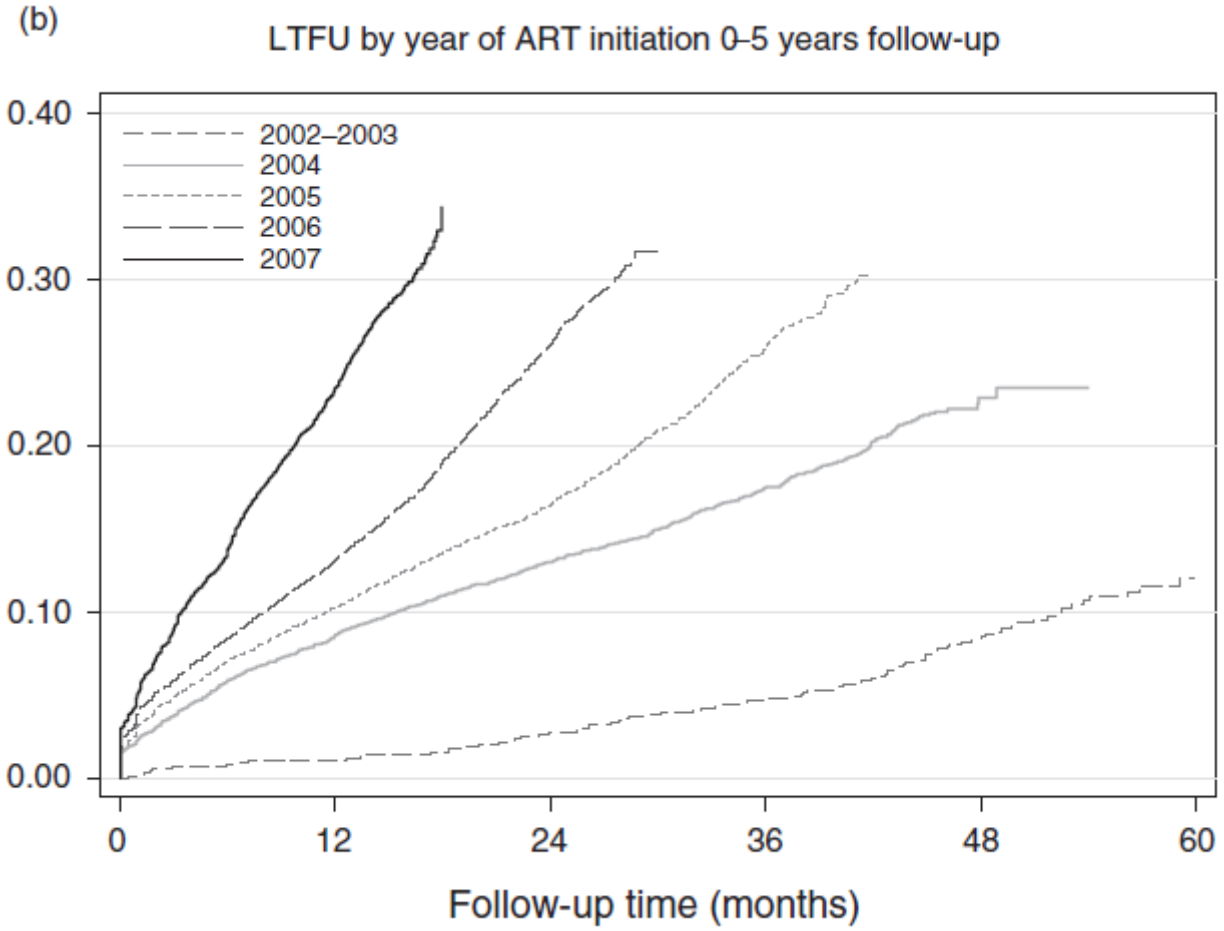
# 3 concepts – show mortality slide




**2. Audit implementation of guidelines for