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THINGS (YOU MAY NOT KNOW) ABOUT
SIDE EFFECTS

COMPANION GUIDE

10½ things (you may not know) about side effects...

We have all taken medicine in our life, but what do we know about side effects? It may surprise you to learn that every medicine has side effects – some predictable, some unavoidable and some amplified by the foods that we eat. This guide explores *10½ things that you may not know about side effects...*








To watch the *10½ things (you may not know) about side effects* animation please visit: www.liverpool.ac.uk/drug-safety/drug-safety/



Overview

Medical research investigates how the body works and looks for new ways to treat and prevent diseases. Within medical research, there is the science of side effects, its aim is to look at the side effects caused by certain treatments and to try and find out why the reaction is happening and find ways to prevent it.

The pharmacologists and toxicologists that study side effects ask questions like:

-  Do people react to a medicine because of their genetics?
-  Is it an important part of the medicine, or something that can be changed without reducing the effectiveness?
-  Is there a way to modify a medicine, or allow certain groups of people to use it so that the benefit of the treatment isn't lost?
-  Is the side effect very rare?
-  Is the side effect caused by something else affecting the medicine, another medication, food or alcohol?



Studying the side effects caused by medicines allows researchers to develop more tests to predict who will experience a side effect and improves our understanding about how medicines work.

Everyone who takes a medicine can help with this process. If you, your child, or someone you care for, experiences a negative side-effect when taking a medicine, you can report it via the MHRA's Yellow Card Scheme. It's easy to report online, or using the Yellow Card App. Your doctor and pharmacist can also report the side effect on your behalf.

Glossary

Toxicologists assess the adverse effects of chemicals on humans and animals

Pharmacologists look at how medicines work in animals and humans with respect to both the benefits and the harms

MHRA (www.mhra.gov.uk) The Medicines and Healthcare products Regulatory Agency is the UK Government's Agency responsible for ensuring that medicines and medical devices work and are acceptably safe. The MHRA runs the Yellow Card Scheme (see below).

MRC The Medical Research Council funds medical research in the UK. It is part of the government funded UK Research and Innovation (UKRI).

Side effects (also called adverse drug reactions) – a secondary, usually negative, effect from a medicine.

Yellow Card Scheme

(www.mhra.gov.uk/yellowcard) – run by the MHRA (see above), it allows members of the public and healthcare professionals to report suspected side effects from any medicines, vaccines, complementary remedies such as herbal products, concerns with e-cigarettes and their refills, and medical devices incidents.



ABOUT SIDE EFFECTS

All medicines have side effects.

Not just the strong ones like chemotherapy, but also everyday ones like ibuprofen. Medicines are tested to check that they work and are safe before they come to market. For most people, the benefit of taking the medicine outweighs any negative side effects.

Medicines are tested to find their 'therapeutic range'. This means working out at what dose the medicine starts to have an effect, and at what dose the medicine becomes toxic and harmful to health.

With some medicines, like anti-cancer medications, the side effects can be severe but these side effects are accepted because of the life-threatening nature of the disease. Over the counter medications for milder conditions must have far fewer side effects to be licensed for use.

For a list of recognised side effects, see the product information or the patient information leaflet that is usually within the medicine's box. You can also access this information here: www.mhra.gov.uk/spc-pil/index.htm



INVESTIGATES REPORTS

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The science of side effects

New funding of drug safety science is opening up our understanding about side effects and helping to find solutions. In 2008, the [MRC Centre for Drug Safety Science](#) opened at the University of Liverpool. Funded by the [MRC](#), the Centre is staffed by academic pharmacologists and toxicologists. The Centre investigates reports of serious and/ or unusual side effects and works to:

- Understand why side effects can occur and why in certain populations
- Create enhanced testing so that more people can benefit from drugs that are currently deemed too risky
- Track and uncover why certain reactions happen

The Centre investigates reports of unusual, negative side effects and provides useful information to the public.

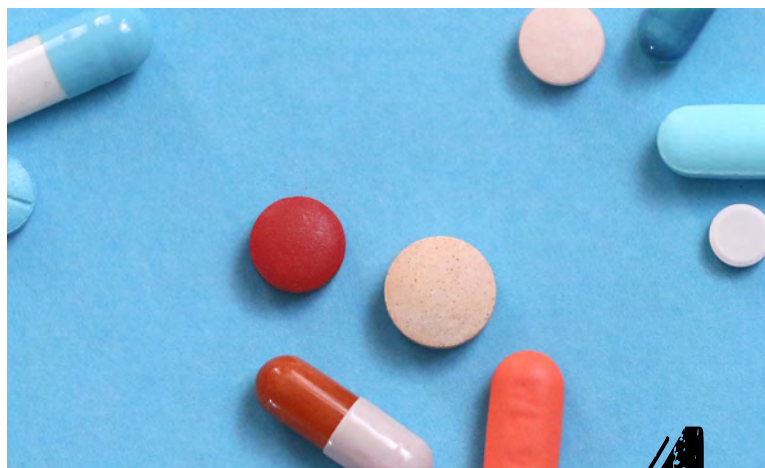
Some side effects can be common

These common side effects are listed on the medicine's box or the patient information leaflet that comes with the medicine. They do not occur in all patients, and they are typically mild, like dry mouth or headaches.

