Viral suppression: How well are we doing?

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Fast-Track Targets

90% of all living with HIV will know their HIV status

90% of all living with HIV will receive sustained antiretroviral therapy

90% of all receiving antiretroviral therapy will have durable viral suppression

And 95% by 2030!
High suppression rates are possible!

>95% suppression achievable with INSTI-based ART in recent RCTs

Sax et al, NEJM, 2016

Venter et al, NEJM, 2019
But trials cannot be generalized to real world

Randomized clinical trial:
• Preselected populations
• Strict monitoring
• Follow-up for 1-3 years
• Motivation to participate

Real world:
• Everyone
• Monitoring dependent on setting
• Lifelong follow-up
• Burden of repeated clinic visits

Real world data is required!
How do we measure viral suppression

• What data source(s) do we use?

• How do we define the population on treatment?
  • on treatment
  • intention-to-treat

• What viral load threshold do we use?
  • 1000 copies/mL
  • 50 copies/mL
Data source

• **National cohorts** have the unique ability to capture the entire treated population of a country, but are often unavailable.

• **Surveys** are a cost-effective way to collect data on the cascade, but may suffer from various forms of bias.

• **Laboratory data** are a valuable additional data source, but lack clinical information and follow-up.
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On-treatment vs intention-to-treat

• Systematic reviews on virological suppression in observational studies in LMIC
  • 2010¹ and 2015²

• Suppression at 24 months
  • 84.4% on treatment
  • 64.6% intention-to-treat

• LTFU occurs in 29% after 24 months³

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Viral load threshold

• Data from 69,454 patients on 1st line EFV-based ART
• 57 rural and urban clinics in four provinces in South Africa
• Virological suppression per threshold (at month 24):
  • 89.1% < 1000 copies/mL
  • 75.6% < 50 copies/mL

Hermans et al, CROI, 2018
90% suppression – examples of success

• Switzerland

• Sweden

• Botswana
Achieving 90% suppression - Switzerland

- Data derived from Swiss HIV Cohort Study (SHCS)
  - National cohort with high coverage
  - Cross-sectional analysis 2012

- 96% (8888/9190) virological suppression
  - below 200 copies/mL

Fig. 1. HIV care cascade for Switzerland in 2012. Numbers and proportions (estimated total of infected individuals = 100%). Red horizontal lines indicate the 2014 UNAIDS/WHO targets of 90% of the previous level, translating into 90, 71, and 64% of the total. Columns are sub-divided by reliability, SHCS, Swiss HIV Cohort Study. Vertical error bars indicate the margins of uncertainty.

Kohler et al, AIDS, 2015
Achieving 90% suppression - Sweden

- Data derived from national cohort
  - Swedish InfCare HIV Cohort Study
  - Covering all HIV treatment sites since 2008
  - Cross-sectional analysis 2015

- 94.7% (6053/6395) suppression
  - below 50 copies/mL

Fig. 1 The Swedish HIV continuum of care 2015, showing the estimated proportion of all HIV-1-infected subjects in Sweden achieving various goals of engagement in HIV care. Red horizontal lines indicate 2014 Joint United Nations Programme on HIV/AIDS (UNAIDS)/World Health Organization (WHO) 90-90-90 targets. Numbers above bars indicate the proportion of the number at the previous level; numbers within bars indicate the proportion of all HIV-infected individuals. ART, antiretroviral therapy.

Gisslen et al, HIV Medicine, 2017
Achieving 90% Suppression - Botswana

- Data from a household survey
  - Botswana Combination Prevention Project (Ya Tsie Study)
  - Household survey performed at project baseline

- 81.5% (12610/15475) included
- 28.5% (3596/12610) HIV+
- 83.3% (2995/3596) aware of status
- 87.4% (2617/2995) on ART
- 93.1% (2428/2617) virological suppression (<40 cp/mL)
How do we get to 90% suppression? (and beyond)

- Efficacious ART (see presentation dr. Moorhouse)

- Guarantee rapid ART initiation in newly diagnosed HIV+ patients\(^1\)

- Early identification and tailored management of patients at increased risk of non-adherence and LTFU\(^2\)

- **Viral load awareness**

Viral load awareness

• Data from SA cohort
  • 69,454 patients on EFV-based first-line ART (57 clinics, 4 provinces)

• Viral rebound is not followed by rapid healthcare worker response
  • Only 41.5% of patients with failure were switched during follow-up
  • Switch was performed at a median of 68 weeks after first detection of rebound

Hermans et al, CROI, 2018
Delay in response to rebound

• Patient delay?

• Healthcare worker delay?
  • Not checking results / results unavailable
  • Insufficient awareness of guideline recommendations

• Healthcare worker doubt?
  • Patients may resuppress even after confirmed failure of first-line EFV-based ART
  • Testing to confirm presence of resistance and/or of treatment adherence unavailable
Any VL > 50 c/mL is a medical emergency and requires action:

A VL of more than 50 c/mL means that **viral replication** is taking place **in the presence of drugs**, and this puts the patient at risk of developing **treatment resistance**

A **thorough assessment** is essential for any patient with a viral load measuring ≥ 50 c/ml
Conclusions

• High rates of virological suppression can be achieved

• Study methods and definition of suppression may substantially impact reported suppression rates

• Achieving high suppression rates requires timely acting on viral rebound
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