priority patients at high risk of mortality**

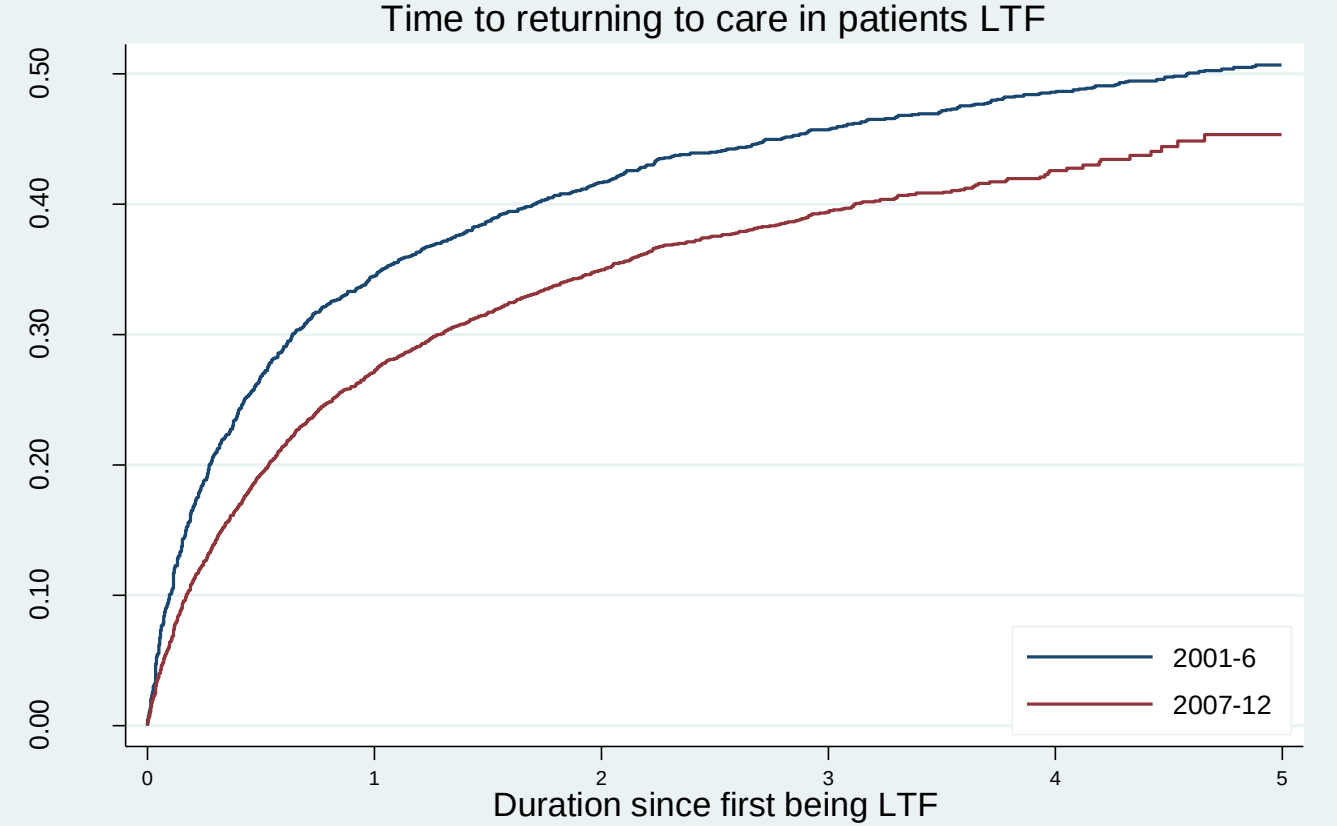
**3. Aggressive focus on ART retention**

