UNIVERSITY of WASHINGTON
DEPARTMENT OF GLOBAL HEALTH

UW Medicine
DIVISION OF ALLERGY AND INFECTIOUS DISEASES

The Cost of Differentiated Service Delivery: A Systematic Review

D. Allen Roberts, Nishaant Limaye, Ruanne V. Barnabas
Associate Professor, Global Health and Medicine, University of Washington

July 23, 2018

Outline

1. Background
2. Systematic review methods
3. Preliminary results
4. Case Study
5. Next steps

Background

- DSD strategies increase access to ART
- Data on cost are needed to estimate budget impact and cost-effectiveness can help guide choice of DSD approach
- Aim
  - Systematic review evidence on the **cost and cost-effectiveness** of DSD
  - Included DSD studies in SSA on ART delivery that reported primary cost data collected between 2004-2018

Background

- Differentiated Service Delivery (DSD) – a ***client-centered*** approach that ***simplifies and adapts*** HIV services across the cascade to reflect the preferences and expectations of various groups of PLHIV while ***reducing unnecessary burdens*** on the health care system

1. Health care worker managed groups

Clients receive their ART refills in a group and either a professional or a lay health care staff member manages this group. The groups meet within and/or outside of health care facilities.

2. Client-managed groups

Clients receive their ART refills in a group but this group is managed and run by clients themselves. Generally, client-managed groups meet outside of health care facilities.

3. Facility-based individual models

ART refill visits are separated from clinical consultations. When clients have an ART refill visit, they bypass any clinical staff or adherence support and proceed directly to receive their medication.

4. Out-of-facility individual models

clinical consultations are provided to individuals outside of health care facilities.

- 5. Task shifting is cross cutting

Systematic review methods

- Followed PRIMSA and Cochrane Guidelines
- Searched PubMed, EMBASE, Global Health, and EconLit databases, conference abstract review is ongoing
  - **1514 articles returned**
  - **48 articles identified for full text review**
  - **19 studies and 2 conference abstracts included**
- Data abstraction from included studies
  - 4 DSD models plus task shifting, costs, outcomes, comparison

Results (1)

- **Facility-based individual**
  - 7 studies included Uganda (3), Malawi, Zambia, Tanzania, Kenya
  - Shade (Uganda + Kenya, 2013-2017): Streamlined ART delivery (nurse-driven) for stable clients - $275 per patient year
  - Prust (Malawi, 2016): Multi-month scripting - 3 month instead of 1 month refills - $121 per patient year
- **Out-of-facility individual**
  - 5 studies (Uganda)
  - Vu (2012): Community ART distribution by expert clients - $404 per person-year
  - Roberts (2016-2017): Community-based ART - $241-$465 per person-year depending on program scale

Results (2)

- **Group models (n=1)**
  - Bango (South Africa, 2007-2011): Health care worker-managed groups (Adherence clubs) - Cost per patient-year: $300 in clubs vs $374 SOC
- **Client-managed groups (n=1)**
  - Prust (Malawi, 2016)
    - Community ART groups – stable patients rotate visiting the clinic and distributing ART refills to group
    - Cost per patient-year: $122 vs. $135 SOC

Task shifting

- **9 studies report costs of task shifting ART delivery**
  - South Africa (5), Uganda, Malawi, Nigeria, Ethiopia
- Barton (South Africa, 2007-2010)
  - Nurse-led ART initiation model increased annual costs by $103 for new patients and $59 for stable patients (more clinic visits, stronger adherence to referral protocol)
- Babigumura (Uganda, 2007)
  - Pharmacy-worker model ART refill model reduced annual medical costs by $14 compared to nurse-led model and by $21 compared to physician-led model

Case Study

Tropical Medicine and International Health
doi:10.1111/tmi.12736
VOLUME 21 NO 9 PP 1115–1123 SEPTEMBER 2016

Adherence clubs for long-term provision of antiretroviral therapy: cost-effectiveness and access analysis from Khayelitsha, South Africa

Funeka Bango[1,2], John Ashmore[2], Lynne Wilkinson[2,3], Gilles van Cutsem[2,3] and Susan Cleary[4]

1 *Provincial Department of Health, Western Cape Government, Cape Town, South Africa*
2 *Médecins Sans Frontières, Khayelitsha, South Africa*
3 *School of Public Health & Family Medicine, Centre for Infectious Disease Epidemiology & Research, University of Cape Town, Cape Town, South Africa*
4 *Health Economics Unit, School of Public Health and Family Medicine, University of Cape Town, Cape Town, South Africa*

