Social Science & Medicine 105 (2014) 140–148

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Short report

The effect of financial incentives on chlamydia testing rates: Evidence from a randomized experiment☆

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ARTICLE INFO

Article history:
Available online 19 November 2013

Keywords:
UK
Financial incentives
Sexually transmitted infections
Socioeconomic status

ABSTRACT

Financial incentives have been used in a variety of settings to motivate behaviors that might not otherwise be undertaken. They have been highlighted as particularly useful in settings that require a single behavior, such as appointment attendance or vaccination. They also have differential effects based on socioeconomic status in some applications (e.g. smoking). To further investigate these claims, we tested the effect of providing different types of non-cash financial incentives on the return rates of chlamydia specimen samples amongst 16–24 year-olds in England. In 2011 and 2012, we ran a two-stage randomized experiment involving 2988 young people (1489 in Round 1 and 1499 in Round 2) who requested a chlamydia screening kit from Freetest.me, an online and text screening service run by Preventx Limited. Participants were randomized to control, or one of five types of financial incentives in Round 1 or one of four financial incentives in Round 2. We tested the effect of five types of incentives on specimen sample return; reward vouchers of differing values, charity donation, participation in a lottery, choices between a lottery and a voucher and including vouchers of differing values in the test kit prior to specimen return. Financial incentives of any type, did not make a significant difference in the likelihood of specimen return. The more deprived individuals were, as calculated using Index of Multiple Deprivation (IMD), the less likely they were to return a sample. The extent to which incentive structures influenced sample return was not moderated by IMD score. Non-cash financial incentives for chlamydia testing do not seem to affect the specimen return rate in a chlamydia screening program where test kits are requested online, mailed to requestors and returned by mail. They also do not appear more or less effective in influencing test return depending on deprivation level.

Introduction

Financial incentives present policy options to change patient behavior in a number of areas including smoking and weight loss (Marteau, Ashcroft, & Oliver, 2009). Several reviews have concluded that financial incentives are successful in influencing 'one-shot' behaviors, such as immunizations and appointment attendance (Kane, Johnson, Town, & Butler, 2004; Sutherland, Christianson, & Leatherman, 2008). This study considers the generalizability of this conclusion by using a large, randomized experiment occurring in a natural setting to test the effectiveness of financial incentives in promoting chlamydia testing.

While effectiveness is one part of the decision to implement financial incentives, acceptability is another. A series of experiments examining the acceptability of financial incentives for smoking cessation and weight loss, found that the UK general public's acceptability of financial incentives increased with their level of effectiveness (Promberger, Dolan, & Marteau, 2012). Effectiveness is a crucial aspect to any successful incentive program in the eyes of the public, and so it is important to investigate whether and which types of incentives work most successfully.

In addition to effectiveness, considerations of equity also matter. A meta-analysis of trials found socioeconomic status to have an influence on the effectiveness of financial incentives applied in smoking, diet and physical activity contexts (Mantzari et al., in preparation). Policymakers could also use financial incentives to reduce health inequalities by targeting behaviors disproportionately engaged in by poorer people (Oliver & Brown, 2012). Incentives can be seen as coercive, however, even subtly forcing individuals to act

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http://dx.doi.org/10.1016/j.socscimed.2013.11.018

in a way they do not wish, especially the more disadvantaged (Ashcroft, 2011; Lunze & Paasche-Orlow, 2013).

Beyond effectiveness and equity, considerations of financial sustainability are important for policy planning. Offering financial incentives presents a cost to health system payers. This immediate cost may or may not be worth the future costs avoided. The degree to which payers avoid future costs depends on incentive size and effectiveness (Giuffrida & Torgeson, 1997) as well as whether the effect of the incentive is sustainable over time (e.g. Volpp et al., 2008).

Chlamydia is the most common sexually transmitted infection (STI) in the United Kingdom (UK). The UK Department of Health's goal for 2010/11 was screening 35% of 16–24 year olds through the National Chlamydia Screening Programme (NCSP). The average across England was 28.5% from April 2011 to March 2012, ranging across English regions (Strategic Health Authorities) from 24.5% to 35.7% (NCSP, 2012a).

Young people return about 70% of chlaymdia test kits requested via Freetest.me, an online and text screening service run by Preventx Limited. 47 out of the 152 primary care trusts (PCTs)[1] in England contract Preventx Limited to dispatch at-home chlamydia test kits requested by text or online as part of the NCSP. While 70% is an impressive return rate, it leaves almost 1/3 of dispensed tests unused. Therefore, we consider whether non-cash financial incentives might increase sample return rates and whether in a differential manner depending on socioeconomic status.

