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Our Issues, Our Drugs, Our Patients

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Supporting ART adherence

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Benefits of ART:

- For individuals: HIV becomes a manageable chronic illness
- For sexual partners: risk of transmission is reduced (includes PrEP)
- For countries: maintains a healthy & economically active population
Difficulties of ART:

Seem to focus on individuals...

• Choice to start ART (initiation);
• Daily dosing of medication as treatment or PrEP, possible side effects (implementation);
• Need for long-term relationship with health care system (persistence).

Impact of missed doses

Drug concentration

Time in hours.

0 12 24 36 48

efavirenz

tenofovir

3TC

MONOTHERAPY
The third 90...
Rates of failure (implementation):

**Figure 3.** Kaplan-Meier failure estimate for time to first, then second consecutive HIV RNA level >1,000 copies/ml

**Figure 2:** A Kaplan-Meier survival curve depicting risk of an initial virological breakthrough (first viral load >1000 copies/mL after initial suppression—lower curve) and subsequent risk of virological failure (second consecutive viral load >1000 copies/mL—upper curve). Of those with virological breakthrough an expected 66% will resuppress after adherence intervention.

Orrell, AIDS Research and Treatment 2011
Retention in care (persistence):

Orrell, AIDS Research and Treatment 2011

Figure 1. Kaplan-Meier estimates of LTFU, mortality and loss to care by months.
Boyles Plos One 2011 (Eastern Cape)
First, we need to assess adherence...
Assessing adherence

Self-report:
Important to ask, but not often accurate.

Can try: VAS scales, motivational interviewing.

Yes, doctor, I have taken ALL my medicine...
Assessing adherence...

Pharmacy refill:
Were the correct number of bottles of ART collected over the past 4 or 12 months?
Many sites collect electronic dispensing data – but it is not well used.

Thompson, Ann Int Med 2012; Orrell, CROI 2016
Assessing adherence...

Electronic methods:

MEMs caps: Retrospective data

Wise pill: Real-time data

Dosing as recorded using the Wise pill® electronic pillbox.
Adherence measures vs. failure...

- at week 48
- failure defined as >40 copies/ml.

Measure: EAMD PR-ave PR-gap TR EFV SR
AUC ROC: 0.74 0.73 0.72 0.64 0.55 0.51
95%CI: 0.63-0.84 0.61-0.85 0.59-0.85 0.52-0.76 0.40-0.70 0.46-0.56

Orrell, CROI 2016
Then we need to support individual adherence – what works?

• Education / counselling methods
• Electronic intervention
• Healthcare system restructure
• Economic-based interventions
Education / counselling methods:

Education:
An exchange of information to increase knowledge.
Treatment preparedness - a required minimum for starting ART; recommended in most ART guidelines.

Barnighausen, Lancet ID 2011; Thompson, Ann Int Med 2012; Chaiyachati, AIDS 2014
Education / counselling methods:

Counselling:
Beliefs, attitudes, feelings and skills related to ART adherence. Counsellor or peer-nominated supporters can improve adherence, provide emotional support and promote healthy behaviours.

Barnighausen, Lancet ID 2011; Thompson, Ann Int Med 2012; Chaiyachati, AIDS 2014
Electronic tools:
Electronic tools:

Mobile phone interventions – Weekly, bi-weekly and initial daily text messages have all resulted in adherence improvement; as have voice calls.
• Connection with the clinic adds benefit.
• Creation of good habits.

Electronic tools:

Electronic Monitoring Devices (EMD) – Monitor adherence in real-time, so allow immediate intervention.

To date:
- Increased cumulative adherence
- Reduced ART Rx interruptions
- Improved adherence to TB Rx

Electronic tools:  

Caution – 
Not all studies show improvement in biological markers.  
Some good studies show no benefit of SMS reminders.
Healthcare system restructure:

Barriers:
- Extended travel to clinic
- Long waiting times
- Stock outages
- Negative interactions with staff
Healthcare system restructure:

Task-shifting –
Doctor to nurse (NIMART) – already used in South Africa...
Includes counselor to peer shifting; and clinic to community...

Healthcare system restructure:

Adherence clubs –
Alternate models of receiving ART - success with moving suppressed individuals into clinic-based and community clubs.
• Better retention
• Reduced clinic staff burden
• Reduced patient time / transport
• Social support

Grimsrud, JIAS 2015; Decroo, Trop Med Int Health 2014
Healthcare system restructure:

e.g. South Africa: VL<40
- 30 people per club
- 5 times per year
- Less than 1 hour per visit

e.g. Mozambique:
- ~6 people in community groups
- 1 person represents the group at the clinic

Grimsrud, JIAS 2015; Decroo, Trop Med Int Health 2014; Sharp 2015
Economic-based interventions

Cash incentives – in US conditional economic incentives have improved adherence.

Food parcels: worked with youth, and in resource-poor settings.
How do we apply this on a country level?

Differentiated care - Different people have different needs; tailor resources to those who require them.
How do we apply this on a country level?

1. Assess adherence in all; intensify interventions for decreasing pool of individuals with reduced adherence. PR – coarse, retrospective... Electronic – identify adherence patterns, granular.
How do we apply this on a country level?

2. Allow people to choose an intervention up front, from a range of (exciting!) options
Conclusion...

• Adherence is crucial
• Can be altered – both directions
• We have to improve / streamline existing systems (use what you have)

Lastly: Take your treatment and stay suppressed!!
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