# Typical output on temporal trends in loss to follow-up



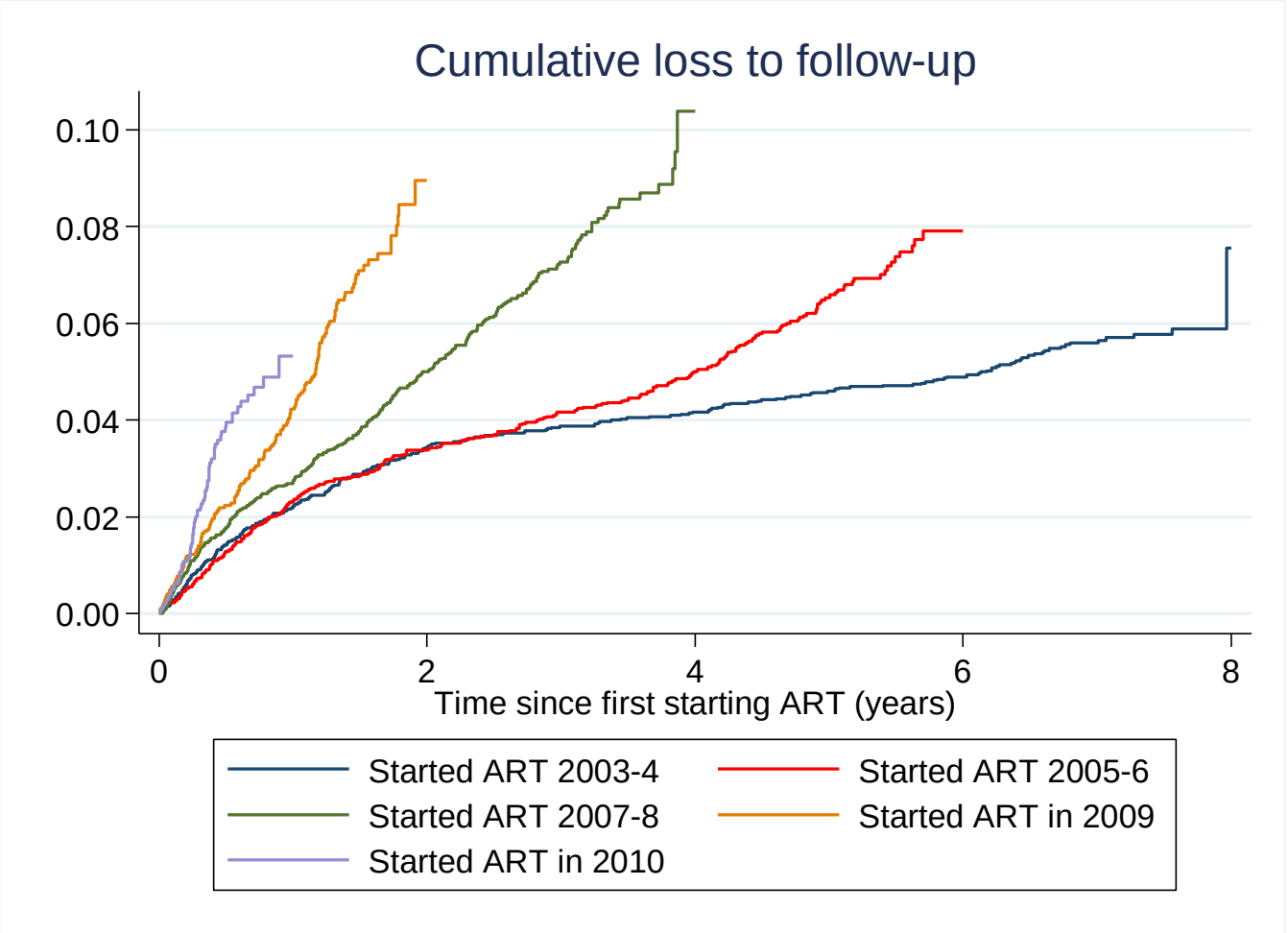

*Cornell, AIDS 2010*

# Returning to care after loss to follow-up




*Based on 6,000 patients lost to follow-up for at least 6 months in Khayelithsa, South Africa*