It's worth remembering that these effects will go away when you stop taking the medication

Some side effects are predictable but can be avoided

Make sure that your GP and your pharmacist are aware of ALL the medicines that you are taking, so that they can advise you of known conflicts or prescribe an alternative. This includes any medicines you are taking that you might have bought for yourself and any complementary remedies such as herbal supplements.



It is well known that certain medicines can cause negative side effects when taken together. Keeping a list of the medications you take, or taking a photo on your phone of each packet, particularly if you take more than one, can be helpful if you need to check your dose or medication with your GP or pharmacist.

Follow the instructions included with the medicine, things like avoiding alcoholic drinks, or taking the medicine on a full or empty stomach. These instructions are included because it is known that the medicine works better when taken in a certain way.

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Certain foods can compromise, reverse or amplify the effects of different medications.

Grapefruit juice, cheese, leafy greens and alcohol amongst other foods, are all known to have an effect on certain medications. For example:

- ▣ Grapefruit juice is known to amplify the effects of statins
- ▣ Cheese can cause problems with monoamine oxidase inhibitor (MAOI) drugs which may be prescribed for depression
- ▣ Kale, and other leafy greens that are high in Vitamin K, can make blood thinning drugs such as warfarin less effective
- ▣ Alcohol can cause many reactions but in particular if taking a stimulant and drinking alcohol, it can impair your judgement and ability to assess how intoxicated you are.



The severity of the reaction depends on the person, the drug and the amount of juice/food that is consumed. When a doctor prescribes you a medicine for the first time, it's important to ask if there are known food interactions and side effects. You can also check the information that comes with the medication.

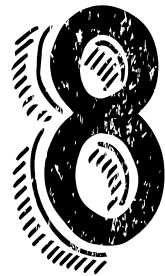
Further reading on dangerous food interactions: pharmacytimes.com and www.ncbi.nlm.nih.gov



Herbal supplements can cause side effects

Herbal supplements can sometimes cause negative side effects and they can also interact with other medicines that you are taking. For example, 903 medicines are known to interact with St John's Wort and 264 of them have serious negative side effects. Gingko biloba is taken by people who believe it helps with circulation and mental function but it can thin the blood and cause bleeding. This is especially risky if you take blood thinning drugs.

Herbal remedies aren't harmless and if you start to feel unwell when taking them you should talk to your pharmacist or doctor. If you are taking other medications at the same



time it's important to check that your herbal remedy won't cause a negative reaction and isn't causing a negative side effect.

Further reading: [nhs.uk](https://www.nhs.uk)

Recreational drugs can interact with medications

Recreational drugs, like cannabis, opiates, cocaine and club drugs can also interact with prescribed or over the counter medications. Cannabis and cannabinoids taken to relieve symptoms of disease can also interact with other medications. It's important to be open with your doctor about anything you may be taking so that they can help you get the right treatment.

**NOTHING
STAYS THE
SAME**

Side effects can change

Even if you are following the instructions carefully and have been taking the medicine for a long time without problems, something can change in you and that can then cause the medicine to have an adverse side

effect. So even if you've been taking something for a while if you start to feel unwell it might be because of the medication you are taking.



Some side effects are unpredictable

They may be related to genes and only affect people with a rare genetic make-up, or certain populations of people. There can also be widespread effects, which only become known after the medication has been in use for some time. This is why the yellow card system was developed and why it is also available as a free app for your phone – making it even easier to report side effects.



The App is available for download free of charge from [iTunes](https://itunes.apple.com) **Yellow Card for iOS** devices or [PlayStore](https://play.google.com/store/apps/details?id=org.uk.nhs.uk.yellowcard) **Yellow Card for Android** devices.



MAKING MEDICINES SAFER

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Unusual or serious side effects need to be reported

If you are following your medication instructions but start to experience something unusual or an effect that makes you feel really bad, it's important to discuss it with your GP or pharmacist. In England, you can also call the NHS 111 for advice.

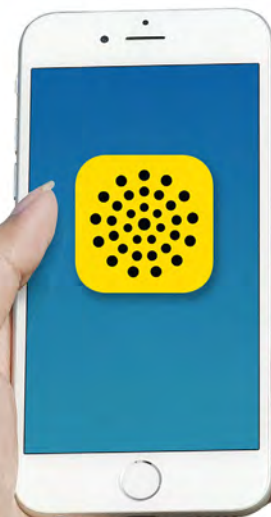
▼ Some drugs have an [inverted black triangle](#) (▼) next to their name – these are medicines in use for less than 2 years. **For these “black triangle” medicines, all side effects should be reported.**

