The HIV prevention continuum: a paradigm shift

Richard Hayes

London School of Hygiene & Tropical Medicine

Outline

- Problem statement: How to achieve steep reductions in HIV incidence in the most cost-effective way?
- Combination prevention: What do we know about what methods work and how can they best be combined?
- TasP as a component of Combination Prevention: What questions do we need to ask about delivery of TasP and its cost-effectiveness?

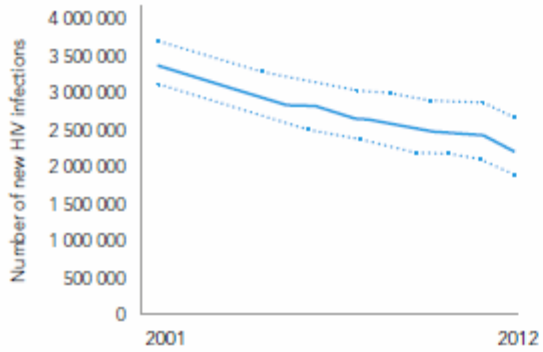
- How to enhance the evidence base and to ensure that policy is based on evidence?

Problem statement

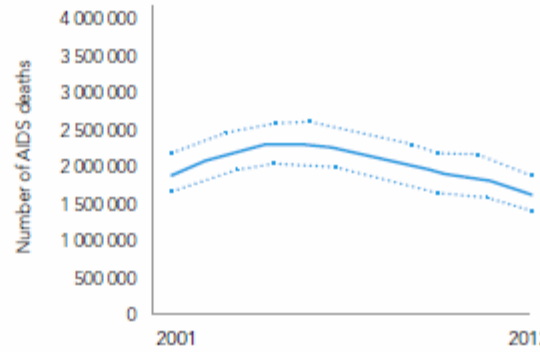
- Reductions in HIV incidence in many countries
- BUT HIV incidence remains high in many parts of Sub-Saharan Africa – very high in Southern Africa
- Number of new HIV infections greatly exceeds number of HIV-related deaths (thanks to ART!)
- This means that HIV prevalence continues to increase every year
- ...and that unless HIV incidence can be reduced steeply it will be increasingly difficult to sustain HIV treatment services for all who need them

Numbers of people living with HIV, new HIV infections, and AIDS deaths, 2001-2012, globally

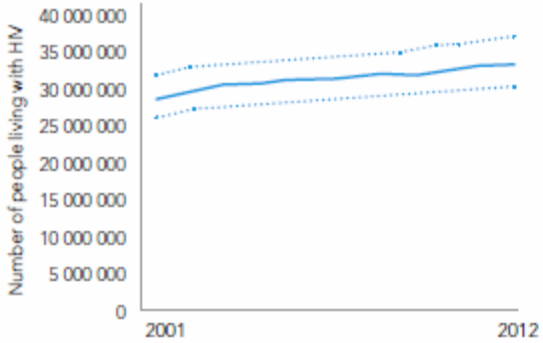
NEW HIV INFECTIONS, GLOBAL, 2001–2012

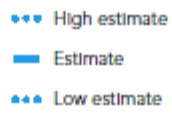


AIDS DEATHS, GLOBAL, 2001–2012



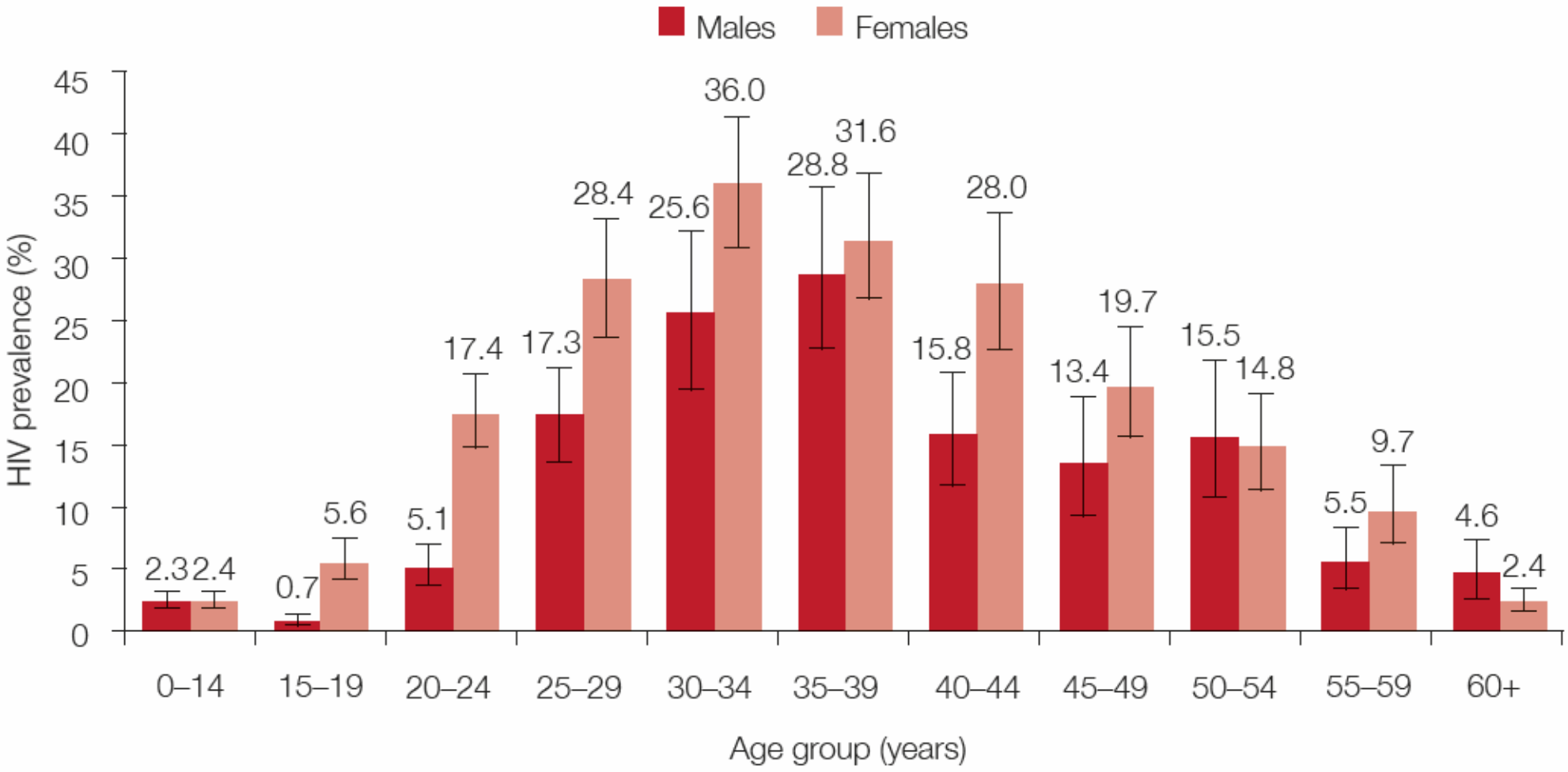
PEOPLE LIVING WITH HIV, GLOBAL, 2001–2012





Source: UNAIDS 2012 estimates.

