

**Healthy Hub Roadshow: Employee perceptions of a workplace HIV testing intervention in England**

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## **Employee perceptions of a workplace HIV testing intervention**

### **Abstract**

**Purpose:** There is a need to increase access to HIV testing in the UK in male migrant communities. We assessed the uptake and acceptability of a workplace HIV testing intervention aimed at increasing access to testing in non-clinical settings.

**Methodology:** 20 health check events were delivered at 11 UK organisations employing male migrant workers. Intervention included HIV testing, cholesterol, BMI, blood glucose, blood pressure; tailored health advice; take-away resources; optional post-event text reminders about HIV and general health. Mixed-methods evaluation included exit questionnaires (n=771), follow-up text messages (n=465) and qualitative interviews (n=35) to assess event acceptability. Qualitative data were analysed thematically.

**Findings:** Attendees were 776 employees from 50 countries (51% male; 30% migrant workers). 52% of attendees undertook an HIV test (75% were first-time testers). 96% considered HIV testing to be an acceptable element of workplace health checks. 79% reported new health-related knowledge. 60% of attendees opted for follow-up text messaging. 26% of text respondents reported independently taking HIV test post-event. High acceptability and uptake of HIV testing was associated with convenience, opportunity taking (through removal of deliberation and intentional test-seeking), and normalisation of HIV testing within a general health check.

**Originality/Value:** This study is the first to demonstrate that opt-in HIV testing can be successfully delivered in the workplace within a multicomponent health check. The workplace is an effective means of increasing access to HIV testing in groups at risk for HIV, including male migrant workers.

**Keywords:** Workplace, health checks, HIV testing, immigrants and health, health innovation.

**Paper type:** Research

## **Introduction**

HIV testing rates are still too low in the UK and Europe (Gourlay et al., 2017). Of the estimated 103,700 people living with HIV in the UK, approximately 17% are unaware of their diagnosis (Public Health England, 2015). People who are undiagnosed or diagnosed late have poorer health outcomes, are more likely to die prematurely, and are more likely to transmit the infection to others (Kirwan et al, 2016). To ensure people who are unaware of their infection are diagnosed early and therefore receive safe and effective treatment, there is a need to increase access to HIV testing in the UK. We report on the delivery of a multi-site innovative workplace HIV testing intervention, and present findings from a mixed-methods evaluation.

### *Populations at increased risk for HIV*

Within the UK, key risk groups for HIV are men who have sex with men and migrants from sub-Saharan Africa (Public Health England, 2015). In addition, the UK has an increasing migrant workforce drawn from Eastern Europe – a region where HIV rates are increasing significantly in several countries (e.g. Poland, Latvia, Ukraine) (Alvarez-del Arco et al., 2017, Office for National Statistics, 2017, UNAIDS, 2017; Evans et al 2011). In many localities, there are specialist HIV testing services targeted specifically at Black Africans and MSM. However, in order to reach the continuing percentage of individuals with undiagnosed (or late diagnosed) HIV, existing guidance recommends undertaking routine HIV testing in all clinical settings in areas where HIV prevalence exceeds 0.2% (British HIV Association et al., 2008).

There are particular challenges around health promotion initiatives for men (Robertson and Baker, 2017). Although life expectancy rates have improved nationally, there remains

concern over rates of premature male mortality, particularly for men living in areas of socioeconomic deprivation (Marmot, 2010). There is a general recognition that men are reluctant to seek help from healthcare professionals (Addis and Mahalik, 2003; Wang et al, 2013) and are less frequent users of many primary care services (Banks and Baker, 2013). A systematic review identified challenges around linking migrants and ethnic minorities to clinical care (Alvarez-del Arco, 2013). The review showed that the HIV prevalence of migrants and ethnic minorities in high-income countries is higher than the general population's and migrants have higher frequency of delayed HIV diagnosis. These issues may be influenced by socio-economic vulnerability, fear of stigma from their communities, cultural and linguistic barriers, racism, xenophobia, and for migrants the added complications around the legal and administrative impediments to accessing healthcare in the UK (Alvarez-del Arco, 2013; Thomas et al, 2010). Although the evidence is complex and at times contradictory (Deane et al, 2010), mobility is commonly considered a risk factor for HIV (e.g. associated with migration, and/or occupational mobility) (Lagarde et al, 2003; Douglas, 2000). There may be associations between high mobility and risky sexual behaviours (e.g. number of partners, frequency of sexual behaviour, partners from higher prevalence communities) and factors that mediate risk (e.g. condom use, presence of other infections).

As such, there are calls to expand HIV testing outside of traditional (clinical) settings in the UK, and to investigate alternative innovative means of providing access to HIV testing for population groups who may otherwise be hard to reach. Offering HIV testing in community settings (such as the workplace) may therefore be beneficial in increasing access to testing among groups that for a variety of reasons may not visit primary care services, or access specialist HIV testing services.

