

Factsheet What are the side-effects of post-exposure prophylaxis (PEP)?

Key points

- In the UK the recommended first-line PEP medications of emtricitabine/tenofovir and raltegravir are generally well tolerated by most people.
- Nonetheless, some people do have short-term problems with tiredness, diarrhoea, nausea, flatulence, headache, vivid dreams and other side-effects.



Post-exposure prophylaxis (PEP) is a method of preventing HIV infection. It involves using a four-week course of the drugs used to treat HIV, taken very soon after a person may have been exposed to the virus.

PEP consists of three anti-HIV drugs. Two of these medications are from a class of drugs known as nucleoside reverse transcriptase inhibitors (NRTIs) and are usually taken together in a single pill. A third medication – from either the integrase inhibitor or protease inhibitor class of drugs – is taken separately. It is important to take all three drugs for PEP to be effective.

The [British Association for Sexual Health and HIV \(BASHH\)](#) recommends using a fixed-dose combination tablet combining emtricitabine and tenofovir (*Truvada*, or a generic alternative) from the NRTI class, and raltegravir (*Isentress*) from the integrase inhibitor class. Previously, BASHH guidelines recommended the protease inhibitor lopinavir/ritonavir (*Kaletra*) in place of raltegravir, but [research shows](#) that raltegravir causes fewer side-effects and fewer potential drug-drug interactions, and is associated with better adherence, than lopinavir/ritonavir. PEP is therefore easier to take than it used to be.

This page outlines the possible side-effects of the currently recommended combination of PEP medications, as well as the side-effects of other medications that may be used as alternatives.

Side-effects usually appear soon after starting PEP as the body adjusts to the new medications. Side-effects often lessen, become manageable, or go away completely after a few days or weeks.

Another point to bear in mind is that most of these data on side-effects come from HIV-positive people taking the same medications over many years as HIV treatment. Some possible long-term complications that are listed (such as raised liver enzymes) are highly unlikely to occur during a

one-month course of the medication.

Emtricitabine/tenofovir + raltegravir

The recommended combination treatment of emtricitabine (200mg) and tenofovir (245mg) once daily, and raltegravir (400mg) every 12 hours is well tolerated.

That said, common side-effects (over 1% of people) of raltegravir include: loss of appetite, headache, difficulty in sleeping, abnormal dreams, depression, dizziness, vertigo, abdominal pain, bloating, flatulence, [diarrhoea](#), nausea, vomiting, indigestion, rash, weakness, fatigue, fever, raised liver or pancreatic enzymes, and raised triglycerides.

Rarely, raltegravir can cause a hypersensitivity (allergic) reaction. If you develop a rash with other symptoms, such as a fever, seek medical advice.

The most common side-effects of emtricitabine/tenofovir are [diarrhoea](#), [being sick \(vomiting\)](#), [feeling sick \(nausea\)](#), dizziness, headache, rash, feeling weak, pain, stomach pain, difficulty sleeping, abnormal dreams, feeling bloated, flatulence, allergic reactions, such as wheezing, swelling or feeling light-headed.

Emtricitabine/tenofovir can also affect the kidneys and bones, so an alternative drug may be offered to people with pre-existing severe kidney disease.

It should be noted that with the emtricitabine/tenofovir & raltegravir combination there have been [occasional reports](#) of muscle-related adverse events. These included reports of myalgia (muscle pain), and rhabdomyolysis (muscle damage that can lead to renal complications). Caution should therefore be taken in individuals with a history of these conditions or who are using other medications associated with these conditions, for example statins.

[Australian doctors recently reported](#) on how many of their patients taking this form of PEP reported side-effects. The most common side-effects were fatigue (37% of PEP users), diarrhoea (25%), nausea (24%), flatulence (24%), abdominal cramps (21%), bloating (16%), headache (15%), vivid dreams (15%), depression (10%) and thirst (10%).

For more information on these medications, see our factsheets on [Truvada](#) (emtricitabine/tenofovir) and [raltegravir](#).

Alternative NRTI backbone: lamivudine/zidovudine

BASHH guidelines state that zidovudine (250mg) and lamivudine (150mg), twice daily, may be used instead of emtricitabine/tenofovir. This combination may be preferred to emtricitabine/tenofovir in people with abnormal renal function, for example.

The most common reported side-effects (over 1% of people) of lamivudine/zidovudine taken together are: nausea, vomiting, diarrhoea, [tiredness](#), headache, dizziness, weakness, muscle pain, loss of appetite, fever, abdominal pain, hair loss, insomnia, rash, cough, runny nose, joint or muscle pain, fat loss, anaemia, low white blood cell count and raised liver enzymes.