Figure II: HIV prevalence by sex and age, South Africa 2012

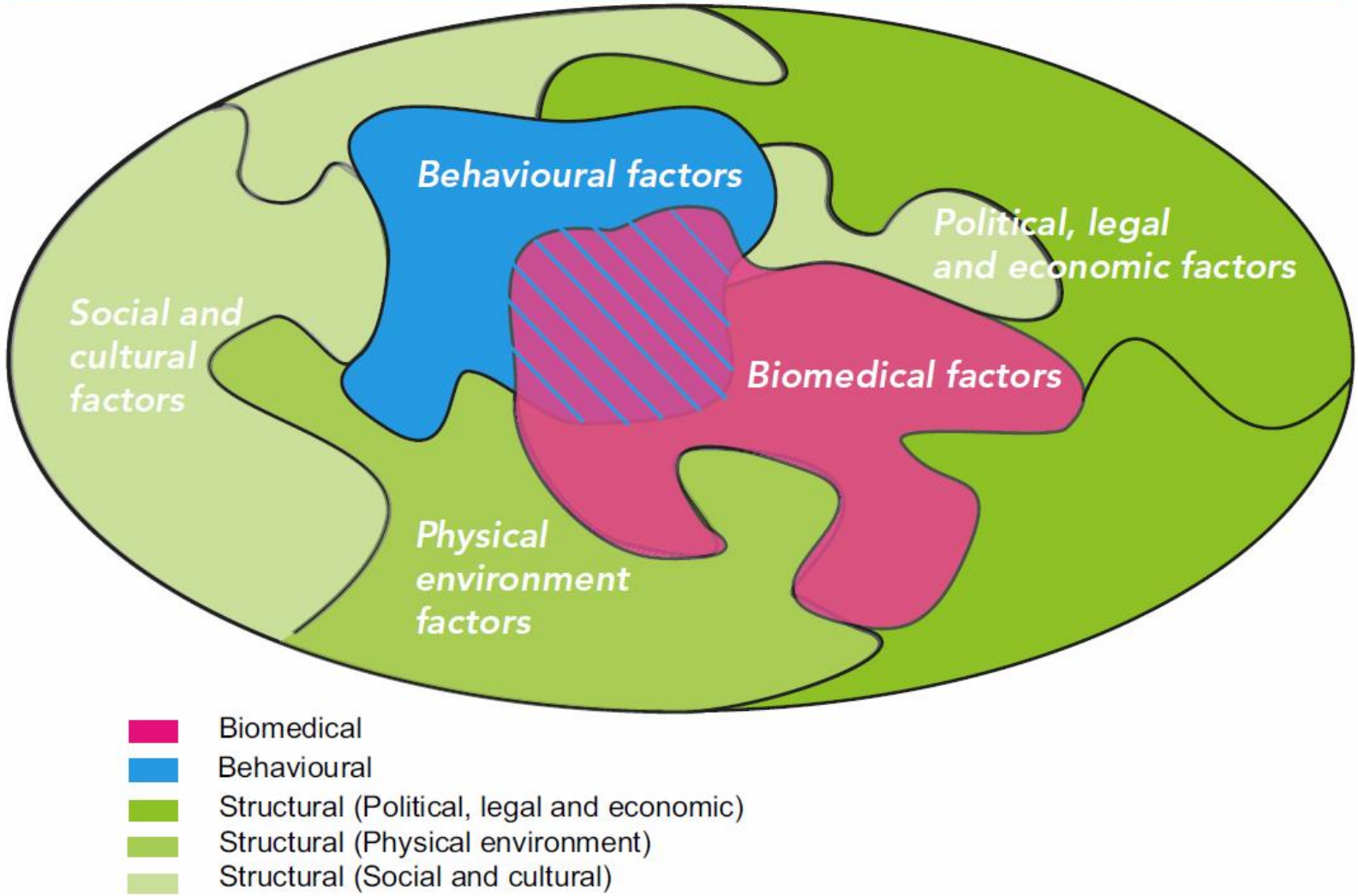


S African National HIV Prevalence, Incidence & Behaviour Survey 2012 (Shisana et al, 2014)

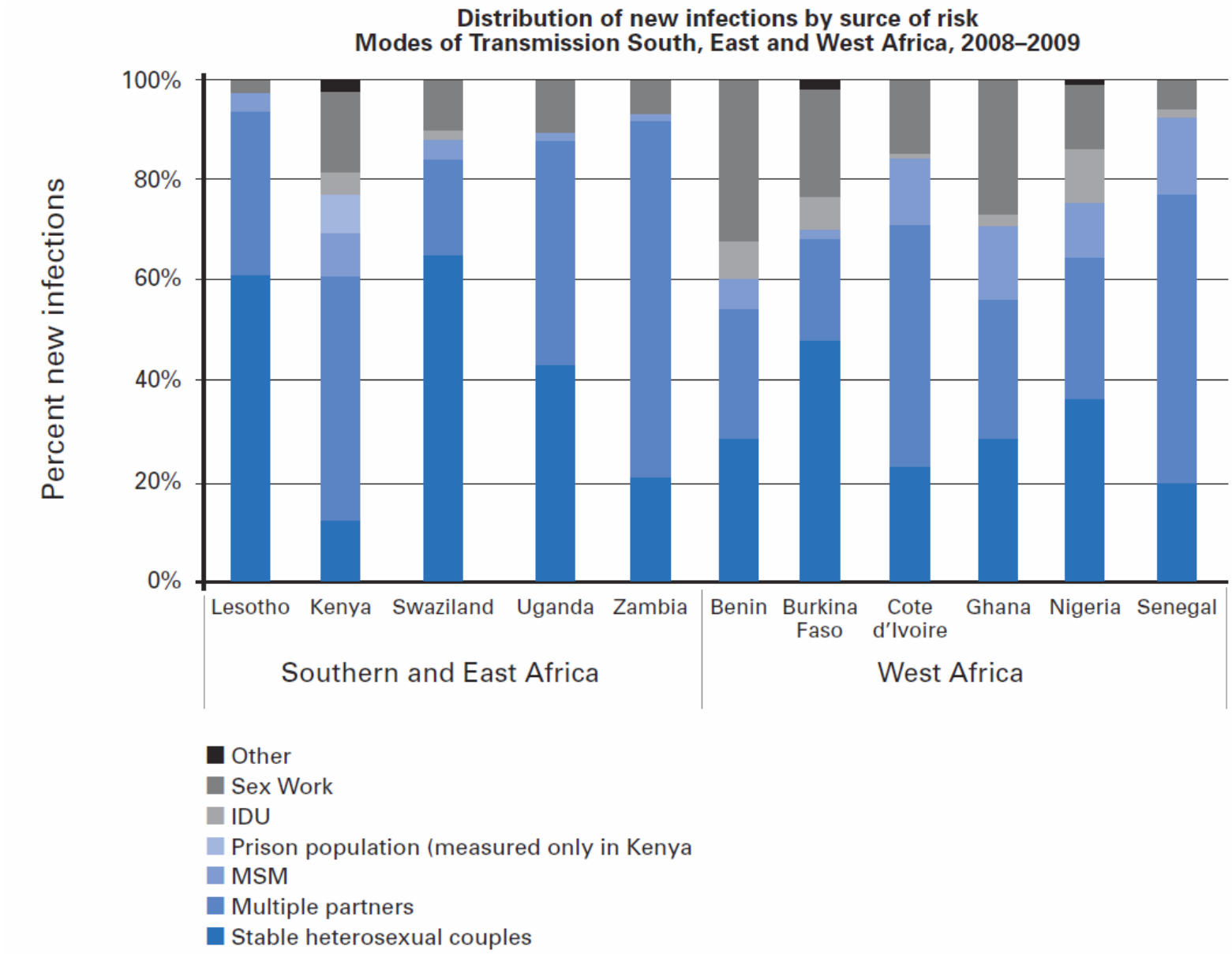
Combination Prevention

- Combination of several partially protective strategies in effort to achieve steep reduction in HIV incidence
- May include structural, behavioural and biomedical components
- Tailored to local context and transmission patterns based on the *Know your Epidemic* approach