*HIV testing in non-clinical settings*

There is little published evidence relating to uptake of HIV testing interventions delivered in non-healthcare settings, with minimal evidence from the UK and none from the workplace setting. A systematic review of community interventions to increase uptake of HIV testing in resource-rich countries (Thornton et al., 2012) included 45 studies; only eight studies were from the UK and none were set in workplaces. Out of the 45 studies, only 14 included data on the uptake of HIV testing. Of these 14, uptake of HIV testing varied from 9% to 95% but the authors note that the outcomes are difficult to compare due to the highly diverse settings and diverse test offer methods (p.420). Another systematic review looked at the global evidence on community-based HIV testing strategies and identified six papers that reported findings from workplace-based interventions (Suthar et al., 2013). None were from the UK; one study was set in Afghanistan, the rest were all from sub-Saharan Africa. The review found that uptake of HIV testing in workplace settings varied from 92% to 20% with an overall average of 67.4%. The workplace may serve as a useful platform, not least for engaging with populations at risk for HIV (De Beer et al., 2015, Suthar et al., 2013) but also in accessing hard-to-reach groups, such as employees from social and economically deprived areas (Abbas et al., 2015). The evidence suggests promise for the workplace setting as a platform for increasing access to health protection services, but there is currently no evidence available to determine whether opt-in workplace HIV testing is feasible in the UK or whether it is acceptable to employees.

### *Workplace Health Checks*

Further, relatively few organisations in the UK offer any form of general health checks (or publish the evidence). Where health checks are offered, HIV testing and awareness are not generally included in wellbeing programmes providing health and lifestyle assessment and

advice packages (Blake et al., 2018). As such, there is limited research on employee perspectives of general health checks, with or without the inclusion of HIV testing.

Evaluation of a workplace health check intervention in the UK has shown that employees value the investment of organisations in the health and wellbeing of their workforce (Blake et al, 2014). However, a survey conducted in the Netherlands suggested that employees are ambivalent or hesitant about taking health checks in the workplace (Damman et al, 2015). Despite their conclusions, Damman and colleagues did find that employees *were* positive about health checks being offered to all employees and that employees perceived more benefits than drawbacks of health checks in the occupational setting. Indeed, the drawbacks were more commonly expressed by particular subgroups including younger, female participants and those with greater education and reported health literacy; more positive attitudes were expressed in less educated and less literate, male subgroups. Further, their survey did not explicitly mention ‘voluntary’ health checks and so there may have been potential for employees to misinterpret this as ‘non-voluntary’ health checks occurring as part of occupational health surveillance. More research is needed to assess the uptake of, and perceptions towards general workplace health checks, and in particular to assess the uptake of opt-in HIV testing in the workplace setting. Strategies might be put in place to address potential concerns raised in prior studies. For example, potential concerns relating to privacy or employer interference (Damman et al, 2015) might be reduced by engaging external organisations to deliver the tests without provision of test results to the employer.

The workplace is therefore an ideal setting to offer health checks and specifically, opt-in HIV testing. This would have the ultimate aim of reducing late diagnosis of HIV, and increasing uptake of testing, particularly in populations at risk for HIV (e.g. young males, mobile workers, migrant workers).



We have delivered and evaluated a highly innovative workplace HIV testing intervention aimed at increasing access to HIV testing through non-clinical settings. A key focus of the intervention was to explore the extent to which delivery of this intervention through the workplace setting could reach migrant male workers (a group known to have less contact with primary health services and known to be under-represented in sexual health services) (del Amo et al., 2003, Broring et al., 2003, Burns et al., 2011, Evans et al., 2011).

An intervention mapping approach was adopted (Bartholomew Eldredge et al, 2016) and a logic model is provided in Figure 1. The aim of this study was to: i] determine the feasibility of delivering HIV testing within workplace health checks, ii] describe the demographic characteristics of employees who chose to attend, iii] ascertain the views of attending employees towards workplace HIV testing.

## **Methods**

The study adopted a concurrent triangulation mixed-methods design (Creswell et al, 2003), using data from questionnaires, text messages and qualitative interviews. The questionnaire provides valuable information about participant demographics, thus providing key insights about the intervention's ability to reach the intended target group. The interviews and questionnaires were both used to explore the acceptability of the intervention.

Organisations were invited to participate in the study if they had premises within our target region, and employed majority male workers, and migrant workers (commonly agency and mobile workers) – the particular interest groups of this intervention. Twenty-nine organisations were invited by the study team to host a health check event between June-September 2016. Of these, 14 did not respond, four agreed to participate but then withdrew, 11 companies (38%) agreed and took part. The profile of participating organisations and

employer perspectives of workplace HIV testing are reported elsewhere (Blake et al, in press).

All employees were invited (via email, team meetings, posters and payslips) by their company to attend a free, optional, workplace health check event. All attendees completed exit questionnaires collecting demographic data from attendees, and asking their views towards the event and workplace HIV testing. Demographic data included age category, gender, sexual orientation, type of work, region of birth, and HIV testing history. Employees were asked to respond 'yes' or 'no' to: whether they had taken a HIV test before; whether they learned anything new about their health in the event; whether the health information they received was easy to understand; whether they felt it was acceptable to have HIV testing as part of a workplace health event; whether they intended to make health changes following the event; whether they would be interested in other health assessments; and, whether they would attend a similar event in the future. They were also asked to rate the knowledge and ability of the *Healthy Hub Roadshow* team when taking tests on a 4-point scale: excellent, good, average or poor.

No incentives were provided for engagement in the evaluation, no health or demographic data was stored by employers, and data on employees undertaking an HIV test was collected on a separate form prior to testing, and not linked with their evaluation questionnaire responses.

Attending employees could opt to receive a series of 15 health-promoting text messages providing information about HIV, health and wellbeing, a theoretically-informed approach previously shown to be acceptable for HIV testing promotion (Evans et al., 2016). Delivery of messages was organised by an independent social enterprise with expertise in HIV-related

health promotion services. Participant mobile phone numbers were not linked to their questionnaire or interview data. The concluding three messages requested a feedback response of 'yes' or 'no' from employees for the purpose of evaluation data collection. Items asked whether, following the event, employees had [a] learned anything new about HIV; [b] taken an HIV test; [c] felt inspired to make positive changes to their health.

