COSTS OF HOME-BASED HIV TESTING IN ZAMBIA: EVIDENCE FROM THE HPTN 071(PopART) STUDY

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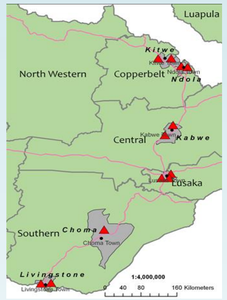
BACKGROUND

More than 14.5 of the 36.7 million people living with HIV globally do not know their HIV status, making comprehensive testing interventions a critical first step in ending the AIDS epidemic. Home-based testing and counselling (HBTC) involves small teams of community health workers with basic training going from door-to-door and offering services in people's homes.

There is very limited robust evidence on the costs of HBTC delivery. Previous study estimates range from $5.80 to $38.80 for cost per person tested, and $42.40 to $454.40 for cost per person tested positive.[1] The HPTN 071(PopART) trial conducted population-wide HBTC rounds in Zambia.[2]



Map of study communities in Zambia

STUDY COMMUNITIES

THE STUDY

The HPTN 071 (PopART) trial is being conducted in 12 communities in Zambia (and 9 in South Africa). The trial (2013-2017) is investigating the impact on HIV incidence of the 'PopART intervention. 'Community' is defined as the catchment area of a health care facility providing anti-retroviral therapy (ART).

The communities in Zambia were formed into four matched triplets based on estimates of their HIV prevalence. In each matched triplet two communities were randomised to the intervention arm and one to the control arm. Average baseline HIV prevalence across sites in Zambia was 22%.

HBTC UNDER THE POPART INTERVENTION

The PopART intervention is a combination prevention package. It comprises annual rounds of HBTC delivered by community HIV-care providers (CHiPs) who also support linkage to care, ART retention, and other services.

CHiPs work in pairs, with each pair serving a zone consisting of around 500 households. In total 412 CHiPs provide HBTC in Zambia.

Data from eight communities in Zambia receiving the full intervention were used to estimate the total costs per year, cost per person tested, and cost per person testing positive ('yield' from HBTC).

METHODOLOGY

MICRO-COSTING

We applied micro-costing methods to estimate the economic costs of HBTC delivered to over 250,000 individuals between December 2013 and December 2016.

- Total costs, cost per person tested, and cost per person tested positive were calculated. Data on salaries, equipment, supplies, transport, and general administration were extracted from program records, and merged with outcome indicators from program data.
- Personnel costs were allocated to communities by number of CHiPs teams in each community
- Costs associated with HIV testing were allocated by number of tests conducted and other cost components were allocated by population covered.
- All equipment and training costs were adjusted to estimated equivalent annual costs over the lifetime of the study. All costs were adjusted for inflation and are presented as 2016 US$

Probabilistic sensitivity analysis (PSA) by random sampling from specified distributions was conducted to determine the sensitivity of estimates to uncertainty in cost components. Costs are presented as means from the PSA simulations.

HIV TESTING ACROSS ROUNDS

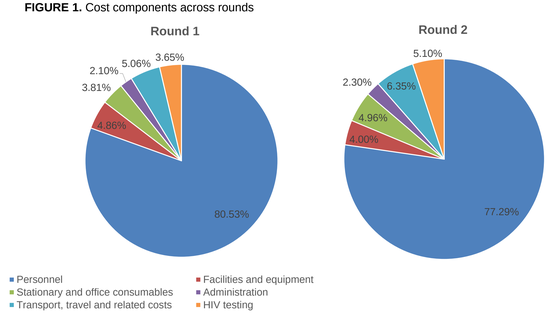
In the first round:

- 126,208 individuals were tested,
- Of those tested, 9,196 (7%) tested HIV-positive.

In the second round:

- 136,966 individuals were tested
- Of those tested, 4,921 (3.6%) tested HIV-positive

FIGURE 1. Cost components across rounds



FINDINGS

COSTS ACROSS ROUNDS

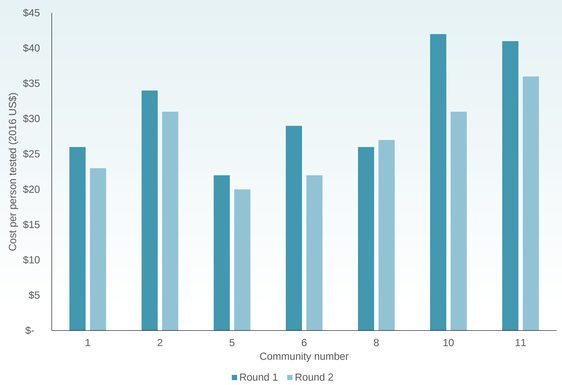
The total cost of delivering the intervention in each round was around US$ 3.40mn. The average cost per person in the population was US$ 7.6 across the two rounds (Table 1). The largest cost component of HBTC was personnel costs (80.53% in round 1 and 77.29% in round 2 (Figure 1).

The cost per person tested was US$ 26.77, and the cost per person tested positive was US$ 367 in the first round. While the cost person tested remained similar at around US$25.42 in round 2, the cost per person tested positive doubled to around US$691.88 (Table 1).

TABLE 1. Costs by rounds

	Round 1	Round 2
Total economic costs	US$ 3.37mn	US$ 3.40mn
Average cost per population	US$ 7.61	US$ 7.67
Cost per person tested	US$ 26.77	US$ 25.42
Cost per person tested HIV-positive	US$ 367.00	US$ 691.88

FIGURE 2. Cost per person tested by community



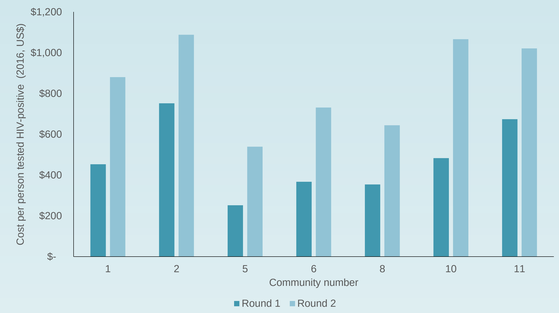
VARIATION ACROSS COMMUNITIES

The costs per person tested (round1: min=US$ 22.00, max=US$ 42.11, round 2: min=US$ 20.30, max=US$ 36.28) varied across communities and rounds. The costs per person tested positive (round1: min=US$ 252.29, max=US$ 751.99, round2: min=US$ 538.66, max=US$ 1,087.69) varied substantially across communities and increased between rounds. (Figures 2 and 3)

INTERPRETATION

The findings suggest that costs are sensitive to community-specific factors related to service delivery or population characteristics. The cost per person tested HIV-positive nearly doubled between rounds, which is partly explained by a reduction in the number of persons tested HIV-positive in the second round.

FIGURE 3. Cost per person tested HIV-positive by community



The costs included represent all activities carried out by ChiPs, but we currently use only intermediate outcomes (numbers tested) as the denominator. Future work will adjust these costs by time spent on each activity to separate out testing costs from adherence counselling and other activities. Further analysis is required to evaluate the cost-effectiveness of HBTC in terms of their wider health and non-health benefits.

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