Figure 1. Interacting causes of HIV risk and vulnerability

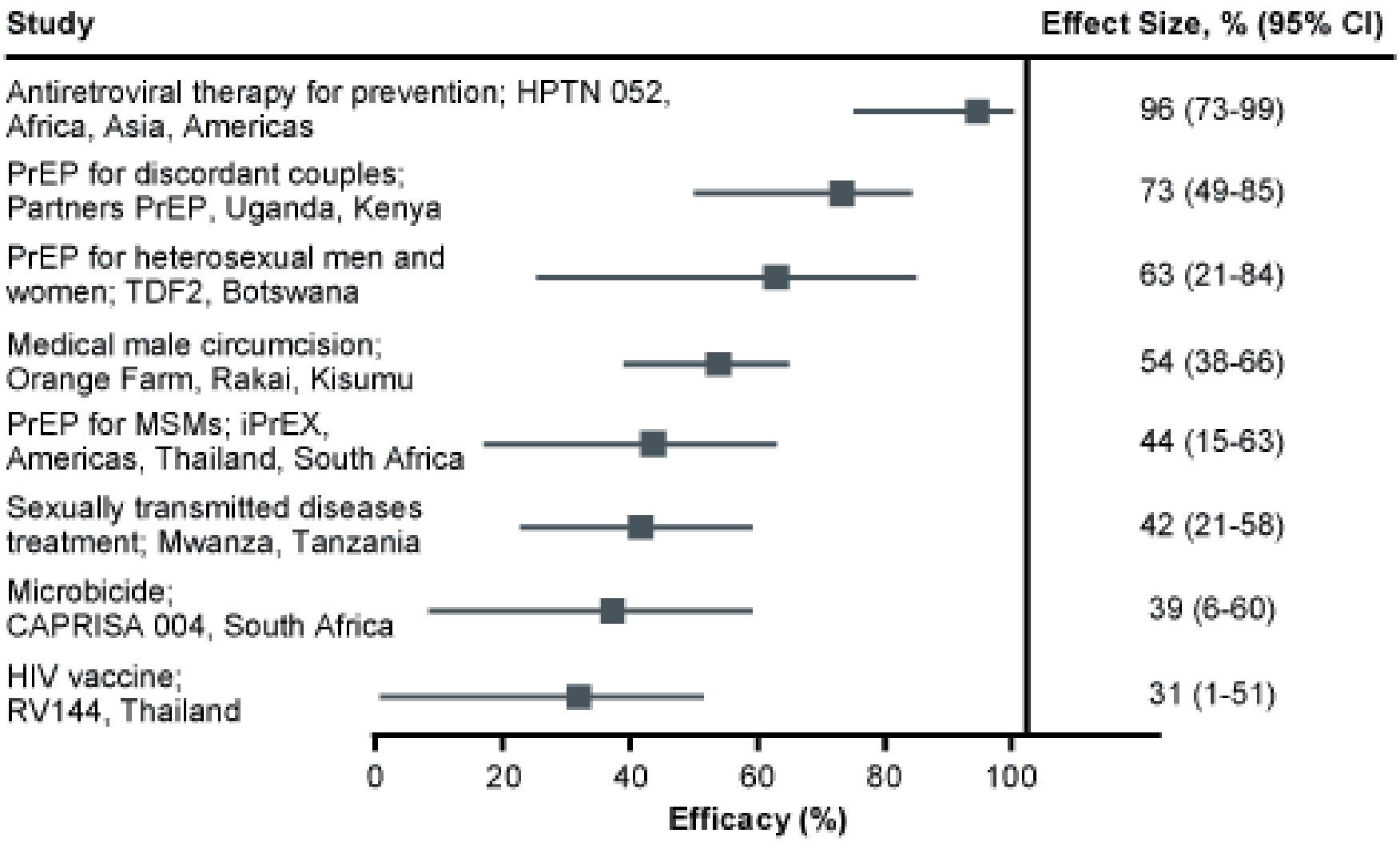


Combination Prevention Discussion Paper, UNAIDS 2012



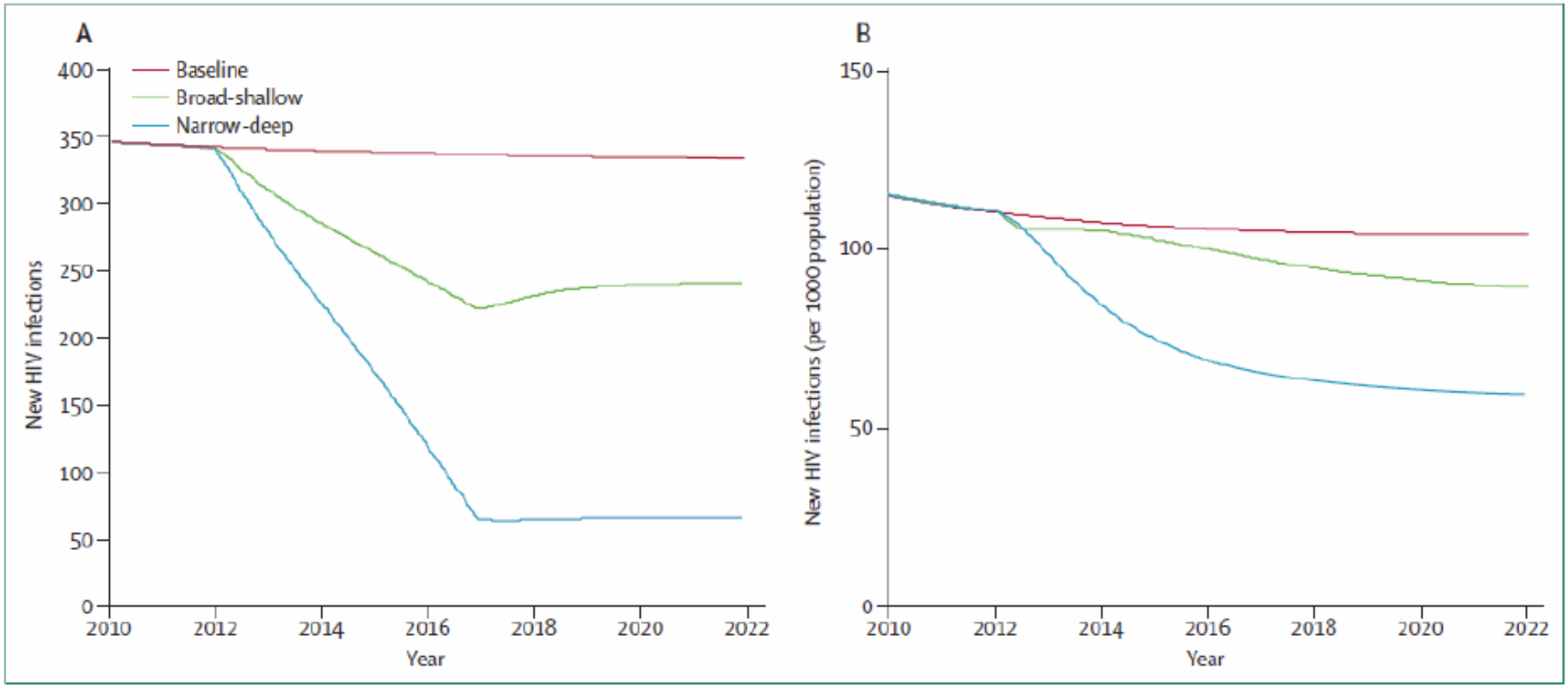
Guidelines for 2nd Generation HIV Surveillance, UNAIDS/WHO 2013

