

Modelling the cost-effectiveness of the MOSAIC study (mitigation of COVID-19 through onsite testing and education among formerly incarcerated individuals)

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Background:

The MOSAIC study evaluated a community health worker (CHW)-led point-of-care COVID-19 testing and education intervention in a re-entry-focused community-based organization supporting criminal legal system-involved individuals (CLSI) in New York City (NYC). We explored the cost-effectiveness of the onsite point-of-care (O-PoC) intervention compared to standard of care (SoC) in terms of COVID-19 cases averted through differences in mask-wearing and testing behaviour.

Methods:

We developed a Markov model of COVID-19 transmission over 2022-2025 in a cohort of 1000 individuals, representative of the MOSAIC study population. Infection rates were based on daily reported cases in NYC, assuming 2.1 unreported infections per reported case. Each infection in the model cohort was assumed to cause one additional infection in the wider community. Survey data describing participants' masking and testing behaviour were used to model the intervention's impact on mask-wearing and diagnosis rates in the O-PoC group compared to SoC. The model estimated the number of COVID-19 cases averted and the cost per quality-adjusted life year (QALY) gained by the intervention.

Results:

Mask-wearing rates were 19% higher in the O-PoC group, and preliminary results suggest that around 45 COVID-19 cases were averted by masking. The cost-effectiveness of the intervention is sensitive to the background infection rate and the incremental cost of O-PoC compared to SoC. For the intervention (focusing only on the impact of higher mask-wearing rates) to be cost-effective at a \$100,000 willingness-to-pay threshold, the incremental per person-cost for the O-PoC arm must be kept below approximately \$600. Increasing the incidence rate to 2022 outbreak levels approximately triples the cases averted and the intervention becomes cost-saving.

Conclusion:

CHW-led PoC testing and education interventions can increase protective behaviours in formerly incarcerated individuals and could be highly cost-effective, particularly during infectious disease outbreaks. Preliminary results indicate that, despite the low background infection rates between 2022 and 2025, COVID-19 cases, and associated costs and QALY losses, were averted due to the intervention.

Disclosure of Interest Statement: SARS-CoV-2 testing platforms and cartridges were provided for this study by Cepheid.