# POST-EXPOSURE PROPHYLAXIS (PEP)

*The knowledge, the will and the power (KWP)* is the national African HIV Prevention (NAHIP) programme's strategic plan to prevent sexual HIV transmissions among African people in England. One of the aims of KWP is for there to be an increase in the awareness and availability of post-exposure prophylaxis (known as PEP) for African people who may have been sexually exposed to HIV. This briefing describes what PEP is, how effective it is, who may be prescribed it, African people's knowledge and experience of PEP and how African community organisations can support its use.

For a variety of reasons, people without HIV have unprotected intercourse with a partner they know, or think has HIV, or they may discover after sex that their partner had HIV. If an uninfected person is exposed to HIV, post-exposure prophylaxis (PEP) can be used to try and ensure they do not become infected.

'Prophylaxis' refers to medical procedures which are designed to prevent, rather than treat, a disease. Other examples of prophylaxis include drugs taken to prevent malarial infection and statins to prevent cardiovascular disease. 'Post-exposure' indicates that PEP is taken *after* a person has been exposed to body fluids which may contain HIV. PEP is normally taken for one month after a single risk event.

Post-exposure prophylaxis is different from 'pre-exposure prophylaxis' (PrEP). As its name indicates, pre-exposure prophylaxis is taken *before* a person is exposed to body fluids which may contain HIV. PrEP is a new intervention whose validity is still being tested in clinical trials.

PEP normally consists of three or four anti-HIV drugs, which need to be taken for 28 days, following possible exposure to HIV. The drugs used in PEP are the same as the drugs used for treatment of diagnosed HIV. To be effective, it is important to start taking PEP as soon as possible, and no later than three days (72 hours) after the risk event, and to take all the doses, at the right time. Although PEP is not 100% effective, there have been few reports of HIV infection after the use of PEP.

## WHAT IS PEP?

When an individual is exposed to HIV, the virus first replicates in cells close to the site of infection, before spreading throughout the body. During this time, there is a short 'window of opportunity' to use antiretroviral drugs to block the replication of HIV.

When used, PEP must be initiated promptly. Research on monkeys suggests that it is more likely to be effective if it is begun within the first 24 hours after exposure to HIV. UK Guidelines[1] do not support starting PEP more than 72 hours after exposure.

A regime of three or four antiretroviral drugs is recommended. This probably provides more powerful protection than a single drug or two drugs together. The disadvantage of taking several drugs can be an increase in the severity of side-effects, although the drugs currently used have been chosen to minimise side-effects as far as possible.

PEP has been used since the mid-1990s for healthcare workers who might have been exposed to HIV, for example, after accidentally pricking themselves with needles already used on patients. Although it was sometimes used in cases of sexual assault, it was almost a decade later that PEP began to be widely used following sexual exposure. The greatest use has been by gay men, but awareness in African communities is growing.

## UK PEP GUIDELINE[1]

In 2006, the Chief Medical Officer asked local NHS organisations to make sure that PEP following sexual exposure was routinely available in their areas.

The British Association of Sexual Health and HIV (BASHH) and the British HIV Association (BHIVA) first published guidance on the appropriate use of PEP following sexual exposure (sometimes known as PEPSE) in 2006. An updated guideline was recently published and is available online[1]. For more information, see page 3.

The Department of Health's Expert Advisory Group on AIDS (EAGA) issued guidance on healthcare workers' use of PEP following a needlestick injury.

## HOW EFFECTIVE IS PEP?

The most reliable evidence for effective medical interventions comes from randomised controlled trials. However because doctors have always believed that PEP is more likely to work than not, it would be unethical to conduct a randomised controlled trial into PEP. To do so would involve withholding PEP from some people at high risk of infection, in order to compare their infections with those given PEP. Also, given the infrequency with which HIV transmission actually occurs, it would be difficult to recruit enough people into a trial that would have statistical validity.

Important early data suggesting that PEP could prevent HIV infection came from a 1997 case-control study[2]. It examined HIV infection rates in 698 healthcare workers who had had needle stick injuries. Those individuals who acquired HIV were less likely to have taken PEP (AZT monotherapy) than their colleagues who remained uninfected. The researchers estimated that PEP reduced the HIV infection risk by 81% (confidence interval 48-94%).

