

Impact of PrEP on Individuals, Health Care and Society

Following the recent ruling that pre-exposure prophylaxis (PrEP) can be prescribed for the prevention of HIV within the National Health Service, what potential impact might this have for individuals, health care and society?

Introduction

Pre-exposure prophylaxis (PrEP) is medication taken by individuals without a diagnosis of HIV, in order to reduce the risk of contracting the virus (Spinner et al., 2016). The regimen of PrEP is typically composed of antiretrovirals in a combined pill, typically tenofovir disoproxil fumarate and emtricitabine (Brydon, 2018). In HIV-infected individuals, these antiretrovirals serve to treat the infection, reducing the viral load of the patient; lifelong therapy is needed with antiretrovirals to prevent clinical disease (i.e. AIDS) (Kelen and Cresswell, 2017). In HIV-negative individuals the purpose of PrEP is not to prevent viral transmission or entry into the body, but to reduce viral replication to a level whereby the immune system can eradicate infected cells, preventing established HIV infection (Brydon, 2018).

The evidence base supporting the use of PrEP is substantial, indicating a reduction in HIV transmission, particularly in men who have sex with men (MSM), a key target population (e.g. Volk et al., 2015; LeVasseur et al., 2018). Therefore, PrEP can be considered an effective preventative approach, along with other strategies to prevent HIV infection, such as condom use (barriers methods) and male circumcision (Dolling et al., 2014). This has led to the approval of PrEP for the prevention of HIV within the National Health Service (NHS) within the last year, building on the availability of PrEP in Scotland (Nandwani, 2017). The

remainder of this paper will consider the potential impact of this approval process, focusing on individual, health care, and societal outcomes.

Individuals

The changes in availability and use of PrEP can have massive effects on the individual. Firstly, NHS funding of PrEP can increase access to the drugs and affordability of these drugs (Nichols and Meyer-Rath, 2017). PrEP was only available through third parties and pharmacies from other nations, increasing the cost of this preventative strategy and the risk of unreliable sourcing from online companies (Brydon, 2018). Affordability and access are particularly important in vulnerable groups and socioeconomically disadvantaged members of the population, who may be at a higher risk of HIV infection (Spinner et al., 2016).

One of the main individual benefits of the availability of PrEP is the expansion of options available for those who are at-risk of HIV. Current preventative strategies can have significant limitations, which limit their practical application (Frankis et al., 2016). For instance, condom use requires access to condoms and positive attitudes to their use, which are not always present due to perceptions of diminished sexual pleasure (Dolling et al., 2014). In these individuals, PrEP can provide an alternative to condom use and ultimately empowers individuals to manage health risk (Frankis et al., 2016).

Other factors that interfere with traditional HIV prevention practices, including religious beliefs, cultural factors and personal attitudes to condom use, may lead to an acceptance of PrEP, increasing the power of the individual to prevent HIV transmission (Stewart, 2016). Providing increased opportunities and options for individuals to prevent HIV transmission is vital in promoting healthier sexual behaviours, while increasing individual autonomy and self-efficacy (Harawa et al., 2017). Therefore, the impact of PrEP approval within the NHS may

benefit those at greatest risk, while broadening access and availability of preventative measures.

It is important to note that PrEP use does not protect against sexually transmitted infections (STIs) and that the role of condoms in preventing both HIV and STIs remains important and should be communicated to individuals interested in PrEP (Storholm et al., 2017). Furthermore, individual benefits are only possible if adherence to PrEP is likely to be optimal; non-adherence reduces the effectiveness of the drug combination and can increase risk of HIV transmission (Storholm et al., 2017). Therefore, selection of the target population and individual education on PrEP use will be essential in ensuring benefits. At present, 10,000 people are enrolled onto the PrEP IMPACT evaluation in England and the results of this trial will provide valuable insights into the individual benefits of the use of PrEP (NHS England, 2018).

Health care

From a health care perspective, the funding of PrEP by the NHS can be considered beneficial in a number of ways. Principally, PrEP has been shown to have a significant impact on HIV transmission rates in trials and 'real-world' evaluations, which may translate into a reduced HIV burden in the population (Fonner et al., 2016; McCormack et al., 2016; Sagaon-Teyssier et al., 2016). HIV infection is still associated with significant morbidity and mortality in the population and therefore prevention can have significant benefits in how health services manage population health (Hankins et al., 2015).

