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Paying teens to take their ART: will it work?

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Outline

- * Adherence to medication among adults and adolescents
 - * What we know about levels and drivers
 - * Intervention success
- * Cash transfers/incentives and behavior change
- * Cash/incentives and adherence among adults and adolescents
- * Future for incentives for adherence?

Adherence is critical

- * High levels of adherence are essential to medication improving health outcomes
- * In HIV infected patients, not taking ART has implications for :
 - * Morbidity
 - * Mortality
 - * Drug resistance
 - * Ongoing transmission



But...adherence is less than ideal

- * Among adults, 20-30% of medication prescriptions are never filled
- * And 50% of medications for chronic disease are not taken as prescribed (Haynes RB et al. Cochrane Reviews 2008; Viswanahan M et al. 2012)
- * Meta-analysis of ART adherence in adults found a pooled estimate in North America of 55% (95% CI 49-62%) and 77% in Africa (95% CI 68-85%) (Mills et al. JAMA 2006)
- * In children and adolescents, wide range of estimates
 - * Among those 3mo-24 yrs adherence ranged from 84% to 96% (Simoni J 2007 review) (n=13).
 - * Among those 13-24 yrs, adherence ranged from 28-69.8% (Reisner S 2009 review) (n= 14)

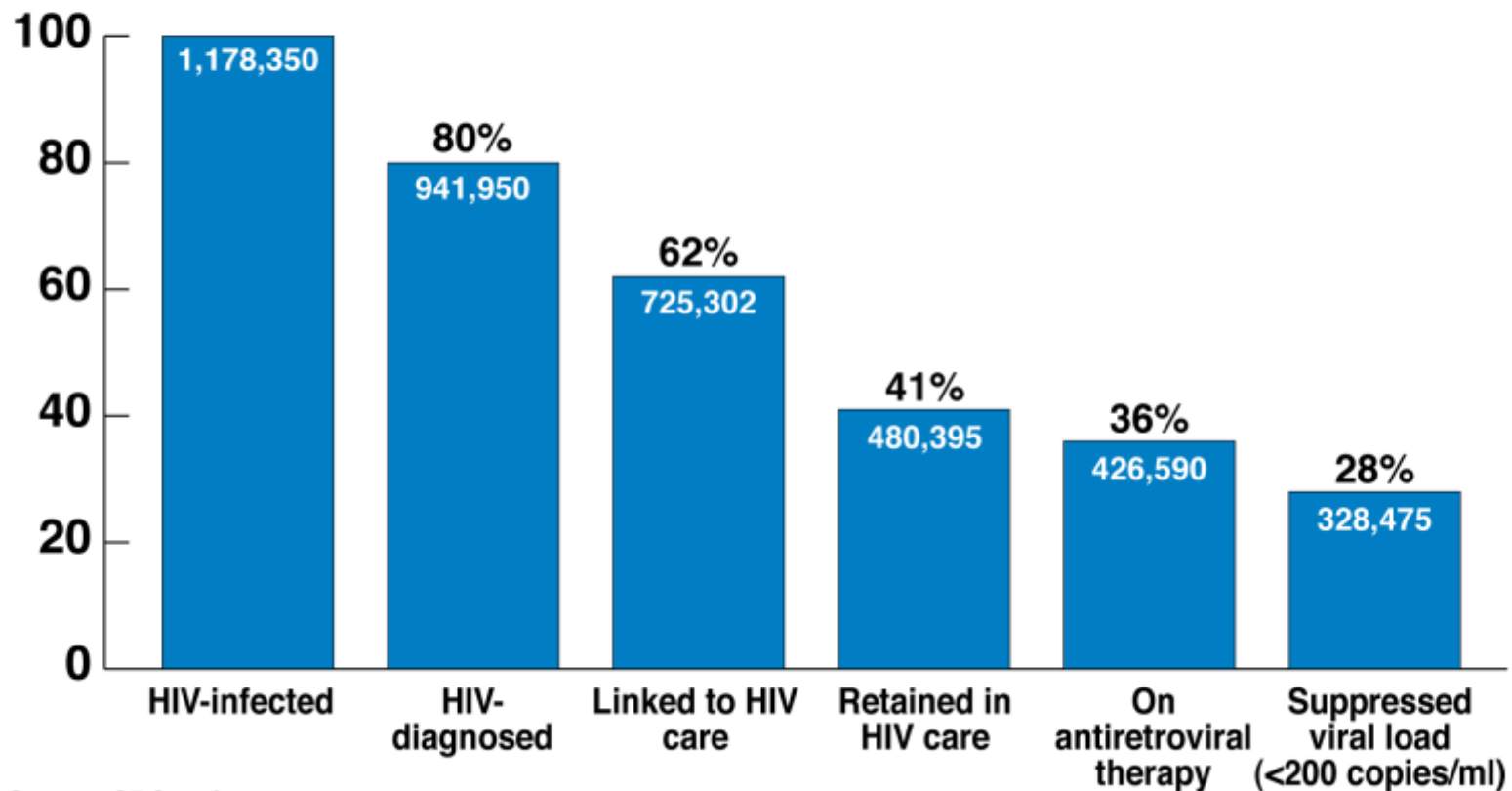
And adherence is difficult to measure accurately