A sub-sample specifically of migrant male workers (the target group of the roadshow) was interviewed immediately after the health check. Due to the nature of the health checks, which were delivered on a specific date and often accessed by employees during short break times, the recruitment strategy was convenience sampling. The interviewees were drawn from across the organisations – they were selected from 6 different events hosted by 5 different companies in 4 different locations. Interviews took place in a separate room or quiet area away from the event area, lasting between five and twenty minutes (mean=9.54, SD = 3.79). Interviews were conducted in English by the researcher who provided a participant information sheet, explained the study and answered any questions, took informed consent and followed an interview topic guide (Table 1). Ethical approval was obtained from the local institutional review board (Ref: LT12042016).

Evaluation was informed by Intervention Process Evaluation (IPE) frameworks (Biron et al, 2014). Quantitative data were analysed using SPSS IBM PASW Version 21.0. Data were analysed using descriptive statistics. Qualitative interviews were audio-recorded, transcribed, entered into NVIVO and analysed thematically following the process outlined by Braun & Clark (2006). The transcripts were read in-depth and inductively coded to identify key concepts. Two of the research team (BH and CE) reviewed the codes and sorted them into an initial set of themes and sub-themes. These were then reviewed again across the whole data

set and refined into three over-arching themes. We sought to ensure rigour of the analysis through adopting a team approach in which we challenged our emerging interpretations and assumptions and were careful to check that themes were well-grounded in the data. In addition, we paid careful attention to any negative cases and have highlighted these were relevant (Lincoln and Guba, 1985).

### **Workplace Health Check Intervention: The Healthy Hub Roadshow**

*Intervention Aims:* The aim of the *Healthy Hub Roadshow* was to increase access to HIV testing in male, migrant communities.

*Target Outcomes:* Sociodemographic characteristics of attendees to determine profile up employee uptake, and uptake in male migrant workers. Acceptability of the health check (and HIV testing) with regards employee perceptions of the delivery partners and information provided, and employee perceptions of the acceptability of workplace HIV testing. Potential for behavioural or health changes with regards employee perceptions of knowledge changes around HIV and health, perceived changes in future health behaviours (e.g. health screening attendance) and self-efficacy. Employee interest in workplace health testing in other areas of health. Perceptions of the workplace as a delivery setting with regards past and future participation in workplace health checks. Perceptions of male migrant workers towards workplace HIV testing including barriers and facilitators to engagement.

*Content:* The intervention was a workplace health check event consisting of opt-in HIV testing (using 4th generation Insti finger prick rapid tests), offered as part of a multi-component general health check including cholesterol, BMI, blood glucose, and blood pressure. The events included on-the-spot tailored health advice, and take-away resources

(e.g. condoms and leaflets on safer sex). Advice was tailored according to test results and included discussion and signposting around HIV testing and services, sexual health, and healthy lifestyle behaviours. Attendees could opt to receive post-event reminders about HIV testing and awareness and general health, delivered by text message (SMS). For those opting to receive SMS messages, these were delivered to the individual's mobile phone for one month post-event using an automated system (starting three days after the event) (Table 2). Messages were sent at the same times and days of the week to all recipients.

*Context:* The *Healthy Hub Roadshow* was an innovation project funded by the Public Health England HIV Prevention Innovation Fund, and led by a charitable organisation working in collaboration with academic partners. Although the primary aim of *Healthy Hub Roadshow* was to engage migrant male workers in HIV testing and awareness, the full event was accessible to all employees. Employees generally spent 10-20 minutes attending the event, depending on the number of health tests they selected. The health checks and tailored advice were coordinated by a charitable organisation with significant expertise in HIV testing and support. This organisation selected all supplementary materials to be provided to attendees, based on their extensive experience of offering HIV testing in community settings. The data collection instruments and text message content were developed together with community partners.

*Implementation issues:* Workplace general health checks are promoted to employees as optional check-ups of their overall health, in order that employees can determine their risk of having, or developing certain health problems. Therefore they are different to tests undertaken as part of occupational health surveillance where test results have implications for health and safety, and may be required by law. The intervention required organisational

‘sign-up’ and careful communication around organisational requirements, health check delivery and confidentiality of data.

## **Results**

### **Exit Questionnaire**

#### *Socio-demographic characteristics*

Of 776 attendees, 771 respondents completed the exit questionnaire (Table 3). Thirty per cent (n=231) of all respondents were classified as migrant workers, originating from 50 different countries. Of all attendees, 52% (n=405) opted to take a HIV test, and 100% took at least one other health measure (BMI, blood glucose, blood pressure, cholesterol). Higher rates of HIV testing were observed in migrant groups, with HIV testing undertaken by 64% (n=23) of all attendees from sub-Saharan Africa (n=36), and 34.7% (n=42) of all attendees from Eastern Europe (n=121).

#### *Acceptability of the Health Check (and HIV Testing) Event*

The knowledge and ability of those delivering the health check was rated as either ‘good or excellent’ by almost all respondents (99%, n=732). Almost all the attendees reported that information provided at the health event and following testing was ‘easy to understand’ (99.1%, n=745). Most of the attendees considered the HIV test to be an acceptable element of the workplace health checks (96.2%, n=705).