Combination Prevention: Evidence



Abdool Karim, Lancet 2011

Figure 1. Number of new infections between 2010 and 2022 projected for people who inject drugs in Karachi, Pakistan (A), and the general population in Kwazulu-Natal, South Africa (B)[59]



UNAIDS Background Paper 2012

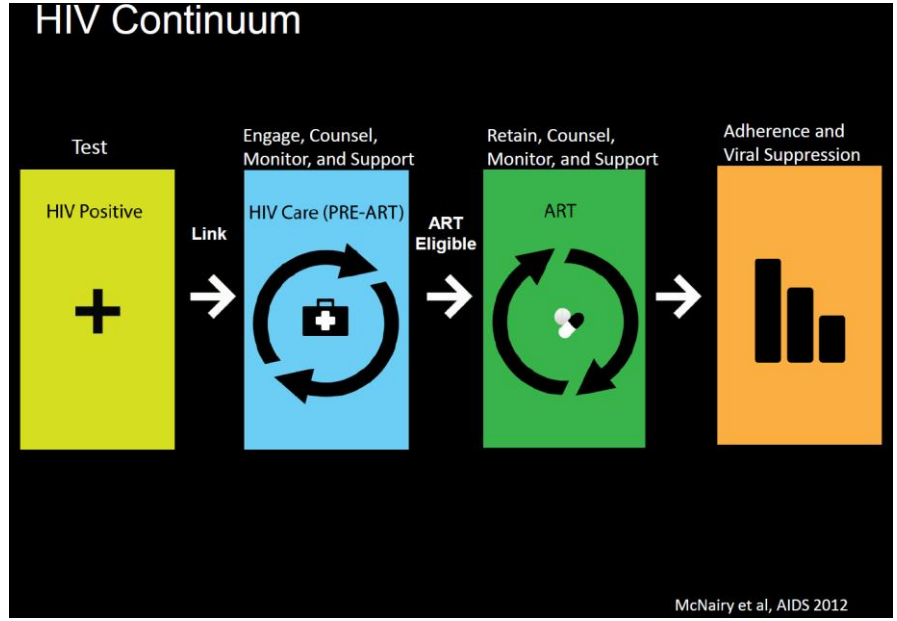
Combination prevention: Questions

- What is the *effectiveness* of different combination prevention packages tailored to different populations?
- How best to combine interventions to capture *synergies* and avoid *redundancy*?
- There are many questions about the *implementation* of combination prevention programmes – the most important being to determine how to achieve high *coverage* in order to achieve intended benefits at minimum *cost* and maximum *sustainability*

TasP and Combination prevention

TasP is intimately linked with Combination Prevention because:

- TasP is likely to be a key component of many Combination Prevention programmes – and one with stronger evidence of benefit than most other components
- TasP *is itself* a combination prevention intervention



Cascade of care

- HIV testing and regular re-testing if HIV-negative
  - Everyone should know their HIV status
- Linkage to services
  - HIV- and HIV+ to prevention services
  - HIV+ to treatment and care
- Monitor, follow-up, start on ART
  - Prompt onset of ART when eligible
- Retention on ART, monitor, adherence support
  - Long-term viral suppression

Cascade of care

- HIV testing and regular re-testing if HIV-negative — 80%
  - Everyone should know their HIV status
- Linkage to services — 80%
  - HIV- and HIV+ to prevention services
  - HIV+ to treatment and care
- Monitor, follow-up, start on ART — 80%
  - Prompt onset of ART when eligible
- Retention on ART, monitor, adherence support — 80%
  - Long-term viral suppression

40%

By 2020…

90%

of all people living with HIV will know their HIV status

90%

of all people diagnosed with HIV will receive sustained antiretroviral therapy.

90%

of all people receiving antiretroviral therapy will have durable suppression.

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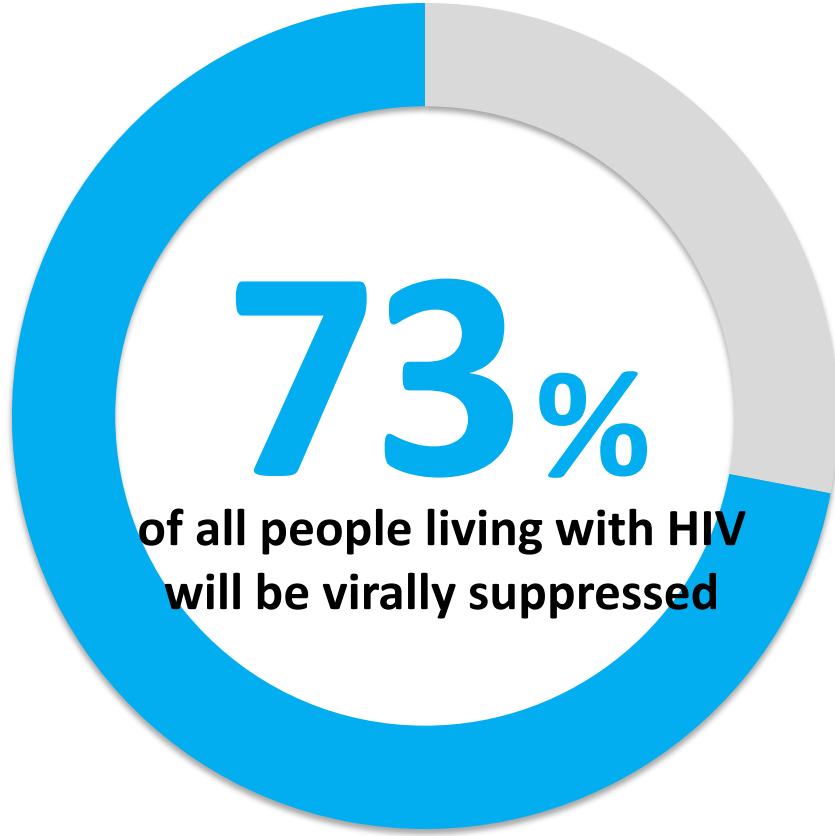
The result