- * Self-report often over-reported
 - * Varies by who is reporting (parent, child, provider)
- * Pharmacy refill data and Pill counts/electronic drug monitoring (EDM) better but not perfect
- * Viral load- much better
- * Drug concentrations in blood or hair-- gold standard (?)
- * Adherence is also dynamic and thus requires ongoing monitoring



And adherence is only part of the picture

Proportion of HIV-Infected Individuals in the United States at Each Stage of Care



Why are adolescents different from children or adults?

- * In younger kids, parents/caregivers may be central to medication adherence in terms of acquisition and administration of drugs
- * Transition to greater independence in medication routine may pose challenges
- * In adolescents, developmental changes, including greater autonomy and the need to challenge authority may pose challenges
- * Time of life when adolescents don't want to appear or be different from peers

Factors associated with adherence in children and adolescents

- * Medication related (less complex regimens)
- * Patient related
 - * Race (white vs non white)
 - * Less stigma surrounding HIV
 - * Knowledge of diagnosis
 - * Lack of depression
 - * Better patient-provider relationship
 - * Less substance use
 - * Housing stability
- * Caregiver/family related
 - * Foster parent
 - * Less concern about hiding child's diagnosis
 - * Better parent-child communication
 - * Less caregiver stress
 - * Higher quality of life
 - * Belief in efficacy of medication

Importance of Context: Peers/Partners, Family & Community



What can we do to ↑ adherence of ART in HIV infected youth?

- * Rigorously evaluated interventions to improve adherence in adolescents are limited
- * 4 studies identified in recent Cochrane review of adherence among those 0-18 years of age on ART (Bain-Brickley D 2011)
 - * 2 RCTs and 2 non-randomized trials
 - * **Home-based nursing** in the US among 37 patients 1.5 yrs to 20 yrs (home visits over 3 mo, medication boxes, beepers, small toys, diaries to help with adherence)- **self reported adherence was higher in intervention arm but no difference in biologic outcomes (VL or CD4)**
 - * **Peer support-groups** for 12-17 year olds in France. 90 minute sessions every 6 weeks for 26 months. No difference in self-reported adherence 2 years out but **intervention group had lower VL (p=0.06)**

Interventions for youth to improve adherence

- * Few studies to date. Most are small, observational studies
- * Range of strategies used including:
 - * DOTs
 - * Educational sessions with family and youth
 - * Home nursing visits
 - * Cell phone reminders, other devices to help with remembering to take pills
 - * Treatment 'buddies', Peer Support
 - * Medication scheduling (reducing to 1x a day)
 - * Multi-component interventions



What role do incentives play in improving adherence?