### *Potential for Behavioural or Health Changes*

Employees who attended generally felt that they had learned something new about their health (79.1%, n=585). Over two-thirds of attendees (66.7%, n=676) stated that they thought they would go on to make changes to their health or health behaviours as a result of the information they received at the health check, and majority of them were confident that they would achieve this (62%, n=612). About one quarter of employees (24.2%, n=728) expressed an interest in receiving checks in other areas of health including physical fitness, eye tests and mental health.

### *Perceptions of Workplace as a Delivery Setting*

Over three quarters of all respondents (76.3%, n=752) had not previously participated in a general health check at their place of work, and this figure was even higher (80.5%, n=220) amongst the migrant workers. Almost all respondents indicated that they would attend a workplace health check event again in the future (99.2%, n=741).

### **Qualitative Interviews**

Interviews were conducted with 35 migrant male workers (Table 3) and findings are presented in three main themes. Of those invited, 98% agreed to be interviewed. The sample included health check attendees including those who opted to take the HIV test (86%, n=30) and those who did not (14%, n=5).

*[i] Theme One: Checking Health at work: Convenience and accessibility*

Respondents were overwhelmingly positive about health checks being offered in the workplace, including HIV testing. The opportunity to undertake a health check at no cost to the employee was perceived positively. However, convenience of access was the main perceived benefit: *'It was on the workplace. So it was easy to attend as well'* (Latvia, 30 yrs, heterosexual). Workplace health checks were seen to provide a window of opportunity for undertaking health tests that may not otherwise be prioritised: *'with GPs it takes time to book an appointment. Sometime 2-3 weeks, for something very trivial. But here, it's so easy'* (Ghana, 61yrs, heterosexual); *'I got a little baby. I don't have time to go to the doctors...'* (Poland, 32 yrs, heterosexual).

Participants felt that workplace HIV testing increased access and opportunity for testing: *'If they get this kind of service, they might take it if you give them opportunity here'* (Eritrea, 31yrs, heterosexual). For many, taking the HIV test was purely opportunistic, free, convenient, and fast: *'while we're working the whole year, we don't have enough time to check ourselves and see where we are'* (India, 35yrs, heterosexual).

The immediacy of test results and feedback at the workplace events was appreciated, compared with their experiences of health tests within healthcare services. Many had not realised that a rapid test was available and appreciated the speed with which the results were



offered: *'When I go to GP... they say ok the result will come in one week, and you come again and get it. So here I found the result straightway' (India, 35yrs, heterosexual).*

Participants stressed the value of workplace testing for individuals who would never had considered testing, or for whom it would have presented an inconvenience or source of stress: *'I think if you go to the people and offer it, people would accept it' (Pakistan, 33 yrs, heterosexual); 'you don't have this confidence to go to a hospital and say 'I want to have HIV test'. So if it's at the workplace, it's very good. People would take the opportunity' (Eritrea, 31yrs, heterosexual).*

Concerns about HIV testing in the workplace were few. However, one employee alluded to the consequences of receiving a positive test result at work, and how this might influence social relations at work, and future employability: *'Your manager find out, what you would say? It gets like everyone knows in the workplace...if someone gets HIV positive then obviously they are unable to work here after that' (Nigeria, 32yrs, heterosexual).*

All participants who opted to take a workplace HIV test were positive about their experience, although it should be noted that all received HIV negative test results. The potential for wider impact of workplace health testing was evident in that several participants expressed an intention to recommend that others within their families and social circles get tested: *'I shall tell my friends and family to get check themselves at least one time every six months' (India, 35yrs, heterosexual).*

*[ii] Theme 2: Knowledge, and stigma around HIV*

The participants had variable knowledge relating to HIV, reflecting its history of stigmatisation and secrecy. Some demonstrated detailed understanding of the condition whereas others held significant misperceptions: *'somebody told me that they used somebody nail cutter, and the HIV transfer to her'* (Philippines, 41 yrs, heterosexual).

Reducing stigma and increasing knowledge around HIV and HIV testing was seen to be important: *'I think that's a good idea. It's like you're normalising it'* (Angola, 24yrs, heterosexual); *'After all, HIV is another disease – so the more you know about this the better'* (Madagascar, 61yrs, heterosexual). For the participants, this was achieved through offering HIV testing alongside other health tests, and offering HIV testing in the workplace rather than in a clinical setting: *'Everything was more friendly and natural – than feeling in a hospital. Here, I know it's my workplace, it's normal to come for health checks'* (Poland, 39 yrs, heterosexual). Embedding HIV testing within a wider package of health tests in a workplace health check was seen by most to be a highly acceptable strategy, and as a mechanism for increasing awareness of HIV, removing the need for presenting to general practitioners, and overcoming fears associated with HIV and testing.

*[iii] Theme Three: Balancing risk, fear and reassurance*

Those who had never tested for HIV previously felt that they were not risk: *'I have not done anything ([laughs]. It's only when you do those things that you need to do it'* (Nigeria, 44 yrs, heterosexual). Those who did not seek a HIV test tended to be more circumspect in their interviews when asked for a reason. Some of these participants did not feel they were at risk, while others alluded to a lack of confidence to test, or fear of impending result: *'They asked*

*me but I said no. It just feels strange. I don't know....HIV? ... I don't feel confident'*

(Bangladesh, 42yrs, heterosexual).