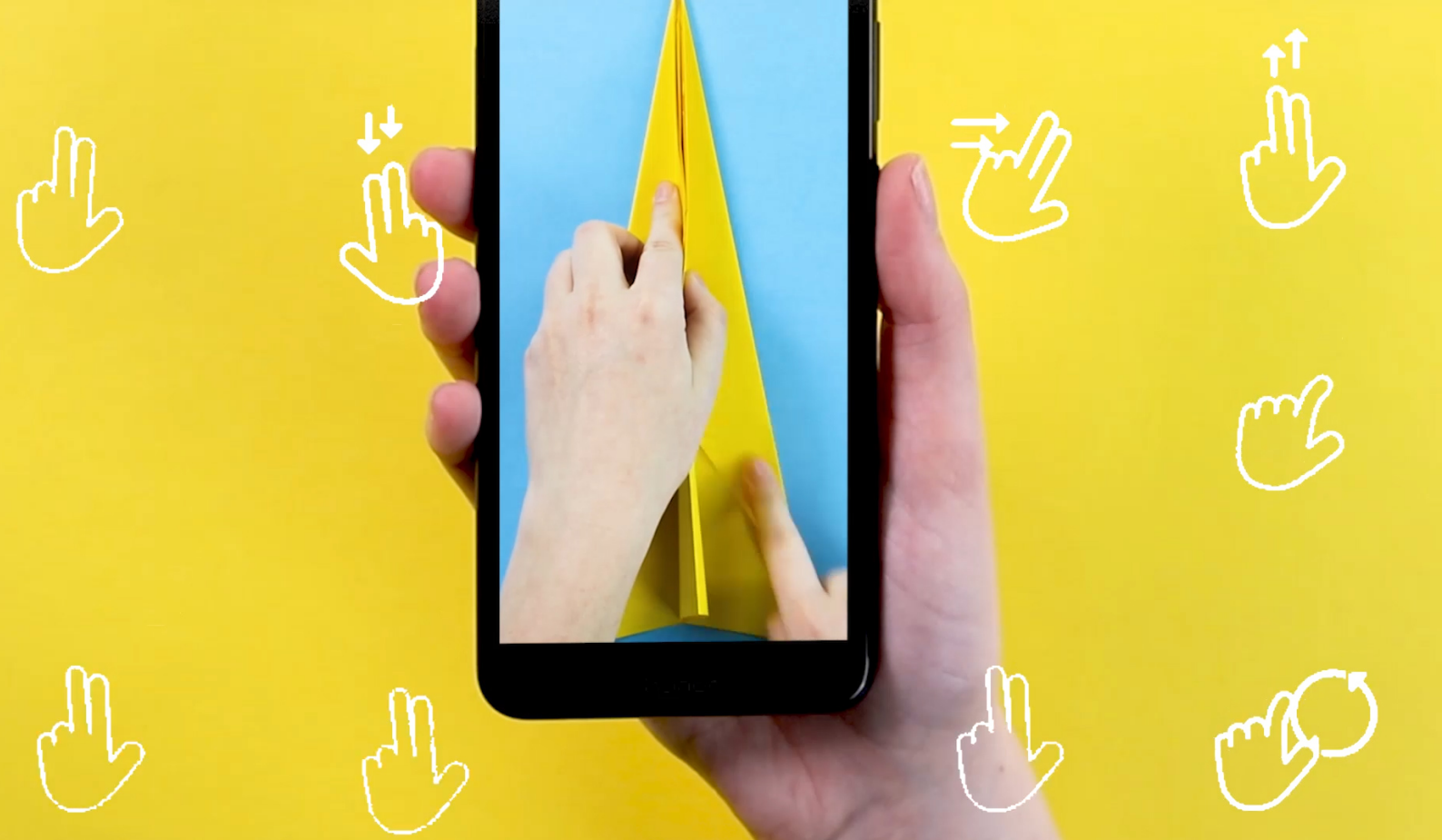
You can then report the side-effect using the MHRA Yellow Card Scheme.

Reporting side effects is really important as this can help to show up previously unknown side effects and safety issues, as well as adding to the information on those that are known about.

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By reporting suspected side effects that you, your child, or someone you are caring for experiences, you are helping make medicines safer for everyone.





This guide has been brought to you by the **MRC Centre for Drug Safety Science** (www.liverpool.ac.uk/drug-safety/) and **Sense about Science** (www.senseaboutscience.org)

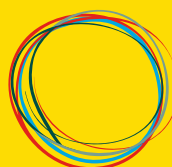
The *10½ things (you may not know) about side effects* animation and guide were developed following a series of public workshops. To be involved in future workshops or to give feedback on the guide or animation please contact hello@senseaboutscience.org

The MRC-funded Centre for Drug Safety Science was established at the University of Liverpool in 2008 to bring together a critical mass of knowledge and technologies in order to advance our understanding of Adverse Drug Reactions (ADRs).

Sense about Science is an independent campaigning charity that challenges the misrepresentation of science and evidence in public life.

MRC

Centre for
Drug Safety Science



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Because evidence matters