Background on \$\$ to change behavior (1)

- * Cash Transfers

- * Social Cash Transfers/Unconditional Cash Transfers

- * Cash payments targeted to poor and vulnerable families
 - * Social safety net
 - * Run by Ministry of Social Welfare/Social Development
 - * Transfer level usually varies by program (US\$10-25/month)

- * Conditional Cash Transfer Programs

- * Cash provided to individuals conditional on performing particular behaviors deemed beneficial (e.g. ANC visits, immunizations, school attendance)

Background on \$\$ to change behavior (2)

- * Contingency Management (psychology)
 - * Based on the theory that behaviors targeted for change should be monitored frequently and rewarded with tangible incentives when desired behavior change is demonstrated
 - * Most evidence is among drug abusing populations (but also used for weight loss, smoking cessation)
- * Behavioral economics
 - * Economic theory behind how cash transfers can affect behavior. Cash provided today can offset myopia that people may experience with regard to benefits that are not immediately tangible.

Cash to prevent HIV Infection

- * 2 main approaches to the issue
 - * Upstream-- Cash for poverty alleviation which aims to reduce HIV risk
 - * Cash as an incentive for behavior change (ie, money to test for HIV, for negative STI tests, to take your ART)
- * Will both approaches work the same in different populations?
- * What is the implication for scale up of both approaches?

Rationale for incentives/cash to improve adherence in youth?

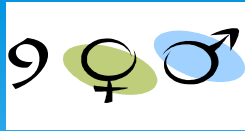
- * In many settings, young people infected with HIV are the most vulnerable
 - * Cash can help offset costs associated with getting to clinic, taking off from work, child-care, medication costs
- * Adolescents may not see the long term benefits of adhering to treatment due to feelings of invincibility and focus on today
 - * Incentives (including cash) may help offset that myopia
 - * Incentives/cash are a direct benefit/reward to the adolescent for their adherence
- * Incentives may help young people get 'on track' with adherence and set up good habits which may sustain into adulthood
- * Incentives to get adolescents through a 'risky period' not the rest of their lives

Incentives for adherence in adults

- * 5 studies among adult populations looking at incentives or cash to improve adherence (all RCTs)
 - * Small studies, some are pilots
 - * 4/5 among substance abusing population. 2/5 among those with low adherence.
 - * Vouchers, cash, lottery, escalating schedule
 - * Take home: incentives worked while being offered but effects not maintained
 - * In one study where incentive combined with case management VL reductions continued after program ended (Javanbakht M et al 2006)– cash or case management?

And among Adolescents?

- * No clear evidence of studies on incentives for adherence in youth for other chronic conditions (Dean AJ Arch Dis Child 2010)
- * No published studies to date on incentives for ART adherence in youth
- * A few *SMALL* pilots in the US and UK
 - * Some promising data from 1 pilot in the UK



Methods

Eligible:

- PaHIV age 16-25 years
- CD4 count ≤ 200 cells/ul
- Longstanding poor adherence
- Off ART despite multiple attempts to start
- Willing to start ART and to sign patient agreement

Started ART	VL response & attended for MI	Voucher value
Week 2	Fall in VL	£ 25
Week 4	Fall in VL	£ 25
Week 8-16	VL<50	£ 50
3 months suppressed	Sustained VL<50	£ 25
6 months suppressed	Sustained VL<50	£ 25
12 months suppressed	Sustained VL<50	£ 50
Total		£ 200

The future?

- * Sustainability?
- * Need Larger, rigorously evaluated studies that determine the effect of incentives on adherence (including long term effects) and determine the cost-effectiveness
- * Need to explore other incentives such as non-monetary incentives/reinforcers or special privileges
- * Studies to examine incentives at other stages of the treatment cascade
- * Need to better understand mechanisms that promote adherence—help patients identify their personal sources of reinforcement for adherence
- * Combination adherence studies also needed

(Simoni J 2008)

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