For more information, read our factsheet on [lamivudine/zidovudine](#).

Alternative third agents

BASHH guidelines state that while raltegravir – an integrase inhibitor – is the first-line treatment in PEP, various boosted protease inhibitors may also be used if raltegravir is judged by the clinician to be unsuitable (for example, if there are concerns about intolerance). However, it should be noted that significant drug-drug interactions can occur with protease inhibitors.

Boosted protease inhibitors consist of one main protease inhibitor taken with a small quantity of ritonavir, another protease inhibitor. The purpose of a low dose of ritonavir is to ‘boost’ and maintain levels of the main protease in the body.

Boosted protease inhibitors that may be prescribed include lopinavir, darunavir or atazanavir.

Lopinavir/ritonavir (*Kaletra*)

Lopinavir (200mg) and ritonavir (50mg), taken twice daily, frequently causes diarrhoea and other gastrointestinal disturbances.

Other common side-effects (over 1% of people) include: nausea, sinus or throat infections, pancreatitis, vomiting, abdominal pain, bloating, flatulence, heartburn and indigestion, loss of appetite, raised lipids or blood sugar, diabetes, high blood pressure, rash, itching, skin infections, dizziness, tiredness, difficulty in sleeping, anxiety, weakness, headache, haemorrhoids, raised liver enzymes, allergic reaction including swelling, infections in the respiratory tract, cough, sore throat, runny nose, erectile dysfunction, menstrual disorders, peripheral nerve damage, muscle pain.

Due to these side-effects, [BASHH recommends](#) that doctors consider providing medications to prevent diarrhoea, nausea and vomiting alongside this form of PEP.

For more information, read our factsheet on [lopinavir/ritonavir](#).

Darunavir/ritonavir

Darunavir (800mg) may be prescribed with ritonavir (100mg) once daily.

Common side-effects of darunavir (over 1% of people) include: diarrhoea, vomiting, nausea, abdominal pain, bloating, indigestion, flatulence, headache, tiredness, dizziness, drowsiness, numbness, peripheral neuropathy (damage to nerves in the hands or feet causing tingling or pain), insomnia, weakness, rash, itching, diabetes, raised lipids, raised liver enzymes.

For more information, read our factsheet on [darunavir](#).

Atazanavir/ritonavir

Atazanavir (300mg) may be prescribed with ritonavir (100mg) once daily.

Common side-effects of atazanavir include: headache, nausea, vomiting, diarrhoea, abdominal pain, indigestion, tiredness, rash, and raised bilirubin levels. Developing some yellowing of the skin and/or eyes (jaundice) is fairly common when taking atazanavir, especially when you first start the drug. Although this can look alarming, it is harmless and does not mean that your liver is damaged, or not working in any way.

Rarely, atazanavir can cause a hypersensitivity (allergic) reaction. If you develop a rash with other symptoms, such as a fever, seek medical advice.

For more information, read our factsheet on [atazanavir](#).

Dolutegravir (*Tivicay*)

Dolutegravir is an integrase inhibitor that may be prescribed (50mg) once daily, as an alternative to raltegravir. It is not a protease inhibitor and is not taken with ritonavir.

Common side-effects associated with dolutegravir include: headache, insomnia, dizziness, abnormal dreams, depression, fatigue, diarrhoea, nausea, vomiting, abdominal pain or discomfort, flatulence, rash and itching.

Rarely, dolutegravir can cause a hypersensitivity (allergic) reaction. If you develop a rash with other symptoms, such as a fever, seek medical advice.

For more information, read our factsheet on [dolutegravir](#).

Drug-drug interactions

With all PEP regimens, your doctor or pharmacist should check for [drug-drug interactions](#). This is especially a concern with PEP that contains a boosted protease inhibitor, but interactions can occur with other PEP medications.

A drug interaction is when one medicine affects how another medicine works. For example, taken together, one medicine may increase the side-effects of another medicine.

It is important to tell your doctor or pharmacist about all other medicines and drugs that you are taking – this includes those prescribed by another doctor; over-the-counter medicines (including inhalers and nasal sprays); supplements, herbal and alternative treatments; and recreational drugs.

The University of Liverpool provides an online tool to check for interactions between anti-HIV drugs, other medications and recreational drugs. You enter the names of the medication you are taking and the results are provided with a traffic-light system: if the result is red or amber, it's worth checking with your doctor or pharmacist. If it's green, there shouldn't be any problem.

Visit www.hiv-druginteractions.org/checker

Find out more

Post-exposure prophylaxis (PEP) Simple factsheet

Diarrhoea Simple factsheet

Nausea and vomiting Simple factsheet