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Targeting interventions to high-risk populations: Benefits and costs[☆]

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Abstract

Targeting prevention interventions to high-risk populations may increase intervention benefits, but identifying and/or finding the high-risk populations may increase intervention costs. We explore the costs and benefits of targeting in the context of human immunodeficiency virus (HIV) prevention in high-risk injection drug users (IDUs). Focusing interventions on such a population should maximize the number of HIV infections averted. Recruiting high-risk IDUs for such interventions, however, may be more difficult and costly. We base our analysis on an earlier model that determines the allocation of resources to two interventions, street outreach and methadone maintenance. The model seeks to minimize HIV incidence in a population of heterosexual IDUs and their non-injecting sex partners. We conclude that while targeting an inexpensive intervention like street outreach rarely proves to be cost-effective, even a costly targeting effort can increase cost effectiveness for an expensive, effective, narrowly focused intervention such as methadone maintenance.

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1. Introduction

Researchers have long suggested that targeting health care by risk or economic need would increase cost effectiveness of the program in question. In writing about the Rand Health Insurance Experiment, researchers concluded that “investing in more targeted programs such as hypertension detection and screening would be a more cost-effective method of saving lives (than would providing free health care to all)” [1]. Targeting a specific population for health care, however, may entail added costs related to identifying and recruiting individuals in that population. The tradeoffs between these costs, and the benefits of targeting health interventions, have received little explicit attention in the research literature. In this paper, we develop a model to more fully explore these tradeoffs in the context of targeting human immunodeficiency (HIV) interventions to high-risk injection drug users (IDUs).

Previous research has looked at a few aspects of targeting interventions and drawn several general and relevant conclusions. An analysis of home care goals identified the non-economic tradeoffs associated with targeting home- and community-based services to the neediest [2]. The author concludes that in a resource-constrained environment, increasing targeting to the neediest in the population will result in less access for those beneath the threshold. In other words, the tradeoffs are between the number of clients reached, and the number of services per client. The research in [2] also points out that targeting assumes the ability exists to distinguish those who are needy from those who are not. Further, the author emphasizes that the goal of targeting the neediest may conflict with the goal of equity if one group is disproportionately excluded from receiving services.

A discussion of the role of spatial targeting in malaria interventions suggests that using information on the distribution of malaria can greatly increase the cost effectiveness of prevention efforts [3]. Conversely, the lack of such information, resulting in omission of the foci of transmission, can result in the failure of control measures. The authors stress that the clustering of malaria risks means that untargeted prevention efforts will generally be inefficient. They outline those conditions that must hold for a successful targeting effort. It must, e.g., be possible to distinguish between high- and low-risk locations, as well as operationally possible to focus efforts on the high-risk locations. They also explain that some methods of control may benefit more from targeting than would others. Finally, they emphasize that the benefits of targeting may be greatest in low- to moderate-risk situations where transmission risks tend to be clustered, rather than in high-risk situations where the risk is more pervasive.

One of the earliest mentions of targeting with respect to prevention of HIV demonstrates the cost effectiveness of targeting subpopulations with higher levels of expected HIV prevalence [4]. While this analysis evaluated nine different target population scenarios, it assumed that each population was equally accessible.

A more recent analysis of vitamin A supplementation to high-risk children concludes that targeting the intervention is *not* cost-effective [5]. The authors include a discussion of some factors affecting the efficiency of targeting: whether the outcome of interest occurs primarily in the target population, the cost and side effects associated with the intervention, the cost and side effects of identifying the target population, and the possibility for misclassification of targets. The authors also discuss issues arising with selection of a cut-off point for the targeting criterion, and conclude that one should pick “...the point at which therapy has been shown to do more good than harm.”

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