Views on HIV testing in general were ambivalent. Some felt that it was important to know one's status, whereas many reported fear, especially that others would find out: *'for some people, because of their culture, they don't want to come and do the test. Some people don't want to talk about it'* (Congo, 35yrs, heterosexual).

For some participants, the health checks provided an opportunity to test and consequently relieve anxiety about HIV: *'I was worried to be honest'* (Spain, 36yrs, homosexual).

Employees found the checks reassuring, whether to address existing health concerns in a particular health area, or to confirm their health was good: *'I just wanted to check if anything is wrong with me or not'* (Latvia, 30 yrs, heterosexual); *'I knew I'm all right. I just wanted to get confirmation'* (Nigeria, 32yrs, heterosexual). The majority stated their motivations simply as *"it's good to know"*, for *"reassurance"* or *"just to check"* their health status, rather than because they had felt at risk for HIV, or had any particular concerns.

The attitude of staff delivering the checks was seen to be influential in reducing fear and creating a positive view towards workplace HIV testing: *'they were nice to me. The way they treat me'* (Spain, 36yrs, homosexual); *'You don't feel any fear and you can ask for the information you required'* (Ghana, 61yrs, heterosexual). Receiving individualised feedback on test results generated perceptions of professionalism: *'They provide you information. They answer questions if you ask them...'* (Romania, 31 yrs, heterosexual).

Workers valued the delivery of health checks by an external organisation, rather than their employer, which they perceived to have benefits for protecting confidentiality of test data.

Two participants alluded to concerns over confidentiality and possible negative ramifications if testing were to be conducted 'in-house' by their own organisation (e.g. through occupational health or human resources).

### **Text Messaging Engagement and Response**

A total of 465 event participants signed up to receive health-promoting text messages (60% of all attendees). Of these, 111 did not receive the complete message set (24%). Fifty mobile telephone numbers were void, and 61 participants un-subscribed to the text message service during the delivery period, although there was no evident pattern to the un-subscription with regards socio-demographic characteristics, message type or the timing of delivery. There were three messages requiring response from participants.

Question 1 '*Have you learned anything new about HIV as a result of attending the event?*' was sent to 358 participants, of which 348 (97.2%) were opened. Of these, 124 participants responded by text message (35.6%), and the vast majority reported that they had learned something new about HIV as a result of attending the event (Yes = 96%, n=119; No = 4%, n=5). Question 2 '*Have you taken a HIV test since attending the event?*' was sent to 355 participants, of which 341 (96.1%) were opened. Of the 80 text respondents (23.5%), more than a quarter (n=21) had independently taken an HIV test after attending the event (Yes = 26%, n=21/80; No = 74%, n=59/80; 6.2% of all those who opened the message). Question 3 '*Have you felt inspired to make positive changes to your health since attending the event?*' was sent to 353 participants, of which 316 (89.5%) were opened. Of the 118 respondents (37.3%), the vast majority felt that their attendance at the event had resulted in them making a positive change and taking action on their health (Yes = 95%, n=112; No = 5%, n=6).

The text messages were perceived to be a positive adjunct to the workplace health check, and several participants provided unsolicited feedback by message response. This demonstrated additional, unanticipated value from the provision of workplace HIV testing. These benefits came in the form of health awareness raising and independent engagement with further health tests, together with discussion about HIV and other health tests with family members, peers and work colleagues.

## **Discussion**

This innovative research is the first to demonstrate that HIV testing can be successfully provided to employees in workplaces, as part of an opt-in general health check. The findings demonstrate that high-risk groups may be effectively reached outside of clinical settings and this has global relevance for increasing access to HIV testing and reducing late diagnosis.

Workplace HIV testing is highly acceptable to employees, whether they choose to take a HIV test or not. Interview data specifically with male migrant workers showed that, for this group, offering HIV tests in the context of a general health check was seen to ‘normalise’ testing by reducing perceived stigma (as defined by Goffman (1963) as “an attribute that is deeply discrediting”) around HIV testing. It did so by enabling individuals to feel that they have not been specifically targeted or are not specifically at risk, hence tackling a key stigma mechanism that can lead to avoidance of testing (Earnshaw and Chaudoir, 2009). It is unclear whether female migrant workers or UK nationals would report the same benefits.

Nonetheless, delivery of testing through the workplace setting reached a diverse demographic of employees across different organisational types and job sectors. It reached individuals who have not tested previously, as well as engaging repeat testers. In this study, more than half of all employees attending a workplace health check chose to take the optional HIV test, and of

those that did not take a test on the day, over one quarter of those replying to the text message reported that they had independently sought a test elsewhere during the following month.

This intervention reached migrant workers from 50 countries. High numbers of migrants from many different countries are a common feature of recent trends in migration across Europe and the UK – referred to in the sociological literature as ‘superdiversity’ (Vertovec, 2011). Uptake of HIV testing in the migrant workers was relatively high (compared with national rates), especially among employees from countries where HIV is prevalent and where regular HIV testing is recommended. Although small in overall numbers, HIV tests were voluntarily taken by almost three-quarters of event attendees from sub-Saharan Africa and over one-third of all attendees from Eastern Europe. As such, although the study did not identify any new HIV diagnoses, it does represent a potential new avenue for promoting HIV testing that could be explored in other settings, particularly in areas with higher proportions of migrant workers from countries with high HIV prevalence (e.g. the major conurbations, especially London). Uptake of HIV testing in the workplace was equal to or higher than rates found outside of the UK in community and workplace settings (Suthar et al., 2013). This has significant implications given that migrant populations often avoid formal health services and delay HIV testing (Thomas et al., 2010). The high uptake of testing here is useful information given that employees could opt-in. We do not have information on whether mandatory HIV testing (or other health testing) was undertaken at the participating organisations as part of occupational health surveillance, although we now know that many employees are willing to self-select to undertake these tests. Only 10 of the respondents identified themselves as homosexual. It is possible that workplace interventions may not be a particularly effective route for reaching this particular group; although this cannot be assumed since this may simply reflect individual choice not to identify as homosexual in the workplace.