A number of studies have investigated the effect of financial incentives to encourage chlamydia screening but only a few have examined the use of incentives for mail-in chlamydia screening while including a control group (Molinar & Nardone, 2010). Low et al. (2007) found that offering a £10 voucher had no effect (compared to no incentive) on chlamydia screening uptake in a mail-based home screening program in England ($n = 838$). Niza, Rudisill, and Dolan (2013) tested the effect of offering a voucher (£5) and lottery participation (£200) on young adults' participation in chlamydia testing in four London student halls of residence ($n = 1060$). Incentives of any type were associated with a higher likelihood of participating in screening than those offered no incentive while the group offered a £5 voucher were more likely to return the test kit than those offered lottery participation. Zenner et al. (2012) compared areas of England that have employed patient financial incentives of any type and those that have not and found a small positive effect of offering vouchers but no effect of prize draws.

Currie et al. (2010) compared chlamydia screening participation in Australia when offering either education sessions and non-financial incentives over six months (n-2786) or four days of text messages and offering a cash incentive of AUD $10 ($n = 866$). The shorter text message/financial incentive strategy had a higher test uptake rate. Downing et al. (2012) found that offering a cash incentive of AUD $10 alongside of a text message reminder increased the likelihood that individuals who had previously tested positive for chlamydia would be re-tested in the recommended 3–4 month timeframe, but re-testing rates were still lower than desired ($n = 94$).

Against this background, financial incentives could be effective in increasing specimen return rates. Effectiveness alone should not determine the use of financial incentives – there are other ethical concerns (e.g. coercion, acceptability) and possible gaming effects that need to be considered – but evidence of effectiveness would, at least, suggest that these additional issues require closer scrutiny. Chlaymdia screening rates from the NCSP are highest in the most deprived parts of England where the populations are also at greatest risk of infection (Sheringham et al., 2011). Therefore, offering incentives could make differences in screening coverage across deprivation levels grow even wider. This study examines the effect of offering English 16–24 year olds non-cash financial incentives on their likelihood of returning a specimen sample for chlamydia testing. We also investigate the extent to which socioeconomic status influences incentive effectiveness.

Well-known theoretical concepts from behavioral economics that would be expected to affect behavior motivated the design of financial incentive schemes used in this study. We include lotteries because of evidence that people overweight low probabilities of high rewards (Loewenstein, Weber, Hsee, & Welch, 2001). Lotteries have also proved successful within contexts of financial incentives for health behaviors (Volpp et al., 2008). We also tested the choice of engaging in a lottery or receiving a certain reward of the expected value of a lottery option (both at the £5 and £10 levels) to examine whether allowing the choice between rewards might engage participants more deeply in decision-making regarding incentives as people prefer having options (Kamenica, 2012). The notion behind endowments is that by offering a participant a gesture of good-will or thanks, it might motivate reciprocity through kit return (Cialdini, 2001). Finally, the ability to give to charity taps into other-regarding motivations for behavior change (Burger & Lynham, 2010).

Methods

Setting and participants

We ran this study in conjunction with Preventx Limited's online and text screening service, Freetest.me. Individuals requesting test kits received them via post along with a pre-addressed stamped return box for their specimen sample (either urine or vaginal swab) to be sent to Freetest.me's laboratory in England for processing. The sample can be mailed back using a regular mailbox. Freetest.me notifies individuals that their results are ready via the method chosen (text or email) when requesting their test kit. They can retrieve results through an online tracking system on the Freetest.me website. Individuals can also request that they be called if the result is positive.

Internet and mobile (remote testing) are not the only way young people can take a chlamydia test in England. The biggest non-NCSP portion of chlamydia testing for young people between April 2011 and May 2012 was performed via genitourinary medicine (GUM) clinics, making up 27.5% of all tests across England. 54.2% of all tests were through the NCSP of which remote testing is part (4.4% of total chlamydia tests) as are GP-based tests (9.2%) (NCSP, 2012b). The breakdown of remote testing versus GP-based tests as well as other NCSP testing channels varies depending on the PCT. At the time of this study, Freetest.me tested about 50,000–60,000 patients annually.

Our study sample came from individuals requesting test kits through the Freetest.me Internet site (both via computer and mobile phone web access) and text message systems. It includes young people from all parts of England except those patients covered by the North East Strategic Health Authority (one of ten regional health bodies) because no PCT in this area contracted chlamydia screening through Preventx Limited at the time of this study.

Each test kit request was randomly allocated to an incentive or the control group (no incentive) sequentially as it came into Freetest.me. A slip (Appendices 1 and 2) was included in each kit with details of the randomly assigned incentive scheme. Freetest.me used a scanned barcode on each slip and a unique barcode identifier on the test kit itself as well as the specimen vial to keep track of participant randomization across control and treatment groups. To ensure patient confidentiality, we did not have access to the

[1] Primary care trusts – purchase care for population in their geographic catchment area.