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Learning from Others' HIV Testing:
Updating Beliefs and Responding to Risk[†]

By Susan Godlonton and Rebecca L. Thornton*

Extending the seminal work of von Neumann and Morgenstern (1944), Savage (1954) advanced a theory that allows decision makers to maximize expected utility based on subjective probabilities of different states when objective probabilities are unknown. Since then, an extensive theoretical and empirical literature has explored how beliefs are formed or updated and how they affect behavior (Dominitz and Manski 1997; Manski 2004). One line of research has studied subjective beliefs in the context of testing and learning results for a variety of health conditions such as Huntington's disease, cervical cancer, and breast cancer (Oster, Shoulson, and Dorsey 2013; Okeke, Adepiti, and Ajenifuja 2013; and Lange 2011, among others). In this context, receiving a diagnosis provides objective information that individuals can use to make decisions, optimizing for the future. In contrast to noncommunicable diseases, some diseases such as HIV, allow for behavioral responses to testing that can affect the spread of the disease.

In this paper we examine how beliefs and behavior are affected by HIV testing in rural Malawi. We extend the existing literature by studying the impact of *others' testing* on individual perceptions of AIDS risk and subsequent decisions to practice safe sex.

Prior research on HIV testing has focused on measuring the effects of an individual learning her own test result. Several studies have found behavioral responses to changes in beliefs after testing (de Paula, Shapira, and Todd 2011) and that subjective expectations play an important role in the decision about risky or safe sexual behavior (Delavande and Kohler 2012). Thornton (2012) finds that learning HIV results has only short-term effects on subjective beliefs which do not persist after two years. Goldstein et al. (2008) find that HIV-positive mothers who learn their status are more likely to receive medication to prevent transmission to their children.

Test results may lead to behavior change when ex ante beliefs about probabilities of possible states are inaccurate or uncertain. Boozer and Philipson (2000) and Gong (2012) find behavior change only among those who learned new information after an HIV test.

Learning one's own HIV results can be informative for determining *personal HIV risk*. At the same time, as others learn their HIV results, information is revealed about *external HIV risk*. Research suggests that individuals overestimate HIV prevalence, transmission rates, as well as their own likelihood of infection; in high HIV prevalence areas in Africa, deaths are often attributed to AIDS even when the exact cause is unknown (Anglewicz and Kohler 2009). A Bayesian updater, who initially overestimates HIV risk, is likely to revise beliefs downward as more people in his community learn their results because the vast majority learns they are HIV-negative. If individuals revise their beliefs about risk downward, sexual behavior may become more risky in response.

Prior studies that examine the relationship between prevalence rates and beliefs or behavior are limited by the fact that prevalence rates are endogenous to beliefs and behavior. Some

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An individual who takes an HIV test can be informed about their own status and risk. Similarly, when friends, family or neighbors learn of a person's HIV status, they may update their beliefs about HIV infection among people they know. Using an experiment conducted in rural Malawi which randomly assigned incentives to learn HIV results, we find that as people in the community learn their HIV results, individuals revise their beliefs downward about deaths attributable to HIV/AIDS. We find corresponding behavioral responses with a significant decrease in condom use and no significant increase in multiple partnerships among those who are HIV-negative.

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