The high acceptability and uptake of workplace HIV testing observed in our study was associated with the convenience of accessing tests whilst at work, and the fact that an opportunity presented itself, thus removing the need for deliberation and intentional test-seeking. This opinion was in contrast with the perceived difficulties of accessing formal healthcare services, such as GPs. The provision of testing by external organisations, coupled with the perceived knowledge level and approachability of the staff delivering the tests was seen to be an important factor in reducing fear associated with HIV testing and allaying concerns over confidentiality of test data.

The more in-depth qualitative findings are based on a convenience sample of brief exit interviews with male, migrant employees opting to attend health events at work. This allowed us to ascertain the views of our specific target group, and our participants included those who had HIV tested previously as well as those who had not. However, there is scope to explore attitudes of migrant workers further (e.g. to capture regional or gender specific variations or differences between testers and non-testers) through more in-depth interviews or focus groups, using purposive sampling strategies. In addition, in future work, it would be useful to compare the views of male migrant employees with UK residents. Interviews with non-attendees would also help to determine barriers to accessing workplace HIV testing, although there may be challenges in recruiting employees for interview who chose not to attend the health event.

Post-event mobile phone messaging was attractive to employees as demonstrated previously (Evans et al., 2017). We propose text messaging as a useful adjunct to HIV awareness and

testing activities with potential to further increase HIV testing uptake. Most recipients indicated that they had gained new health-related knowledge (including HIV) and also intended to make positive changes to their health. Over one quarter of those who replied to the question on HIV testing reported that they had independently sought an HIV test subsequent to attending the workplace event. These findings concur with previous UK-based research showing that text messages can help to promote uptake of HIV testing and general health awareness raising in at-risk populations (Evans et al., 2015, Evans et al., 2016). However, it should be noted that a high proportion of text message recipients did not text back a reply, and so the opinions and actions of participants that did not send a reply are not known. Further, gathering data by text message reply does not allow for extensive discussion around HIV screening actions and intentions, which limits the data available. Responses were limited to yes/no to simplify the response process (and maximise likelihood of response), a decision taken following public consultation with our target groups during the message development phase. At this design stage, members of our target population advocated that brief text replies with limited response categories were the preferred method of communicating compared with more complex or free text response options, or options for more in depth telephone discussions, for example.

Further research is required to better understand the reasons that organisations either declined to take part, or failed to respond to invitation and whether this was associated with negative attitudes towards workplace health, and/or HIV testing, or whether these were simply not viewed as organisational priority. Rolling out opt-in HIV testing in the workplace setting has global relevance, although success would rely on the support and engagement of employers to incorporate this within health promotion programmes for staff. While this study



demonstrates employee acceptability, the attitudes of employers towards HIV testing at work (and workplace health more generally), needs to be explored. Potential barriers to employer engagement in opt-in workplace health testing needs to be fully assessed, and employer attitudes towards the inclusion opt-in HIV testing needs to be investigated. Overall, this study provides an example of the successful cross-fertilisation of public health intervention approaches, with the workplace health context (as described by Karinika-Murray and Weyman, 2013) and provides insight into the mechanisms for successful intervention, drawing on both fields.

**Conclusion:** HIV testing in the workplace is considered a favourable option by employees. It is a highly effective means of reaching populations at risk for HIV including migrant male workers who have not previously been tested for HIV. The clinical and cost effectiveness of this approach still needs to be evaluated.

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**Keywords:** Workplace, health checks, HIV testing, immigrants and health, health innovation.

### **Author contributions**



HB and CE designed the evaluation, JH co-ordinated the intervention, AJ supported intervention delivery, BH and DR collected the data. HB and BH drafted the manuscript. All authors contributed to the analysis and interpretation of the data. All authors reviewed and approved the final version of the manuscript.

### **Acknowledgements**

This work was supported by a grant from the Public Health England (PHE) HIV Prevention Innovation Fund. PHE had no involvement in the study design, conduct or interpretation of findings. The *Healthy Hub Roadshow* was co-ordinated by Jenny Hand, CEO of Leicestershire Aids Support Service (LASS) at the time of the study. The intervention was organised and delivered by Jacqui Tillyard through Well for Living, with support from Katie Turner, STaSS, Sunrise Family Support, designre-defined.co.uk, Well for Life, African Institute for Social Development (AISD), and Embrace Life Luton.