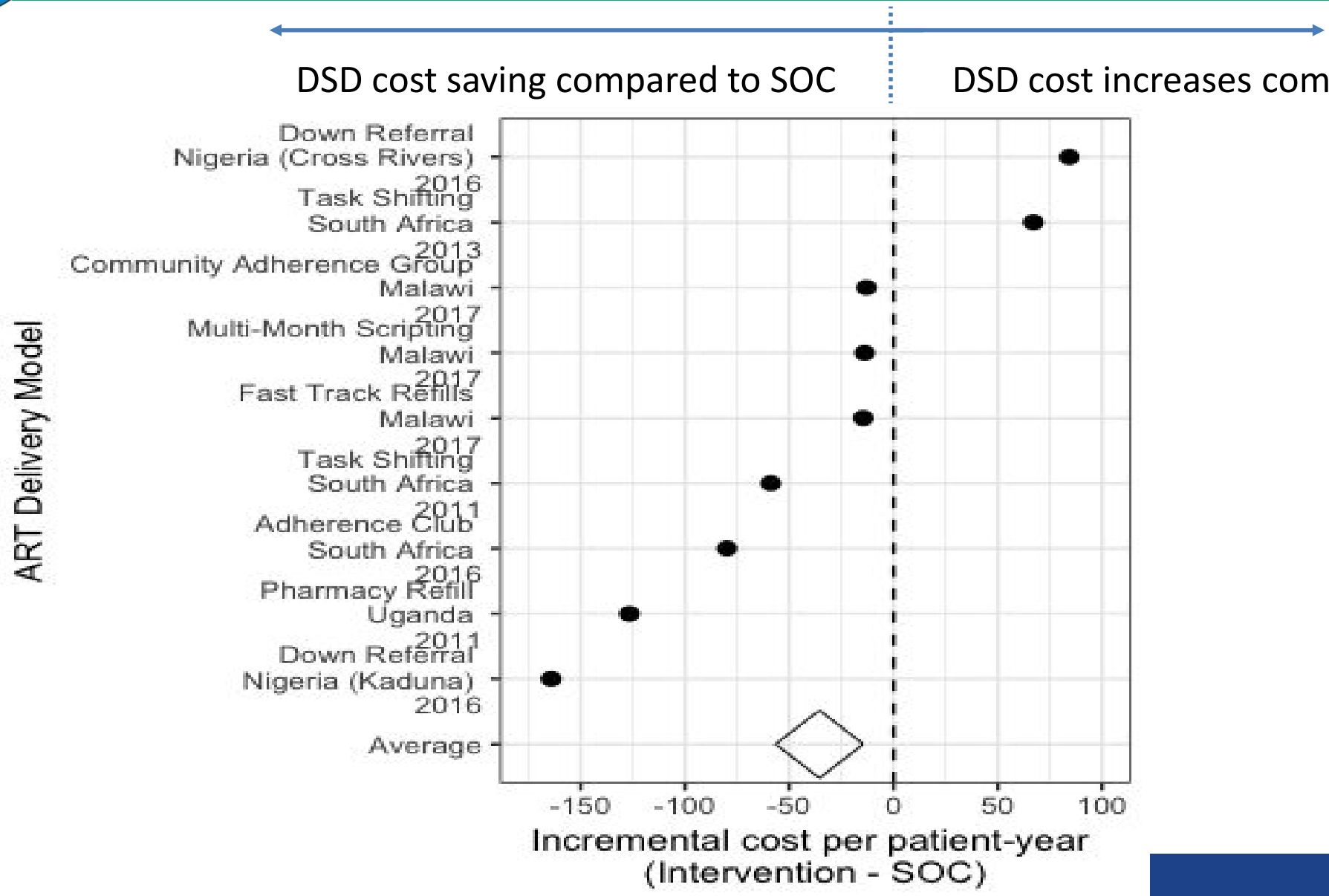
- Bango and colleagues (South Africa)
- Adherence clubs had lower visit costs ($1.52 less per visit) and 4 fewer visits per year than SOC
- Adherence clubs had better outcomes (VS) at lower costs ($74 per year cheaper than SOC)
- Patients felt adherence clubs were better staffed

Table 3 Cost-effectiveness results (provider perspective)

Strategy	Cost	Incremental cost	Effectiveness (RIC) (%)	Effectiveness (VS) (%)	Incremental effectiveness (RIC)	Incremental effectiveness (VS)	ICER
Club	US$ 300		98.03	99.06			
Standard of care	US$ 374	US$ 74	95.49	97.20	−2.54%	−1.86%	Dominated*

RIC, retention in care; VS, viral suppression.
*Standard of care is absolutely dominated by ART Clubs given higher costs and lower effectiveness.

Summary of costs for stable patients



Discussion

- Overall, DSD cost-saving compared to standard for care – DSD strategy must fit the need
- Costs require standardization across studies – e.g. ART costs have decreased
- Need additional data:

Recommendations for minimum economic dataset

Major components	Program characteristics	Outcomes	Reported costs
Personnel Drugs and other consumables Patient costs and wait times Equipment Indirect (overhead) costs Payer information	Program size Criteria for stable client eligibility Percent eligible Laboratory monitoring guidelines	Retention in care Adherence	Unit costs for ART, personnel, and laboratory Average cost per patient-year Breakdown of fixed/variable costs Estimated standard-of-care costs for same population

Discussion and Next Steps

- Randomized comparisons for cost-effectiveness – forth-coming
  - DO ART – community-based ART delivery in Uganda and South Africa
  - STREAM – POC viral load testing and task shifting to nurses for stable patients in South Africa
  - INTERVAL – 6-month (vs. 3-month) dispensing intervals for stable patients in Zambia and Malawi
  - 6-month dispensing to community ART groups in Zimbabwe
- Costs need pairing with math models to estimate cost-effectiveness

Thank you!

- CQUIN Network
- UW Collaborators
  - **D. Allen Roberts**
  - Nishaant Limaaye
  - Nick Tan
  - Carol Levin

HIV LEARNING NETWORK
The CQUIN Project for Differentiated Service Delivery

Funding: CQUIN Network