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Incentives for COVID-19 vaccination

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As coronavirus disease-2019 (COVID-19) vaccine uptake plateaued in mid-2021, many countries began to experiment with incentives. The impact of the resulting patchwork of incentive programs is largely unknown. Rewards research on other health behaviors suggests that incentives for vaccination will be most effective when 3 criteria are met: (1) their receipt is certain, (2) they are delivered immediately, and (3) recipients value them (Table 1).[1] Our commentary uses these criteria to highlight vaccination incentive programs most likely to have impact.

Effectiveness of incentives

The most promising incentive option is guaranteed cash payments, which meet all our criteria when

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	Incentive Type			
	Guaranteed cash payment	Guaranteed non-cash reward	Lottery with cash prize	Lottery with non-cash prize
Example	$25 payment	T-shirt	Chance to win $1 million	Chance to win a truck
Principles				
Receipt is certain	●	●	○	○
Delivered immediately	●	●	○	○
Valued by recipient	●	◉	●	◉
Likely impact	●	◉	◉	○

Table 1: **Behavioral principles for effective vaccination incentives.**
● = Stronger if program is implemented well; ◉ = Moderate; ○ = Weaker.

implemented well. A systematic review of vaccine promotion interventions recommends guaranteed cash payments, with an estimate that they increase uptake of vaccines by 8%.[2] A trial in Sweden found guaranteed payments provided by researchers increased COVID-19 vaccination uptake by 4%.[3] In the United States (U.S.), North Carolina offered $25 incentives for adult vaccination or driving someone to get COVID-19 vaccine, a program that bolstered vaccine uptake.[4] Guaranteed cash incentive programs elsewhere have included Ukraine and Serbia, though these programs' impact has not been evaluated. Employers and insurers have also offered guaranteed cash payments, although these may be less effective because they are unlikely to be provided directly after vaccination.

Another promising option is guaranteed non-cash rewards, which may be the most common COVID-19 incentive globally. These rewards are available soon after vaccination, but the value people assign to them may vary substantially or not be enough to motivate the hesitant. For this reason, they may be less effective than guaranteed cash payments. Offers have included free eggs in China, hummus in Israel, and blenders in India. This and the remaining options remain largely unevaluated for COVID-19 vaccination.

A less promising option is lotteries with cash prizes. Lottery incentives fail two of our criteria by being probabilistic rather than guaranteed and being awarded well after vaccination. People prefer sure things over gambles when receiving a benefit according to Prospect Theory. Lotteries can have some effect, however, if people overestimate their slim chances. In the U.S., Ohio offered a million-dollar lottery but evaluations have found null, mixed, or at best a small benefit early on.[5,6] High-value lotteries in Canada, Latvia, and the Philippines have largely not been evaluated.

The least promising option is lotteries with non-cash prizes. These likely have the smallest impact of all the incentive options, given that they fail all our criteria. They have the weaknesses of cash lotteries as well as having a perceived value that varies considerably among members of the public. For example, Hong Kong's lottery prizes of an apartment may have wide appeal but free motorcycles in the Philippines may not appeal to some residents.

Gaps in understanding of vaccination incentives include the optimal (1) amount; (2) recipient profile (e.g., people already open to vaccination); (3) behavior (e.g., childhood vaccination); and (4) setting (e.g., rural areas). Data are needed on intended and potential unintended consequences of vaccination incentives, and program design must balance projected impact, cost, equity, and other policy considerations.

Additional policy considerations

Incentives preserve choice and thus may be more acceptable to the public than vaccine requirements. Cash incentives that reimburse for the time and effort to access COVID-19 vaccination can be productively framed as a benefit. Drawbacks of incentive programs include their cost and tradeoffs between fairness and cost control. Offering incentives to all those willing to be vaccinated promotes equity but expends resources on those who would have accepted vaccines without payment. Cash incentives so large they are coercive also raise equity concerns. Such payments may exploit financial insecurity in poor communities, with the risk of exploitation increasing with the incentive amount. Incentives may lead some people to express mistrust of vaccination, although this may be a justification by those already disinclined to vaccinate. Additionally, incentives prompt vaccination without changing what people fundamentally think about

vaccination or social norms according to the Increasing Vaccination Model, and thus their behavioral impact likely wanes when discontinued.[7] Finally, Finally, participants must know about incentives for them to increase vaccination uptake, but programs often did not publicize incentives due a lack of budget.

Conclusion

As countries plan promotions for COVID-19 vaccine boosters, well-designed and well-publicized incentive programs can support efforts to achieve coverage globally. However, the speed required to develop and implement COVID-19 vaccine programs has meant that many incentive schemes are ad hoc and remain unevaluated. Incentives based on guaranteed cash payments have the best chance of increasing vaccine uptake when compared to others, especially lotteries with non-cash incentives.

Contributors

Noel T. Brewer wrote the first draft of the manuscript. All authors participated in revising the draft manuscript for critical intellectual content. All authors had full access to the information described in the manuscript.

Declaration of interests

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