**Figure 1. Intervention Logic Model**

<b>NAME OF PROJECT:</b>					
Healthy Hub Roadshow					
<b>SITUATION:</b>					
Need to increase access to HIV testing in the UK, through non-clinical settings Aim to target groups with higher rates of HIV, or barriers to accessing clinical care					
<b>PRIORITIES:</b>					
To increase access to HIV testing in the UK in male migrant communities Offer opt-in HIV testing in workplaces employing male migrant workers					
INPUTS	OUTPUTS		OUTCOMES		
	Activities	Participants	Short-term	Medium-term	Long-term
Workplace health check events delivered by third sector organisations	[i] Rapport with organisations  [ii] Delivery of HIV testing, cholesterol, BMI, blood glucose, blood pressure; tailored health advice*; take-away resources; optional post-event text reminders about HIV and general health	[i] Managers at participating organisations  [ii] Employees from organisations employing male migrant workers	Sign-up of employers  Employee uptake of workplace HIV testing  Employee acceptability of workplace HIV testing (in target group)	Raised awareness about HIV and testing  Increased access to HIV testing  Reduction in stigma around HIV testing	Reduction in delayed diagnosis of HIV in at-risk groups  Normalisation of HIV testing as a workplace health check
<b>PROJECT STAGE</b>			<b>INTENDED OUTCOME</b>		

<ol style="list-style-type: none"> <li>1. Email invitation to all workers</li> <li>2. Emails coming from senior managers</li> <li>3. Workers given time off to attend health checks</li> <li>4. Workers sent in groups to attend health checks</li> <li>5. Provision of leaflets as take-away resources</li> <li>6. One-to-one personalised advice and feedback from checks</li> <li>7. Text message follow up</li> </ol>	 <ol style="list-style-type: none"> <li>1. Call to action</li> <li>2. Indicating employer permission, sanction and buy in</li> <li>3. Call to action, removal of barriers to action</li> <li>4. Social sanction, peer pressure, everyone in it together, normalised</li> <li>5. Awareness raising, providing knowledge, motivational health dialogue (written)</li> <li>6. Motivational health dialogue (verbal); informing individuals of risk status; behaviour-specific feedback; overcoming barriers to action</li> <li>7. Reinforcement for those not yet ready to test; ongoing motivational health dialogue (written), targeting knowledge &amp; translating intention into behaviour</li> </ol>
<b>ASSUMPTIONS</b>	<b>EXTERNAL FACTORS</b>
<ol style="list-style-type: none"> <li>1. Organisations can be recruited to host health check events</li> <li>2. Third sector organisations can successfully deliver health checks</li> <li>3. Health check events are appropriately costed for delivery</li> <li>4. Employees willing to undertake health checks at work</li> <li>5. Evaluation team can collect data as planned</li> </ol>	 <ol style="list-style-type: none"> <li>1. Initial employer interest</li> <li>2. Organisational priorities remain stable during project duration</li> <li>3. Appropriate level of funding is received for the project</li> <li>4. Initial employee interest</li> <li>5. Evaluation team in place and working in harmony with delivery partners</li> </ol>
<b>EVALUATION PLAN:</b>	
<p>Mixed-methods evaluation including exit questionnaires (to assess uptake of health checks and HIV testing), follow-up text messages (to assess perceived impacts and likely uptake of HIV testing post event), and qualitative interviews (to assess intervention acceptability in male migrant workers).</p>	

\*Tailored/personalised health advice targeting modifiable behavioural determinants: knowledge, attitudes, normative beliefs, intention, and behavioural skills

**Table 1. Interview Topic Guide**

Can you tell us why you attended this event today?

How would you currently describe your health?

How do you normally get information and advice about your health?

In what ways, if any, does your work affect your health?

In what ways, if any, does your workplace help you to seek help for health issues?

Did you have any tests or check-ups during the event today? Why? Why not?

How do you feel about HIV testing being included in this event?

Did you seek an HIV test? Why? Why not?

Overall, please tell me your views about this event?

What could be done to improve such events in future?

**Table 2: Text message content and purpose**

<b>Number</b>	<b>Content</b>	<b>Day</b>	<b>Time</b>	<b>Purpose</b>
Welcome	<i>"Thank you for attending the recent Healthy Hub Roadshow. Over the next few weeks you have signed up to receive text messages focusing on your health and well-being. <a href="http://healthyhubroadshow.co.uk">healthyhubroadshow.co.uk</a>"</i>	3	11.00	Welcome Discussion with peers
1	<i>"Tackling the stigma and discrimination of mental health problems is still often a taboo in the workplace. Right now 1 in 6 workers in the UK are dealing with a mental health problem such as anxiety and depression. <a href="http://www.mind.org.uk">www.mind.org.uk</a>"</i>	4	09.00	Employee Engagement General Health – Mental Signposting
2	<i>"Everyone within the workplace should be respected and valued. It should not make a difference to their age, disability, gender, marriage and civil partnership status, pregnancy or maternity, sexual orientation, race, religion or belief."</i>	6	12.00	Engendering respect and value Promoting workplace equality
3	<i>"Do you know your status? Anybody can become infected with HIV, some groups in the UK have a higher proportion of people living with HIV than others. <a href="http://www.test.hiv">www.test.hiv</a>"</i>	8	17.00	Knowing HIV status Addressing stigma Signposting - HIV testing
4	<i>"Good nutrition and regular exercise can help to reduce the prevalence of many common diseases including cardiovascular disease, cancer, diabetes, obesity and osteoporosis. Register or book a check-up with your GP if you have any health concerns. <a href="http://www.nhs.uk/Service-Search/GP/LocationSearch/4">www.nhs.uk/Service-Search/GP/LocationSearch/4</a>"</i>	10	11.00	Increasing access to healthcare General Health - Physical
5	<i>"It's estimated that 215,000 people in the UK have hepatitis C. You can become infected with it if you come into contact with the blood of an infected person. If left untreated, it can cause serious life-</i>	12	16.00	Infectious disease – Hepatitis C