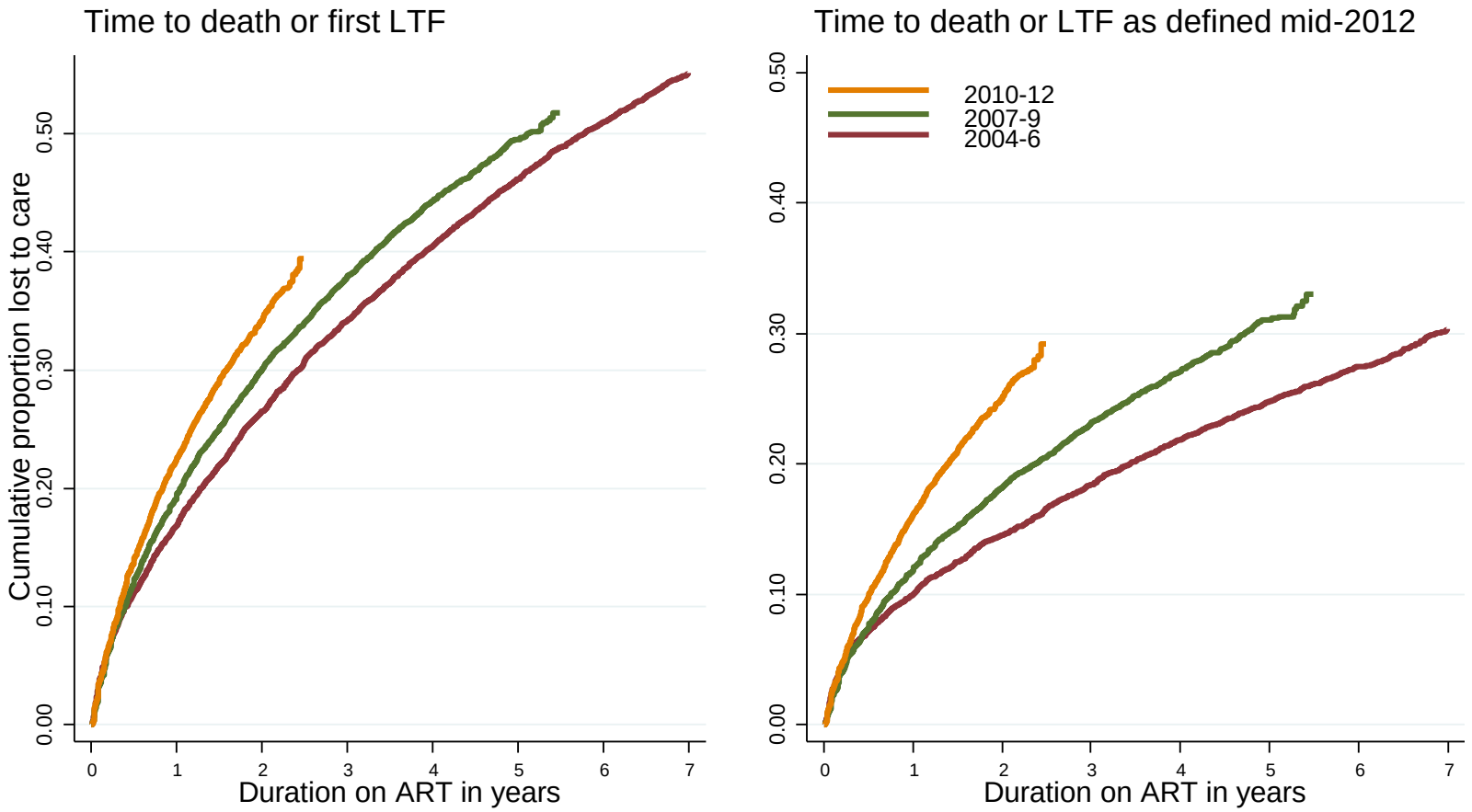
# Simulating cumulative LTF with constant loss and re-entry rates




*Johnson, AJE, in press*

# Comparing trends to first versus current loss to care status

Loss to follow-up or death by calendar period




*Based on 30,000 patients from Khayelithsa, South Africa*

# South African national

| | Adults | | Children | |
|---|---|---|---|---|
| Reporting year[a] | FY 2008/09 | FY 2012/13 | FY 2008/09 | FY 2012/13 |
| Patients evaluated | | | | |
| 1 year | 61731 | 177301 | 4462 | 7681 |
| 2 years | 40206 | 114973 | 3104 | 7322 |
| 3 years | 26695 | 70958 | 2360 | 4957 |
| 4 years | 14997 | 54460 | 1352 | 3930 |
| 5 years | 6019 | 34929 | 489 | 2581 |
| Retention in care | | | | |
| 1 year | 74.9% | 71.7% | 83.7% | 79.3% |
| 2 years | 67.6% | 58.1% | 82.1% | 71.6% |
| 3 years | 64.0% | 50.6% | 84.0% | 67.7% |
| 4 years | 64.5% | 46.6% | 86.2% | 65.7% |
| 5 years | 64.1% | 42.2% | 83.5% | 68.2% |

a Reporting year refers to the year in which patients reach a duration on treatment. Patients reaching 1 year on treatment in a given reporting year will have started ART in the previous year, whereas those who could have reached 5 years on ART will have started ART 5 years previously.