Furthermore, one of the most important impacts of PrEP use in MSM from a health service perspective is the potential for cost savings in the short and/or long term due to reduced rates of HIV infection. A cost-effectiveness and modelling analysis has shown that PrEP in MSM

is associated with cost savings, based on an initial rollout of 4000 men within the first year (Cambiano et al., 2018). Similar analyses have been performed and are associated with cost savings with PrEP use, depending on the length of time the projections are designed, the use of condoms within the target population, the rate of STIs in the target population and the cost of antiretroviral drugs (Drabo et al., 2016; Cambiano et al., 2018; Fu et al., 2018).

Possible negative effects of PrEP have been considered in the literature, with a predominant focus on an anticipated decline in condom use, rise in STIs and the costs associated with these conditions (Kelen and Cresswell, 2017). Although the relationship between condom use and PrEP use is complex, there is no clear evidence that PrEP reduces condom use during sex, although up to 30% of HIV-negative men with HIV-positive partners suggested that they may be less likely to use condoms if PrEP were available in one study (Hoff et al., 2015). However, in the context of committed couples, this may not translate to an increased risk of STIs, although the risk of HIV transmission needs to be considered in individuals who are less likely to use condoms (Hoff et al., 2015). Furthermore, the IPERGAY (Intervention Préventive de l'Exposition aux Risques avec et pour les Gays) study found equal rates of STIs in patients using PrEP and those not using PrEP to prevent HIV transmission, suggesting that risk-taking may not be associated with PrEP use (Sagayon-Teyssier et al., 2016).

The cost-effectiveness of PrEP use in the NHS will partly depend on the potential for an increase in condomless sex and STIs, suggesting that this possibility should be closely monitored to ensure cost savings and population health (Cambiano et al., 2018). More data will be needed to assess the health care impact of PrEP use, particularly as the target population becomes more clearly defined and expansion of PrEP use in England occurs (NHS England, 2018).

Society

Finally, on a societal level, there is an important need to consider the wider ethical, social and cultural aspects of PrEP use and the impact of PrEP. Indeed, views on HIV and HIV management are often highly polarised in society and within the British media (Jaspal and Nerlich, 2017). HIV is associated with a significant level of stigma and any strategies used to combat infection rates and to reduce the risks of relationships between HIV-negative and HIV-positive individuals may serve to reduce stigma to some extent (Grace et al., 2018). The psychological toll of stigma should not be underestimated and strategies that alleviate stigma can have significant benefits for quality of life and wellbeing (Grace et al., 2018).

However, part of the polarised perception of HIV management in society associates negative connotations with the use of PrEP. An argument against PrEP use for the prevention of HIV in the general population is the perception that the medication could be seen as an invitation to promiscuity or condomless sex, with negative moral and health implications (Knight et al., 2016; Brydon, 2018). Similar arguments are generally proposed for all advances in sexual health services (e.g. oral contraception) but are not generally supported by the research evidence (Calabrese et al., 2016).

Therefore, it is important to ensure that public awareness and education of the role of PrEP and the massive potential benefits of the approach are not obscured by misinformation or unfounded claims in the media (Jaspal and Nerlich, 2017). Health care professionals are well-placed to inform the public and address such sources of misinformation but need to be supported by policy makers and national guidance (Calabrese et al., 2016; Desai et al., 2016). However, wider societal attitudes and stigma associated with HIV needs to be challenged through policy and law-making to ensure individuals at-risk of HIV have access to PrEP (Serrant, 2016).

Conclusion

In summary, the use of PrEP for the prevention of HIV infections in the UK is supported by the evidence base and has become an important aspect of NHS-funded interventions for those at-risk of HIV infection. The potential impact of PrEP can be seen on an individual, health care and society level, with reductions in HIV infections, cost savings, and improved availability and access to health services. The implementation of PrEP needs to be closely monitored to ensure public awareness and education is facilitated to prevent negative health behaviours and risks.

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