Number	Content	Day	Time	Purpose
	<i>threatening damage. With treatment it's possible to cure and most people will have a normal life expectancy."</i>			
6	<i>"HIV testing is free &amp; confidential. If you go to a sexual health clinic, you don't need to give your real name. The result will not be given to your family, workplace the government or the immigration authorities."</i>	14	12.00	HIV testing awareness Addressing myths around testing Reducing stigma and fear
7	<i>"Find a local HIV testing centre convenient to you. <a href="http://www.aidsmap.com/hiv-test-finder">http://www.aidsmap.com/hiv-test-finder</a>"</i>	14	17.00	Signposting – HIV testing
8	<i>"Millions of people within the workplace have used SMOKEFREE support to help them stop smoking. Sign up and increase your chances of success, even if you're already using e-cigarettes or stop smoking medication <a href="http://www.quitnow.smokefree.nhs.uk">www.quitnow.smokefree.nhs.uk</a>"</i>	16	18.00	General Health – Smoking Signposting – smoking cessation
9	<i>"Sexual health clinics can offer information, support &amp; testing for STIs, such as chlamydia, gonorrhoea, syphilis &amp; genital herpes. Free condoms &amp; contraception – including emergency contraception, such as the morning after pill are available"</i>	18	16.00	General Health – Sexual Health Signposting - contraception
10	<i>"Around 20% of the estimated 100,000 people living with HIV in the UK remain undiagnosed. Being tested for HIV will allow you to know your status, access treatment and live a long a fulfilled life. Free HIV self-sampling kits are available in many areas <a href="http://www.test.hiv">www.test.hiv</a>"</i>	20	17.00	HIV awareness raising Knowing HIV status Addressing stigma Signposting - HIV testing
11	<i>"Stress at work is the leading cause of people being off sick. When stress becomes enough of a problem to affect your day-to-day tasks, or to enjoy things you have previously liked, It is like any other mental health condition, speaking with someone you are able</i>	22	11.00	General Health – Mental Signposting

Number	Content	Day	Time	Purpose
	to trust may help <a href="http://www.mind.org.uk">www.mind.org.uk</a> "			
12	"Condoms act as barrier and are the best way to protect yourself against sexually transmitted infections (STIs) and unwanted pregnancy. There are two basic types of condom available in the UK – male and female. FREE at GUM clinics and some GP surgeries. Check that they carry the (BSI) kitemark or CE symbol and the expiry date to insure quality"	24	17.00	Sexual Health – risk reduction
13	" <a href="http://www.aidsmap.com">www.aidsmap.com</a> works to change lives by sharing information about HIV. They enable individuals and communities affected by HIV to protect themselves, care for others, advocate for better services and challenge stigma and discrimination"	26	18.00	HIV education and awareness Reducing stigma and discrimination
14	"Sharing any injecting equipment poses a risk of hepatitis C transmission. This includes equipment used to inject steroids to enhance fitness and physique. Also Unsterilised instruments for shaving and tattooing. <a href="http://www.hepctrust.org.uk">www.hepctrust.org.uk</a> "	28	16.00	Infectious disease – Hepatitis C
15	"PEP or Post Exposure Prophylaxis is a medical treatment that can prevent HIV infection after the virus has entered the body. If you have put yourself at risk of HIV infection you can go to a sexual health clinic or hospital A&E department. You need to start PEP ideally within 24 hours of the risk occurring and no later than 72 hours"	30	12.00	HIV Prevention - Post Exposure Prophylaxis (PEP)

**Table 3. Socio-Demographic Characteristics**

<b>Characteristic</b>	<b>Questionnaire Respondents N=771</b>	<b>Male Migrant Interviewees N=35</b>
	N(%)	N(%)
<b>Gender (n=771)</b>		
Male	396 (51.4%)	35 (100%)
Female	375 (48.6%)	
<b>Sexual Orientation (n=718)</b>		
Heterosexual	694 (96.7%)	33 (94%)
Homosexual	10 (1.4%)	1 (3%)
Other	14 (1.9%)	1 (3%)
<b>Age (n=770)</b>		
18-29	159(20.6%)	7 (20%)
30-39	218(28.3%)	19 (54.3%)
40-49	156 (20.2%)	4 (11.4%)
Over 50	237 (30.8%)	5 (14.3%)
<b>Type of Work/Contract</b>		
Full time (n= 737)	662 (89.8%)	35 (100%)
Permanent (n=692)	614 (88.7%)	28 (80%)
Fixed term contract (n= 692)	53 (7.7%)	3 (8.6%)
Agency worker (n=692)	25 (3.6%)	4 (11.4%)
<b>HIV Testing History (n=184)</b>		
Within last 3 months	12 (6.7%)	1 (3%)
3-12 months ago	27 (15%)	1(3%)
1-2 yrs ago	35 (19.4%)	4 (11.4%)
Over 2 yrs ago	106 (58.9%)	6 (17.1%)
No Prior HIV Test (n=732)	548 (74.9%)	23 (65.7%)
<b>Region of Birth (n=771)</b>		
Sub-Saharan Africa	36 (4.7%)	10 (28.6%)
Eastern Europe	121 (15.7%)	12 (34.2%)
Western Europe	14 (1.8%)	1 (3%)
Caribbean	8 (1%)	1 (3%)
Asia	49 (6.3%)	11 (31.4%)
<b>Number of Countries Represented (n=51)</b>	51	21