# Summary

- Moving target and both cross-sectional and longitudinal perspectives are needed
- Disjuncture between routine program and survey data
- Interventions to increase enrolment require concomitant increases in enrolment capacity
- Interventions may be more effective if focussed on patients at high risk of clinical events
- Losses to care on ART probably already account for more morbidity and mortality than for patients who have never been enrolled onto ART

# Acknowledgements


- CIDER colleagues
- Provinicial and National DoH HAST & M&E teams
- SANAC and HST
- Staff and patients of the programs who’s data are included

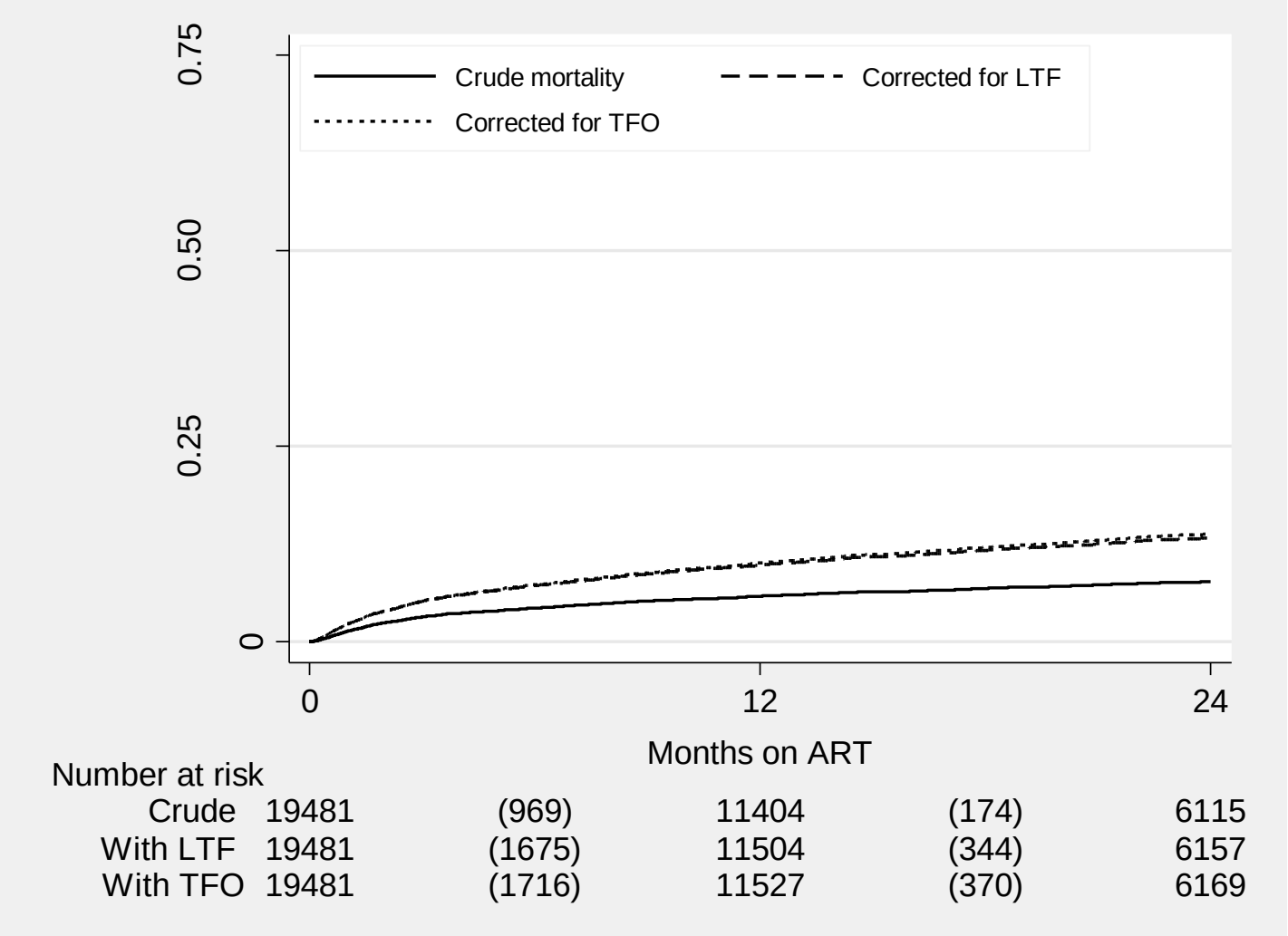
Western Cape Government

Health

University of Cape Town • iYunivesithi yaseKapa • Universiteit van Kaapstad

# Thank you

# Impact of known transfers on ART-mortality estimates




*Cornell, JAIDS, in press*