

# **HIV testing: increasing uptake among people who may have undiagnosed HIV**

**Economic assessment: resource impact of recommendations**

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*National Institute for Health and Care Excellence*

## Aim

This report accompanies the public health guideline for HIV testing. The guideline is an update and merge of 'HIV testing: increasing uptake in men who have sex with men (MSM)' (PH34) and 'HIV testing: increasing uptake in black Africans living in England' (PH33), both of which were first published in 2011.

The National Institute of Health and Care Excellence (NICE) assess and identify any resource impact that may occur as a result of commissioning and implementing services in line with NICE guideline recommendations.

HIV testing followed a rapid guideline update process with a total of 3 meetings of a Public Health Advisory Committee. The purpose of this report is to accompany the guideline recommendations and resource impact work, by helping to identify if any recommendations made by the Public Health Advisory Committee (PHAC) have the potential to have a significant resource impact when implemented.

## Introduction

The greatest prevalence of HIV is in the most deprived areas of England (NAT, 2015), however a number of groups are disproportionately affected by HIV and late diagnosis; primarily these are men who have sex with men (MSM) and black Africans. There are also significant late diagnoses in older adults and non-national populations (Harris & Khatri, 2015).

Nationally, there is a need to increase and target HIV testing in order to improve early diagnosis and to reduce onward transmission by getting people onto treatment. Early diagnosis results in earlier treatment and any post-test counselling.

## Methods

During the scoping stages for the NICE HIV testing update, it was agreed that a full economic model would not be achievable due to data and time limitations, but an assessment of the resource impact of recommendations (where there is weak economic evidence for that recommendation) would be useful. This work has only

been undertaken on new recommendations (not pre-existing recommendations) that were identified as having a potential resource impact when implemented.

Economic analyses were discussed for this guideline in order to assess the cost of various forms of HIV tests, and in which settings the tests are most cost-effective. Since a modelling study was not feasible, a trial conducted by the Health Protection Agency, funded by Department of Health provided useful primary data. This report will focus on assessing where there may be possible economic and resource implications of new recommendations made by the Public Health Advisory Committee (PHAC) thereby excluding any existing recommendations from PH33 and PH34. The new recommendations identified as having a potential resource impact are:

#### Recommendation 1.2.1

- Offer POCT in situations where follow-up may be difficult, so that people do not need to return to get their results. **[new 2016]**

#### Recommendation 1.2.3-4

- Consider providing self-sampling kits, in a sensitive manner, to groups and communities with a high prevalence of HIV. **[new 2016]**
- Recognise that not all community settings are appropriate for providing access to self-sampling kits. For example, people may fear stigma if they are seen asking for a self-sampling kit in a public place. Choose an area that provides privacy and signpost to it clearly within the venue. **[new 2016]**

#### HIV statistics

A 2015 report by Public Health England (PHE) estimated that 103,700 people were living with HIV in the UK in the year 2014, with a prevalence of 1.9 per 1,000 of the population over 15 years old. It has been reported that there has been a decrease in undiagnosed rates of HIV in men who have sex with men, however there is evidence that overall rates of transmission are high and that those living with HIV is increasing (Public Health England, 2015). In 2014 an estimated 17% (18,100) of people in the UK living with HIV were unaware of their infection and risk of unknowingly passing

HIV on to others, thereby risking those people being unaware of their infection and again continuing the cycle of late diagnosis (Public Health England, 2015). In 2014 approximately two fifths or 40% of people were diagnosed late, after the point at which they should have started treatment (Terrence Higgins Trust, HIV in the UK, 2014).

### HIV Testing

There are currently 4 types of test for HIV, a laboratory test, point of care test, self-sampling and self-testing kits. A fourth generation laboratory test is the most accurate of the tests; however results usually take a few days unlike point of care tests and self-tests which give instantaneous results. Although, a disadvantage to these tests is that they usually have a longer “window period” meaning that exposure needs to be longer for results to show up, in addition to their relatively poor sensitivity and specificity. A full blood test can give reliable results from one month after supposed infection occurs (NHS Choices, 2014).

HIV testing and detection is beneficial in that, identification reduces transmission rates by a considerable proportion. A significant number of published studies both for England and worldwide have reported that late diagnosis increases the chances of morbidity, mortality and further transmission between people (National Aids Trust, 2012).

#### - Point of care testing (POCT)

Point of care testing is a type of HIV test that is undertaken with the patient present. Blood is taken from a finger prick and results are ready between approximately one and 20 minutes (Terrence Higgins Trust, Testing for HIV, 2015). There are a number of benefits to POCT, namely that the results are received straight away and if positive, the person is not alone for the diagnosis. There is a smaller margin for technical error resulting in a more accurate test result, although a full confirmatory test would still be required.. Rapid tests are a cheaper method for testing and have shown to be effective (UK Health Centre, 2016).

- Self-sampling kits

Self-sampling in the United Kingdom has always been legal and involves a person ordering or being given a self-sampling kit, the person collecting their own sample either as a finger prick blood sample or a saliva sample from a mouth-swab. The sample is then returned to a laboratory for testing and once confirmed the laboratory will contact the person with the results. Self-sampling is not to be confused with self-testing where the whole test is completed at home and the results are gained immediately (Aidsmap, 2015).