= a **three-fold increase**
over current estimates

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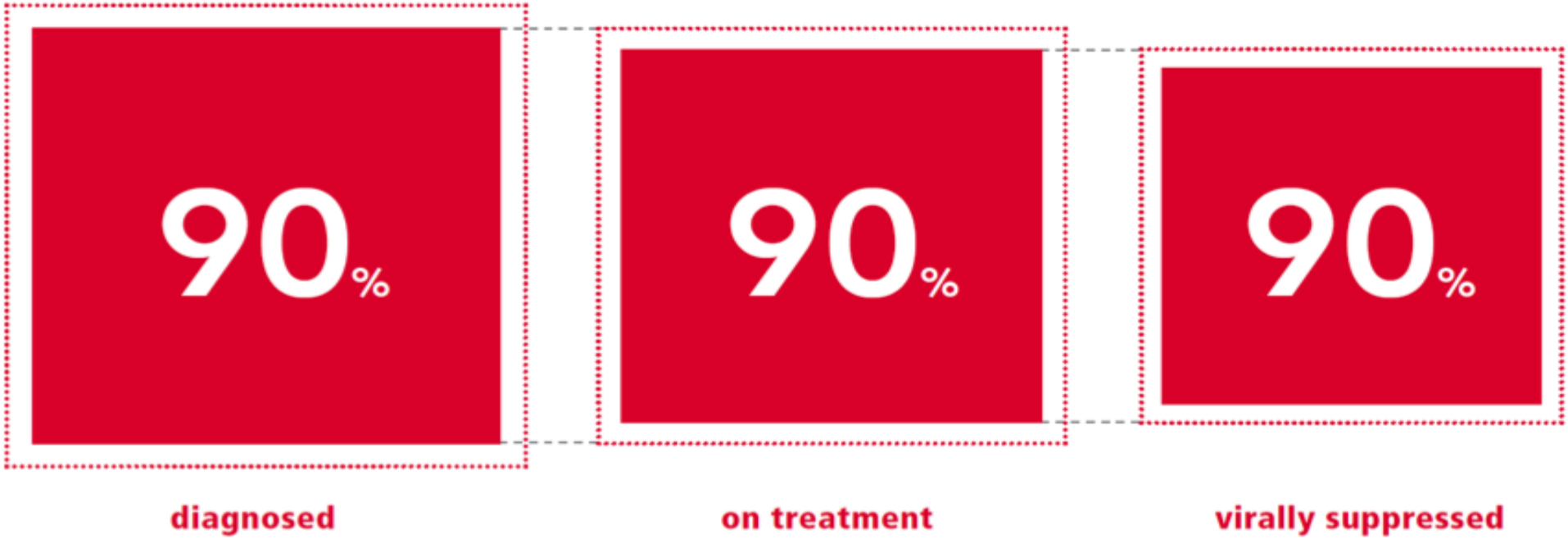
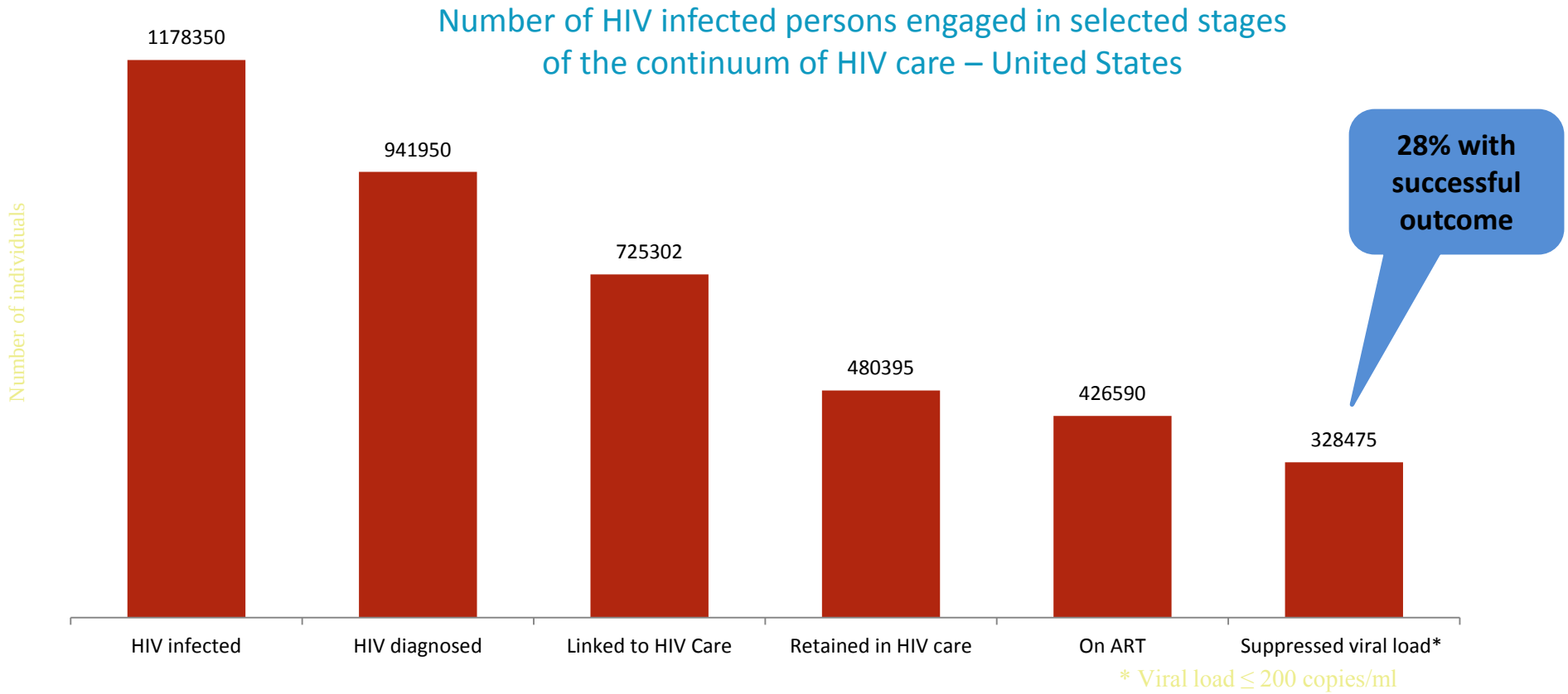
Ambitious, but achievable, new targets



