

Economic evaluation of improving HIV self-testing among men who have sex with men in China using a crowdsourced intervention: a cost-effectiveness analysis

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BACKGROUND

- **HIV self-testing (HIVST) is recommended** by the World Health Organization to enhance HIV testing services.
- **Crowdsourcing**, an approach that taps into the wisdom of crowds, has been successful in generating strategies to enhance HIVST uptake.
- We determined the **cost-effectiveness of a crowdsourced intervention** (one-off or annual) compared to a control scenario (no increase in HIVST) among men who have sex with men (MSM) living in China.

METHODS

- We conducted a **cost-effectiveness analysis alongside our cluster randomized controlled trial of MSM**, using a micro-costing approach to measure direct health costs (\$USD2017) from a health provider perspective.
- Using outputs from a **dynamic transmission model** over a 20-year time horizon, we estimated the incremental cost-effectiveness ratios (ICER) using cost per disability adjusted life years (DALYs) averted with 3% discounting.
- The **one-off intervention** increased HIVST by 1.89 (95%CI:1.50-2.38) for one year, whereas we assumed an **annual intervention** increased HIVST throughout the 20-year time horizon.
- We defined an intervention as cost-effective if the ICER was <1x gross domestic product (GDP; \$8823).

RESULTS

- Across all cities, the **crowdsourced intervention was highly cost-effective** compared to the control scenario (see Table below).
- The one-off intervention was **cost-saving in Guangzhou and Qingdao**.
- **Sensitivity analyses confirmed the robustness** of the findings; specifically, changes in discounting, costs of the crowdsourced intervention, costs of HIV testing and cost of ART did not alter our conclusions.

**Harnessing
the wisdom
of the crowd**



	Cost (USD 2017)	Incremental Cost	Incremental DALYs averted	ICER (Cost per DALY averted)
Guangzhou				
No crowdsourcing	127,213,915			
One-off crowdsourcing	127,036,559	-177,356	546	Dominates*
Annual crowdsourcing	129,039,133	2,002,574	885	2,263
Qingdao				
No crowdsourcing	45,502,682			
One-off crowdsourcing	45,409,229	-93,453	145	Dominates*
Annual crowdsourcing	47,550,238	2,141,009	348	6,152
Jinan				
No crowdsourcing	37,193,770			
One-off crowdsourcing	37,224,788	31,018	152	204
Annual crowdsourcing	38,913,226	1,688,438	294	5,743
Shenzhen				
No crowdsourcing	346,743,984			
One-off crowdsourcing	346,910,542	166,558	972	171
Annual crowdsourcing	350,323,180	3,412,638	2,939	1,161

* One-off crowdsourcing was cheaper and more effective than no crowdsourcing in Guangzhou and Qingdao

CONCLUSIONS

Scaling up a one-off or annual crowdsourced HIV prevention intervention in four cities in China was very likely to be cost-effective or even cost-saving in some cities.

Further research is warranted to evaluate the feasibility of scaling up crowdsourced HIV prevention interventions in other settings and populations.