Evidence suggests that community outreach as a method of testing has been effective in general, but in particular most effective in MSM and black African populations. Emerging evidence indicates that self-sampling is effective in those populations that are harder to reach such as sub-populations of MSM groups and therefore more likely to use self-sampling kits (Harris & Khatri, 2015).

Lifetime cost of treating HIV

Prompt diagnosis of HIV is paramount to experiencing a near-normal life expectancy, since those living with HIV who are diagnosed late have a ten-fold increased risk of death in the year following diagnosis (Public Health England, 2015). Late diagnosis is defined as when a person is diagnosed with a CD4 count below 350 cells/mm<sup>3</sup>. The financial impacts of diagnosing a person with HIV late are significantly more than someone who is newly diagnosed (Mascolini, 2011). This is primarily due to the cost of inpatient resources required for admission, and it has been calculated that HIV care in the first year of diagnosis costs twice as much in people who have been diagnosed late; that is someone who has a CD4 count under 350 cells/mm<sup>3</sup> (National Aids Trust, 2012). This is because in the first year there are significant risks of morbidity linked to late diagnosis. Financially the costs each subsequent year for a person with a late diagnosis are approximately 50% greater than someone with an early diagnosis, meaning that early diagnosis is not just beneficial for the person from a clinical perspective, but also from the payer or NHS perspective too (National Aids Trust, 2012).

Overall HIV treatment and care costs around £800 million for England, which equates to an estimated £280,000 - £360,000 in undiscounted costs over a person's lifetime (Medical Research Council Trials Unit, 2015). Public Health England calculated that if all HIV infections diagnosed in 2011 had been prevented, then this would have saved £1.9 billion in lifetime treatment and clinical care costs.

A pilot for HIV testing set up by the Health Protection Agency (HPA) in collaboration with the Department of Health between 2009 and 2010, found that HIV test costs (including total staff and resource costs) for various settings ranged per test between: £3.11 and £12.15 in hospital settings, £6.35 and £8.32 in primary care settings and £20.93 and £46.72 in community pilots (Health Protection Agency, 2011). Taking inflation into account with the most expensive cost per test, which was £46.72 in a community setting - would be equivalent to £54.03 in 2015 prices, with an average inflation rate of 2.9%. Therefore, being highly conservative, a hypothetical cost per test of £54.03 is still significantly lower than the costs of offsetting the treatment and inpatient stay for a late HIV diagnosis.

### Resource Impact

Over the course of one lifetime, treating a late diagnosis of HIV means that that the person is more likely to become ill on a frequent basis; this increases the likelihood of required hospital admission rates, as opposed to someone who has been diagnosed at a much earlier stage (before CD4 counts falls below 350 cells/mm<sup>3</sup>). The result of a late diagnosis to the health care system means that there can be much higher overall health care costs. Additionally, for more advanced HIV there is a potential need for more long-term social care, and the potential to require more costly housing and personal support services. This is all in addition to the loss to the public purse through people being unable to work (NICE, 2011).

People with late undiagnosed HIV have a greater chance of clinical deterioration and opportunistic infections. Those who are detected much later also have a reduced response to HIV treatments, meaning that there are additional costs associated with treating opportunistic infections. Direct clinical costs for a person with a late HIV diagnosis are also twice as high in the first year, in comparison to someone who is

diagnosed early. These costs are largely attributable to higher inpatient costs of hospital admission (BHIVA, 2015), which is why testing early can have large economic benefits to both the person diagnosed and from a societal perspective. Interventions to expand testing beyond routine settings have been shown to be beneficial, feasible and also cost-effective to people being tested and to the staff involved (Harris & Khatri, 2015).

In countries such as the United States and France there have been a number of cost-effectiveness studies undertaken that assess different strategies for testing. One large US study found that HIV testing was cost-effective as long as the per positive rate was 1/1000 tested. However, no such rates exist for England or the United Kingdom (Health Protection Agency, 2011).

## Discussion

The type and intensity of care required to treat those with HIV has a significant overall cost to the public purse. There is a strong evidence base in the UK and England as well as worldwide (particularly from the US and Canada) that prevention, testing and timely treatment are effective, especially when the detection of HIV infection at the earliest possible point.

A number of trusted and robust data sources have identified that the costs and resources required for the prevention, early identification and early treatment of HIV far outweigh those that are required to treat a late HIV diagnosis. In general HIV testing is seen as being cost-effective, and testing leading to early diagnosis is, in many instances, cost-saving to the NHS as a payer.

This report examines the resources required for HIV testing, given the evidence base and in light of the new NICE remit to assess resource impact around recommendations; NICE is required to identify whether there will be a significant resource impact to the health system given the recommendations made by all guideline development committees. There is a sufficient and reliable evidence base of published studies to indicate that increasing HIV testing, especially among the most prevalent areas of England will, in the long-term, save significant future costs of treatment and care, from late diagnosis and inpatient stay. Therefore, it is noted that

the recommendations identified in this report have not been identified as carrying a significant resource impact.

Please also see NICE self-assessment costing tool from NICE 2011 guidance for HIV testing: increasing uptake in black Africans and HIV testing: increasing uptake in men who have sex with men.



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