Cascade of care: USA



Cohen et al 2011

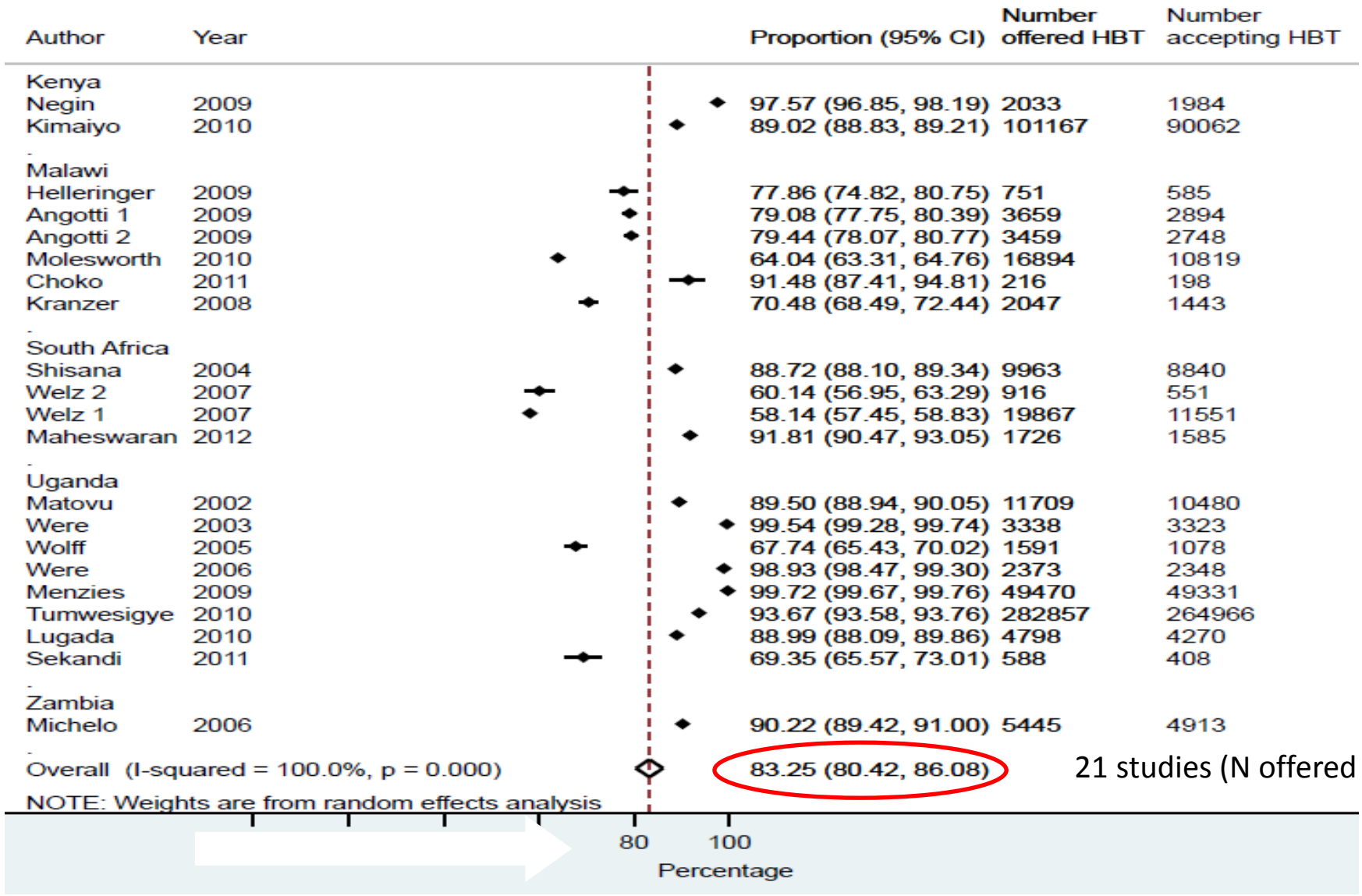
Cascade of Care: Sub-Saharan Africa

1-47%[1] **59%[2]** **46%[2]** **68%[2]** **85% at 6 months[3]**
86% at 18 months[4]
80% at 5 years[5]

Caution:
Estimates from a meta-analysis of studies or studies which examined individual stages in the cascade. Extrapolation to obtain an overall proportion could lead to inaccuracies.

1. UNAIDS report on the global AIDS epidemic 2013
2. Rosen & Fox 2011 3. De Luca et al 2011 4. Elul et al, 2013 5. De Beaudrap, 2012

Home-based HIV testing: Coverage



21 studies (N offered = **524,867**)

Sabapathy et al, 2012

Why is more research needed on TasP?

- How can TasP be delivered most effectively?
- What coverage can be achieved on the ground at each step of the cascade?
- How can other prevention modalities be incorporated in TasP programmes (e.g. MC, PrEP)?
- What are the adverse effects of TasP programmes?
  - Drug resistance
  - Toxicity
  - Sexual risk disinhibition
  - Stigma
  - Overload of health services

Why is more research needed on TasP?

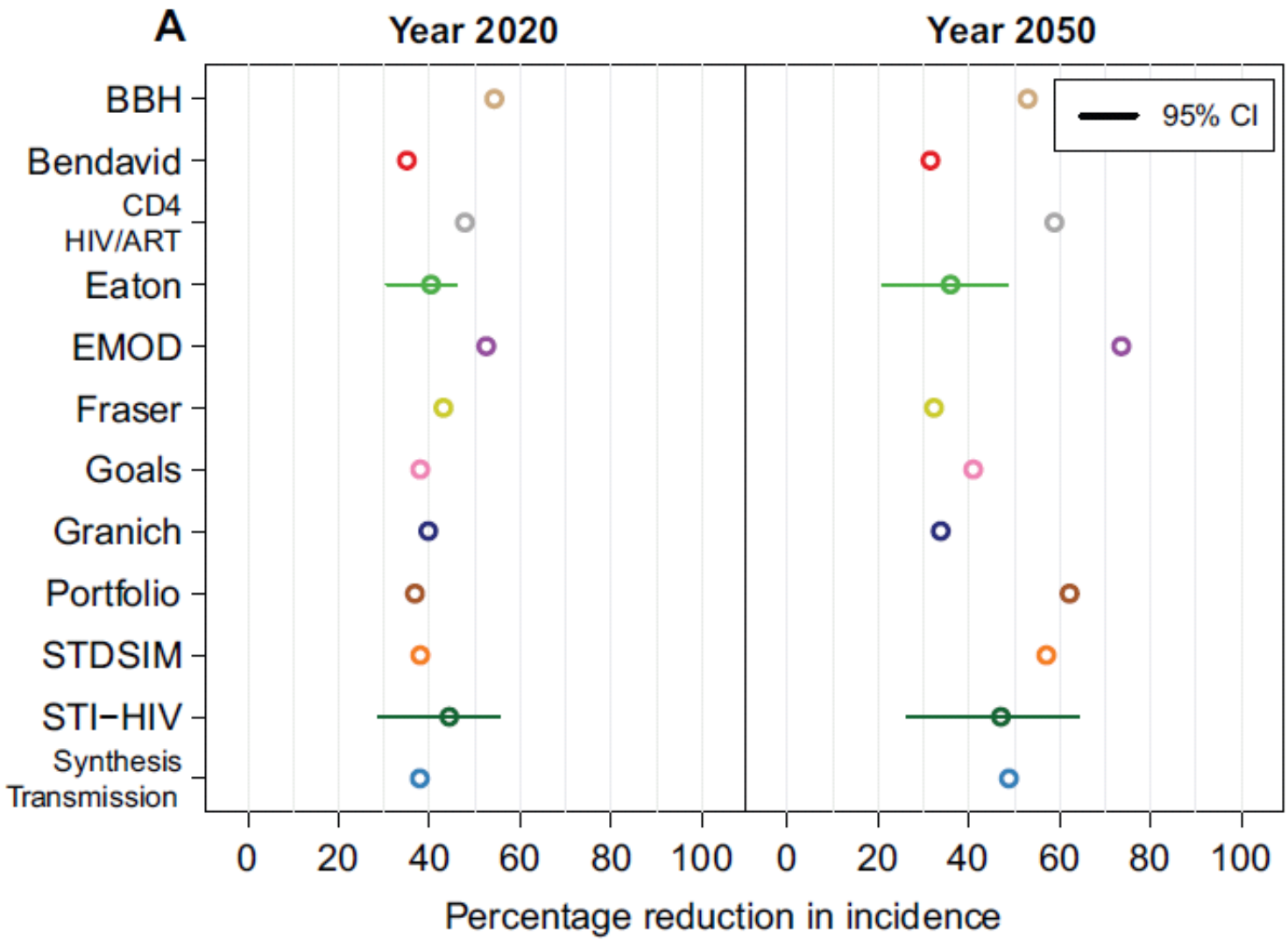
- How can TasP be delivered most effectively?
- What coverage can be achieved on the ground at each step of the cascade?
- How can other prevention modalities be incorporated in TasP programmes (e.g. MC, PrEP)?
- What are the adverse effects of TasP programmes?
- What is the impact of sustainable TasP programmes on HIV incidence and on morbidity and mortality?
- What is the balance of costs and benefits?

- Research can and should be done as efforts to expand testing and treatment are intensified!

What research do we need?