The best available evidence of PEP's effectiveness following sexual exposure comes from a cohort study of 200 men who have sex with men, in Brazil[3]. PEP was made available to the men during a two year period. In this study, 68 men chose to take PEP at least once, while 132 chose not to. Because men made the decision themselves, rather than through a randomisation process, the results could be biased. Nonetheless, whereas only 1 in 68 men who took PEP acquired HIV, 10 of the 132 men who did not take PEP were infected. While PEP provided some protection, the overall number of infections in the group of 200 men who had access to PEP was very similar to what would have been expected had PEP not been made available. The men were generally at high-risk of HIV infection, and although a third of the men took PEP, they did not take it often enough to make a difference to HIV incidence in the group as a whole. The men's own evaluations of which sexual encounters were risky were not always accurate.

It has generally been the experience of countries providing PEP that it is an emergency measure used by a limited number of individuals. Because of this, the use of PEP does not usually make a substantial difference to the number of HIV infections in a population.

A more recent analysis of 710 people given PEP following sexual exposure, over a ten-year period at a Swiss hospital[4] had the following outcomes:

- 60% completed the 28 day course;
- 16% were lost to follow up;
- 15% stopped taking PEP because their sexual partner was found to be HIV negative;
- 5% stopped taking PEP because of side effects;
- 3% stopped for other reasons.

Nobody tested HIV positive following their use of PEP. However two individuals did seroconvert in the months afterwards, following other risk behavior.

These are not the only case reports of individuals who took PEP becoming HIV-positive. Most commonly this is due to taking other sexual risks after beginning PEP. When it appears that PEP has failed, this has been linked to using only one drug for PEP, starting PEP late, poor adherence and being infected with drug resistant virus.

The UK guideline[1] says that it is "crucial" to consider PEP "as only one strategy in preventing HIV infection and, as such, it should be considered as a last measure where conventional, and proven, methods of HIV prevention have failed." Currently there are no national statistics on the prescribing of PEP but the Health Protection Agency is setting up a surveillance programme to monitor how PEP is used after sexual exposure in the UK.

### COST-EFFECTIVENESS

One concern expressed about PEP is cost. However, at around £700 for a month's combination therapy, the cost for a single individual compares favourably with the lifetime costs of treating the same individual for HIV. High-quality UK studies of cost-effectiveness have not been conducted, but it is thought that PEP may be cost-effective when it is provided to people who were at high risk of being exposed to HIV. Providing it to people at low risk of infection is not likely to be cost-effective.

## HIV TRANSMISSION RISKS

When considering whether it is appropriate to take PEP, it is necessary to consider the estimated risk of infection from various types of sexual contact with a person with HIV. Different sexual practices with an HIV infected partner are thought to carry different risks of HIV transmission. In the following list, the riskiest practice is at the top, with the risk decreasing the further down the list you go:

- Receptive anal sex without a condom.
- Insertive anal sex without a condom.
- Receptive vaginal sex without a condom (i.e. the female partner).
- Insertive vaginal sex without a condom (i.e. the male partner).
- Receptive fellatio (i.e. taking a penis in the mouth, without a condom but with ejaculation).

Other types of sexual contact are considered very low risk for HIV transmission.

However the riskiness of a single sexual contact is also modified by a number of other factors. Probably the most important is the viral load of the source partner. A high viral load, due to untreated HIV, especially during the first months of infection, greatly increases the risk of transmission. Similarly, a very low or 'undetectable' viral load

greatly reduces the risk of transmission, although transmission can still occur occasionally. The most recent UK guideline[1] takes this issue into account.

If either sexual partner has a sexually transmitted infection, this also raises the risk of transmission when HIV exposure occurs. A sexually transmitted infection in the HIV infected partner may raise the HIV viral load in genital secretions. An infection in the uninfected partner makes him or her more susceptible, especially if he or she has genital ulcers.

If there is trauma – for example, during sexual assault or the first time a woman has sex – there may be breaks in mucosal surfaces, making transmission more likely.

## UNDER WHAT CIRCUMSTANCES IS PEP GIVEN?

Before being prescribed PEP, an individual will be asked detailed questions about the sex they have had, in order to establish the likelihood of HIV transmission. Moreover, they will be asked for information about their sexual partner, particularly whether his or her HIV status is known. If possible, the sexual partner will be asked to come in for HIV testing (if the result is negative, this avoids someone taking PEP unnecessarily).

If the sexual partner's HIV status is unknown, doctors should consider how common HIV is in the community he or she is thought to come from. For example, if the sexual partner is known to be black African and the sex was risky, PEP might be provided, whereas it would not be if the sexual partner was a white British heterosexual.

The table below summarises the 2011 BASHH and BHIVA UK guideline[1].

