

photosensitive epilepsy

epilepsy
society

factsheet

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If you have epilepsy you may be able to identify triggers – situations that set off your seizures. Common triggers include stress or tiredness. If seizures are triggered by flashing lights or certain patterns, this is called photosensitive epilepsy.

how common is photosensitive epilepsy?

Around 1 in 100 people has epilepsy, and of these people, around 3% have photosensitive epilepsy. Photosensitive epilepsy is more common in children and young people (up to 5%) and is less commonly diagnosed after the age of 20.

how can I tell if I am photosensitive?

Many people know this if they have a seizure when they are exposed to flashing lights or patterns as a photosensitive trigger will usually cause a seizure straightaway.

An electroencephalogram (EEG) may include testing for photosensitive epilepsy. This involves looking at a light which will flash at different speeds. If this causes any changes in brain activity the technician can stop the flashing light before a seizure develops.

 See our leaflets *diagnosis and seizures* for more information.

what rate of flashing light can trigger seizures?

Between 3 and 30 hertz (flashes per second) are the common rates to trigger seizures, but this varies from person to person. While some people are sensitive at frequencies up to 60 hertz, sensitivity under 3 hertz is not common.

what patterns can trigger seizures?

Some people are sensitive to geometric patterns with contrasts of light and dark such as stripes or bars. Patterns are more likely to be a trigger if they are changing direction or flashing, rather than if they are still or moving slowly in one direction.

Flashing, flickering or patterned effects can make people with or without epilepsy feel disorientated, uncomfortable or unwell. This does not necessarily mean they have photosensitive epilepsy.

how is photosensitive epilepsy treated?

Photosensitive epilepsy usually responds well to anti-epileptic drugs (AEDs) that treat generalised seizures (seizures that affect both sides of the brain at once).

 See our booklet and chart *medication for epilepsy* for more information.

Triggers are individual, but the following sources *in themselves* are *not* generally likely to trigger photosensitive seizures. See over the page for possible triggers and what increases the risk.

- **UK TV programme content.** Ofcom regulates material shown on TV in the UK. The regulations restrict the flash rate to three hertz or less, and they also restrict the area of screen allowed for flashing lights or alternating patterns.
- **Digital TV and plasma screens.** Adjusting the brightness down on some screens can be helpful if you have photosensitive epilepsy.
- **3D TV** is not in itself likely to be a problem (see over the page for possible risks with 3D TV).
- **Modern computer or TV screens** do not flicker, or have a very high flicker frequency. Flatscreen monitors, such as laptops, have a liquid crystal display (LCD) that does not flicker, so are even less likely to trigger seizures.
- **Cinema and hand-held screens.** Due to the size of the screen and the low intensity of the projection, it is rare for seizures to be triggered by films in a cinema, or by hand-held miniature screens.
- **'Real 3D' cinema films.** Images are projected separately at each eye, reducing the already low intensity of the projection even further and so there should be even less risk of seizures being triggered by 'real 3D' in cinemas.
- **Interactive whiteboards** are unlikely to trigger a seizure, unless another flickering light source in the room reflects onto the whiteboard.



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possible triggers if you have photosensitive epilepsy

- Flashing or flickering lights or images between 3 and 60 hertz (flashes per second).
- A contrasting dark and light geometric pattern, such as black and white stripes or checks.

factors that may increase the photosensitive risk

- Tiredness, stress or excitement. For example, playing a video game for a long time without breaks.
- The effect taking up all your field of vision. For example, being very close to a screen.
- A light and dark pattern moving quickly, or changing direction, creating a disorientating effect.
- Seeing the effect against a dark background, such as watching a screen in a darkened room.

if suddenly exposed to a trigger

- Covering one eye completely with your hand will greatly reduce the photosensitive effect.

what may have a photosensitive trigger?

TV and computer screens that flicker

- Cathode ray tube TVs (older box style) which 'refresh' the image, if this causes a flicker rate between 3 and 60 hertz (flashes per second).
- Faulty TVs or other screens that flicker.
- With 3D TV, there are two systems, called 'active' and 'passive'. With 'active' 3D glasses, switching suddenly between 3D and non-3D screens or channels may cause a lot of flicker for a few seconds, if the 3D signal to the glasses has not yet switched off. In daylight if there is a window next to the 3D TV, the window may also reflect the flicker.
- A flashing image on a computer screen or game.

Patterns in the natural environment

- Sunlight through trees, blinds or on water.
- Railings, escalators or other structures creating repetitive patterns as you move past them.
- Rotating wind turbine blades, if certain weather conditions occur together with other specific factors.

Flashing or flickering lights or images

- Cameras with multiple flashes or many cameras flashing at once. Single or double flashes are not likely to pose a risk.
- Strobe lights at performances or in nightclubs.
- Lights flickering, such as faulty fluorescent tubes.
- Fireworks, if they create a high enough flash rate.
- Flashing bicycle lights or other LED lights against a dark background, and the effect fills your vision.
- Several circuits of festive lights flashing together could increase the flash rate.

reducing the risk of a photosensitive trigger

The environment and how you use a screen

- Use a flatscreen TV or computer monitor.
- Take regular breaks from the screen.
- Sit well back from the screen.
- Use a remote control to change channels.
- Watch TV or use a screen in a well-lit room.
- Watch 3D TV without other TVs or screens viewable. Remove 3D glasses before switching channels or looking at another screen.
- Use the settings in Internet options to control moving images in your browser.

Special glasses do not stop photosensitivity in a person, but they may help to reduce the effect.

- An optometrist can prescribe coloured or photochromic glasses (darkened lenses) to reduce light sensitivity or visual distortions.
- Polarising sunglasses reduce reflection and glare such as sunlight on water.

UK regulations

- Ofcom regulations require that TV programmes and news stories have a warning if there is going to be a high level of flashes in the programme.
- The Health and Safety Executive recommends that strobe lighting at public performances or in clubs flashes at a maximum rate of four hertz (flashes per second) or less.

Further information

www.epilepsysociety.org.uk/wind-turbines-and-photosensitive-epilepsy

www.epilepsysociety.org.uk/3d-films-and-photosensitive-epilepsy

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