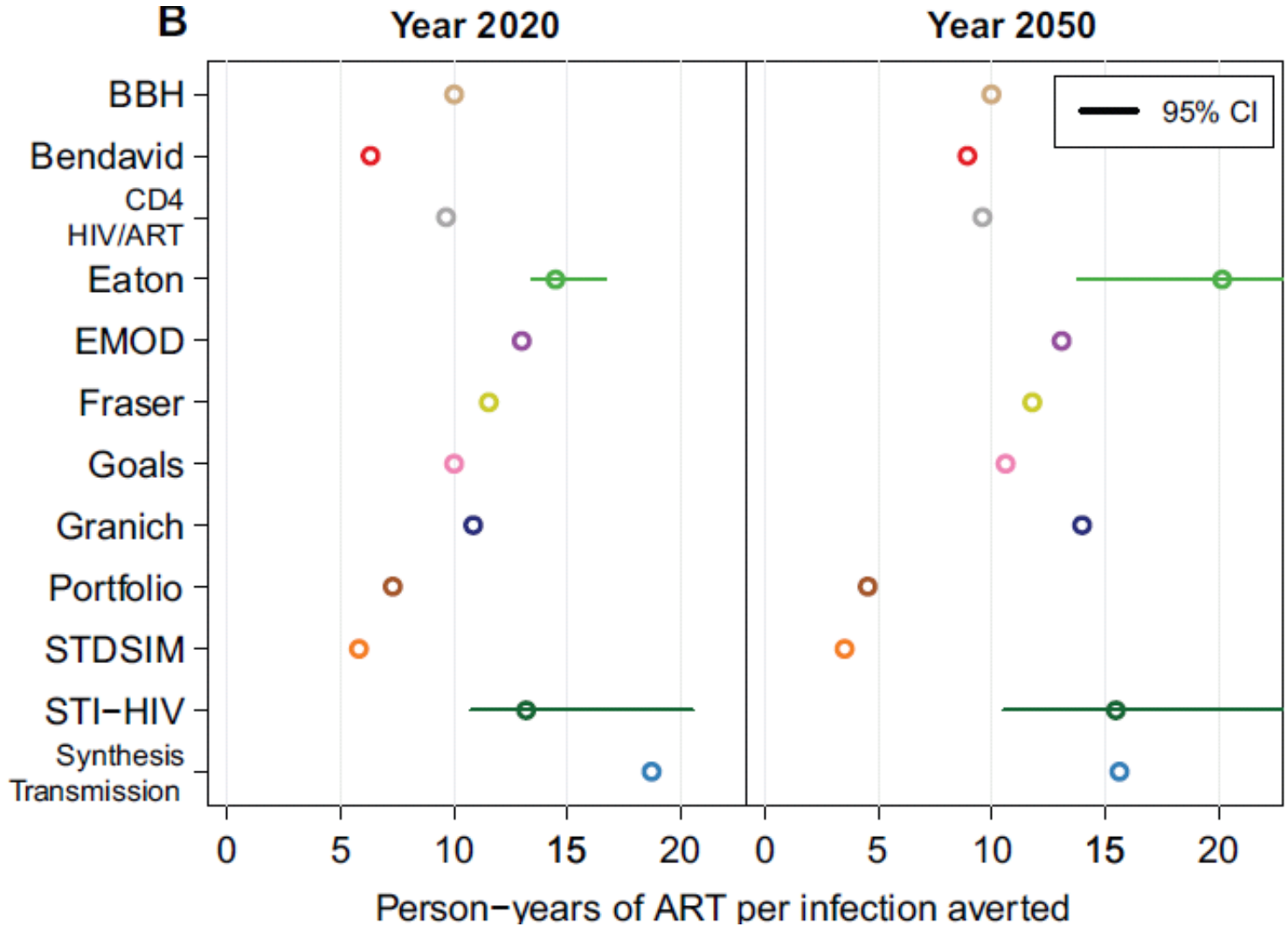
- Implementation science
  - Learning by doing
  - Practical experience and data from TasP programmes on the ground
  - Demonstration projects
  - Routine programme monitoring (data improvement)
- Randomised trials
  - Rigorous data on impact on HIV incidence at population level
  - Direct comparison of benefits and harms
  - Evidence-based data on cost-effectiveness

Model projections



Eaton et al, PLoSMed 2012

Model projections



Eaton et al, PLoSMed 2012

3 arm cluster-randomised trial with 21 communities

Arm A	Arm B	Arm C
Full PopART intervention including immediate ART irrespective of CD4 count	PopART intervention except ART initiation according to current national guidelines	Standard of care at current service provision levels including ART initiation according to current national guidelines

7 communities per arm (N=21)

2,500 random sample from each community :
Population Cohort
N = 52,500

Primary outcome:
HIV incidence at 36 months

PopART intervention package

- Annual rounds of Home Based Voluntary HIV Testing by Community HIV-care Providers (CHiPs)
- Health promotion, Active Referral and/or Retention in Care support by CHiPs for the following:
  - Voluntary Medical Male Circumcision (VMMC) for HIV negative men
  - Prevention of Mother to Child Transmission (PMCT) for HIV positive women
  - HIV treatment and care for all HIV positive individuals
  - Promotion of sexual health and TB services
  - Condom provision
- ART irrespective of CD4-count or immune-status provided at the local health centre in Arm A

http://www.hptn.org/research_studies/hptn071.asp

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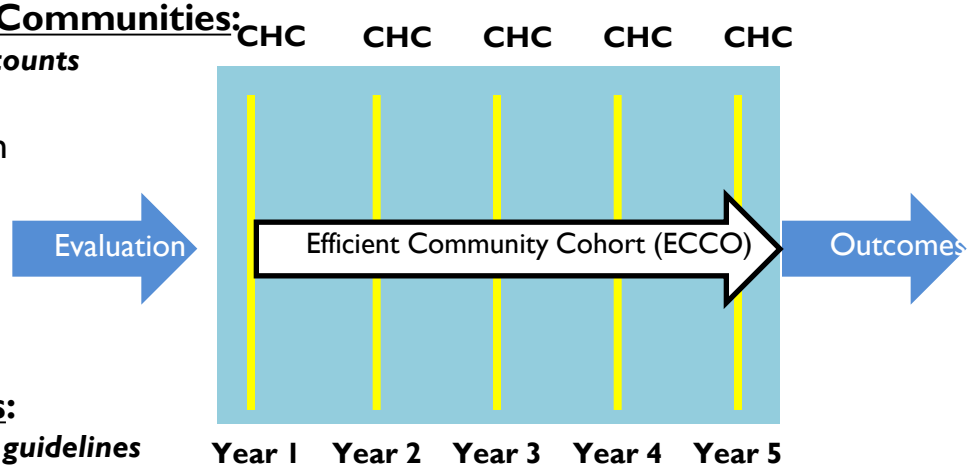
Community Health Campaigns (CHC): HIV Testing/Linkage

Intervention Communities:
ART at all CD4 counts
16 villages
n = 10,000 each

Control Communities:
ART via country guidelines (CD4<350)
16 villages
n = 10,000 each