## HOW CAN PEP BE ACCESSED?

People who think that they may have been exposed to HIV should seek medical help as quickly as possible. The sooner PEP is given, the more effective it is. PEP must be started within 72 hours of the risky sexual contact. People should either go to a GUM or sexual health clinic (if it is open), or an Accident & Emergency department. HIV tests need to be done before PEP is begun and again three months after the last dose. To check for side effects and other complications, other tests need to be done before starting PEP and on another occasion while taking it.

Some people have had difficulty getting PEP. When a GUM clinic is open, patients should tell reception they need to be seen immediately as an emergency appointment for PEP. If the GUM clinic is not open, patients should go as soon as possible to the hospital's A&E department. Since not all clinicians are fully aware of the UK guideline[1], when seeking PEP at A&E departments, it can be helpful to have a print-out of the UK guideline[1] or the Chief Medical Officer's letter. Many NHS settings dispense "starter packs" to ensure PEP is begun within 72 hours. These packs will have 3-5 days supply of the appropriate drugs which can be used prior to completing the HIV and other testing that is recommended prior to PEP initiation (see Table 6, page 704 of the UK guideline[1] for a list of tests recommended).

A person's immigration status should not affect access to PEP. It is emergency treatment that should always be provided free of charge.

Helpline staff can advise patients who have problems getting PEP while they are still at the A&E department or GUM clinic. Patients can also ask the hospital worker to speak to a helpline adviser if this would help.

| | HIV status of the person's sexual partner ('the source') | | | |
|---|---|---|---|---|
| | Known to be HIV positive | HIV positive with undetectable viral load | Unknown HIV status, thought to be an African migrant or a gay man | Unknown HIV status, NOT from a high prevalence group |
| Vaginal intercourse (male or female partner) | Yes | No | Consider * | No |
| Fellatio (ie. taking a penis in the mouth), with ejaculation | Consider * | No | No | No |
| All other forms of oral sex | No | No | No | No |
| Receptive anal intercourse | Yes | Yes | Yes | No |
| Insertive anal intercourse | Yes | No | Consider * | No |

* When the guideline[1] says that PEP should be 'considered', it should only be given if there is an additional factor which increases the likelihood of transmission, such as very high local HIV prevalence, a sexually transmitted infection, acute HIV infection in the source partner, trauma, bleeding (including menstruation) or – in the case of vaginal sex – the HIV-negative male partner not being circumcised.

- The *I Do It Right* information and advice line, funded by NAHIP, is available on 0800 0967 500 (Monday to Friday 9am to 6pm). It provides advice to Africans in England in English and French, Shona, Swahili and Luganda. Information is accessible by phone, text, email or via a live chat service at www.idoitright.co.uk
- NHS Direct on 0845 4647, open 24 hours a day, 365 days a year.
- THT Direct on 0808 802 1221 (Monday to Friday 10am-10pm, Saturday and Sunday 12 noon to 6pm).

## WHICH DRUGS ARE USED AND WHAT ARE THE SIDE-EFFECTS?

PEP needs to be taken for 28 days. The most usual combination of drugs given is:

- *Truvada,* a combined pill containing two non-nucleoside inhibitor drugs, tenofovir and FTC (one tablet daily), and
- *Kaletra*, a combined pill containing two protease inhibitor drugs, lopinavir and ritonavir (four tablets daily).

This combination could be modified if the 'source' partner was known to be HIV-positive and to have resistance to certain anti-HIV drugs. Another reason to modify the drugs given is if the patient is already taking other medication. Some other drugs may interact with the ARVs, including statins and emergency contraception (the morning after pill).

PEP can cause side-effects, including feeling sick, being sick, diarrhoea, tiredness, and generally feeling unwell. More serious, long-lasting side effects have not been observed in people who have taken PEP. The choice of drugs for PEP is guided, in part, by an attempt to minimise the number of side-effects. The currently recommended regime of *Truvada* and *Kaletra* has fewer side effects than other options. A study recently examined side effects in 188 people on this PEP regimen. Just under half the patients had some side effects, with 12% choosing to stop PEP for this reason[5].

Problems with side-effects can discourage people from taking the medication. Many UK hospitals report that half (or less) of the people who are given PEP complete the 28 day course of treatment or return for follow-up HIV testing three months after sexual exposure. In some cases, this is because the patient has found out that their sexual partner did not in fact have HIV. Otherwise, these discontinuations will limit the effectiveness of PEP.

People may find it hard to deal with side-effects and adhere to medication when people around them do not know what they are going through. Embarrassment about sexual behaviour and HIV-related stigma means that many people find it difficult to discuss their use of PEP with friends or family.