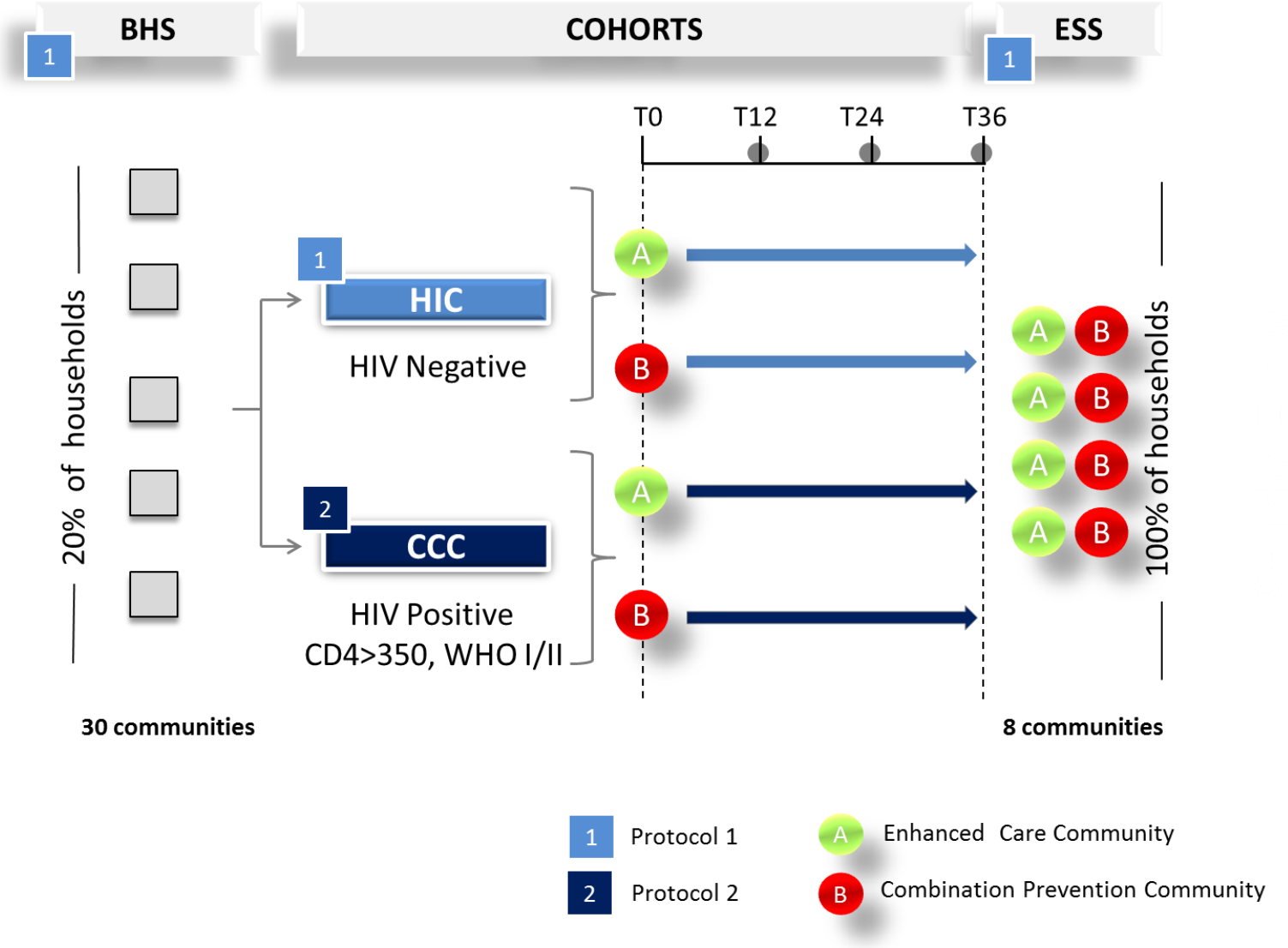
- Baseline census
- Repeated CHC's obtaining individual-level linked data
- Ascertainment of non-returnees (10% sample)

Community Health
HIV incidence
Community viral load
AIDS
Maternal/child health
TB incidence
Malaria incidence

Community Productivity
Workforce participation
Child labor prevalence
Agricultural output
Household income
Educational attainment
Healthcare utilization

SEARCH Consortium 2013

Botswana Combination Prevention



TasP (ANRS 12249)

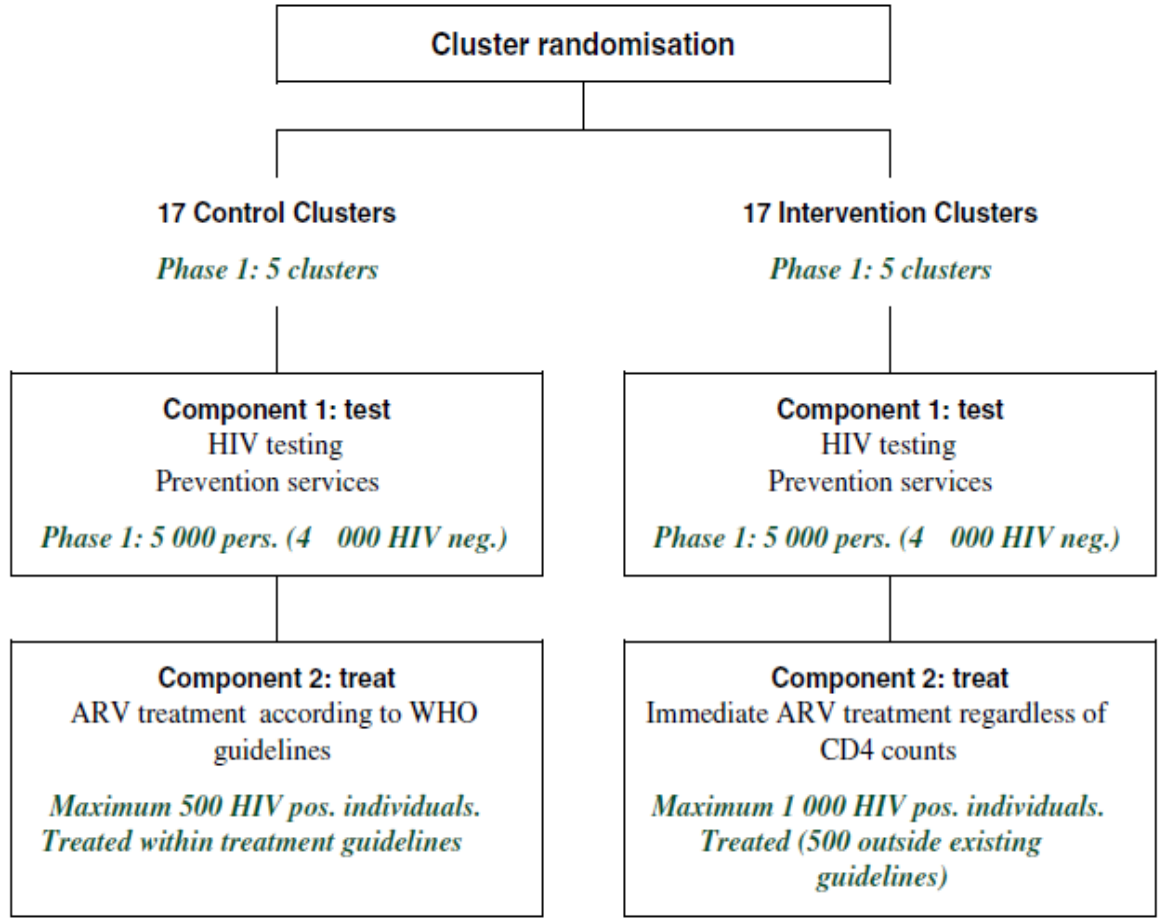


Figure 1 Description of the different components of the ANRS 12249 TasP trial.

Summary

- Combination prevention has the potential to steeply reduce HIV incidence even in the worst affected countries
- TasP is a key component of Combination prevention
- As efforts to promote TasP are expanded we need implementation research to tell us what approaches work best to achieve high impact
- The trials of TasP are complementary and together will provide rigorous data on uptake, costs, adverse effects, effectiveness and cost-effectiveness
- This evidence will help to inform future planning of TasP implementation and resource allocation

Thanks to

- Sarah Fidler
- Kalpana Sabapathy
- Helen Ayles