## AFRICAN PEOPLE'S KNOWLEDGE AND USE OF PEP

The most recent Bass Line survey[6] asked Africans living in England if they had heard of post exposure prophylaxis (PEP). Whereas 32% had heard of it, 68% had not. The numbers who had not heard of PEP were highest among people who had never tested for HIV (81%) and among men (73%).

Respondents were further asked: "Have you ever taken PEP?" Overall, 3.7% of all respondents said they had ever taken PEP. This proportion did not vary by gender.

Bass Line respondents who had not been diagnosed with HIV were told what PEP was and then asked if they thought they would ever consider trying to get PEP. The vast majority either said 'yes' (61%) or 'maybe' (28%). Women were slightly more likely to be interested than men.

When respondents were asked which HIV and sexual health topics they would like to get more information on, PEP topped the list, with 37% of all respondents wanting to know more.

## AFRICAN COMMUNITY ORGANISATIONS AND PEP

African community organisations can play a role in building awareness of PEP and also of people's vulnerability to HIV infection. It is especially important that people with HIV know about PEP. People who are in relationships with a person of a different HIV status also need PEP information. Individuals who usually use condoms may wish to know about PEP, in case a condom breaks. Individuals who seek PEP may be very anxious about the possibility of infection and may seek information and support from community organisations at this time.

## THE KNOWLEDGE, THE WILL AND THE POWER

*The knowledge, the will and the power* (KWP) is the national African HIV Prevention (NAHIP) programme's strategic plan to prevent sexual HIV transmissions among African people in England. One of KWP's aims for direct contact interventions with African people is that *Africans without HIV who are sexually exposed to HIV take post-exposure prophylaxis (PEP)*. In order to take PEP, people need to know about it, to appreciate its costs and benefits, to be able to access it and to take it as prescribed. They will also need to be aware that the sooner PEP is taken after exposure, the more effective it is. Individuals may need skills to communicate this urgency to reception and non-specialist staff in clinical settings.

One policy aim of KWP is that *all emergency and GUM services (either clinic or community-based), increase the availability of post-exposure prophylaxis (PEP) to African people (and the sexual partners of African people) that may have been sexually exposed to HIV.* This will require local NHS managers working in conjunction with a wide variety of stakeholders and community groups to ensure that clinical staff and others follow the PEP guideline[1].

## REFERENCES


1 Benn P, Fisher M, Kulasegaram R on behalf of the BASHH PEPSE Guidelines Writing Group Clinical Effectiveness Group. UK guideline for the use of post-exposure prophylaxis for HIV following sexual exposure (2011). *International Journal of STD & AIDS, 22*: 695-708.

2 Cardo DM, Culver DH, Ciesielski CA *et al.* (1997) A case–control study of HIV seroconversion in health care workers after percutaneous exposure. *New England Journal of Medicine, 337*: 1485-1490.

3 Schechter, M, do Lago RF, Mendelsohn AB, Moreira RI, Moulton LH, Harrison LH for the Praca Onze Study Team (2004) Behavioral impact, acceptability, and HIV incidence among homosexual men with access to postexposure chemoprophylaxis for HIV. *Journal of Acquired Immune Deficiency Syndromes, 35*: 519-525.

4 Tissot F, Erard V, Dang T, Cavassini M (2010) Nonoccupational HIV post-exposure prophylaxis: a 10-year retrospective analysis. *HIV Medicine, 11*: 584-592.

5 Tosini W, Muller P, Prazuck T, Benabdelmoumen G, Peyrouse E, Christian B, Quertainmont Y, Bouvet E, Rabaud C (2010) Tolerability of HIV postexposure prophylaxis with tenofovir/emtricitabine and lopinavir/ritonavir tablet formulation. *AIDS*, 24: 2375–2380.

6 Hickson F, Owuor J, Weatherburn P, Reid D, Hammond G, Jessup K (2009) *Bass Line 2008-09: Assessing the sexual HIV prevention needs of African people in England*. London, Sigma Research.


## FURTHER READING


Bryant J, Baxter L, Hird S (2009) Non-occupational post exposure prophylaxis for HIV: a systematic review. *Health Technology Assessment*, 13(14).

Cairns G (2011) Post-exposure prophylaxis in *Preventing HIV.* London, NAM. www.aidsmap.com/Post-exposure-prophylaxis/page/1061795/

Pebody R et al. (2009) *HIV transmission and testing*. London, NAM. www.aidsmap.com/resources/HIV-transmission-testing/page/1412414/



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