

Risks associated with your anaesthetic

Section 3: Shivering

Summary

This leaflet explains the causes of shivering following anaesthesia and surgery, what can be done to prevent it occurring, and treatments available if it does happen to you.

For a number of reasons, outlined in this leaflet, your temperature may drop slightly during surgery. As a result some people find on waking in the recovery room that they are shivering. Although this might be distressing, it is not dangerous and soon passes. A nurse will be in attendance at all times and he or she will ensure that you warm up as soon as possible.

Shivering after an operation is a very common problem but varies in severity. It can sometimes cause a great deal of discomfort.

Although it can be extremely distressing, shivering is not usually dangerous¹ and should stop within 20 to 30 minutes. It can occur after a general anaesthetic and during or after a regional anaesthetic (for example, an epidural or spinal).

What causes it?

Most shivering after an operation is due to a small decrease in your core (central) body temperature.^{2,3} This occurs because parts of your body may be exposed to a cool environment during your operation. Anaesthetic drugs and gases can contribute to this fall by reducing your body's natural ability to regulate your own temperature. Epidural and spinal anaesthetics open up blood vessels to the skin. This increases blood flow to the skin and increases heat loss.

Shivering may also occur without a fall in core body temperature. It can be caused by anaesthetic drugs and gases, and is more likely if you have pain following your operation.⁴





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What is done to prevent it?

Care is taken to keep you warm before, during and after your operation. If you are kept warm before your operation, you are less likely to be cold afterwards. There are some things that you can do to help you stay warm before your operation:⁵

- remember that the hospital may be colder than your own home
- bring warm clothing, such as a dressing gown, to keep you comfortably warm before your operation
- tell the staff if you feel cold at any time during your hospital stay.

By keeping warm before your operation, you can help avoid shivering afterwards.

Depending on the length and type of your operation, your anaesthetist and recovery nurses may use some other ways to keep you warm. These can include heating any intravenous fluids that you may receive and using a heated blanket filled with warm air.⁵

How often does shivering happen?

Shivering following an operation is a very common problem. Even using measures to prevent a fall in body temperature, a recent large UK study showed that moderate shivering still occurs in just over 1 in 7 patients following a general anaesthetic.⁶ The risk of shivering is increased in younger patients, if the operation is very long or after orthopaedic operations.⁷ Shivering may also be more common when epidural or spinal anaesthesia is used.³ If you are awake for your surgery, with epidural or spinal anaesthesia, then shivering could occur during the operation. Your anaesthetist will be with you and able to support you with this – although there is no quick and simple treatment to make it stop.

What can be done if shivering occurs?

When you get to the recovery room, your temperature will be measured. If you are cold, the nurses will use warming blankets to help warm you up again. This is usually all that is required to stop shivering, although it may take some time for your temperature to return to normal.

There is also a number of drugs which can be used to treat shivering, although it is usually considered best to wait until the shivering stops on its own. None of the drugs are 100% effective and all may have side effects. The most effective drugs include pethidine, clonidine and doxapram.⁸ If you are in pain following your operation, treatment of your pain may also help to reduce your shivering.

Shivering will stop on its own and, although distressing, it is generally not dangerous. It does, however, increase your body's requirement for oxygen so you may be given additional oxygen via a mask.

A nurse will be with you at all times in the recovery room and they will make sure that you are warm and as comfortable as possible following your operation. When you are ready to drink, hot or warm drinks are a good idea, as they will help to warm you up.



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If you have suffered from postoperative shivering in the past this does not indicate that you will shiver with surgery and anaesthesia in the future.

References

- 1 Alfonsi P. Post anaesthetic shivering. Epidemiology, pathophysiology and approaches to prevention and management. *Drugs* 2001;**61**:2193–2205.
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- 3 Buggy DJ, Crossley AWA. Thermo-regulation, mild peri-operative hypothermia and post anaesthetic shivering. *Br J Anaesth* 2000;**84**:615–628.
- 4 Horn EP et al. Postoperative pain facilitates non thermoregulatory tremor. *Anesthesiol* 2002;**96**:467–484.
- 5 Perioperative Hypothermia (Inadvertent) (CG68). *NICE*, London 2008.
- 6 EMK Walker et al for the SNAP-1 investigators. Patient reported outcome of adult perioperative anaesthesia in the United Kingdom: a cross-sectional observational study for the SNAP-1 investigators. *Br J Anaesth* 2016;**117**(6):758–766.
- 7 Eberhart LHJ et al. Independent Risk Factors for Postoperative Shivering. *Anesth Analg* 2005;**101**:1849–1857.
- 8 Kranke P et al. Pharmacological treatment of postoperative shivering: A quantitative systematic review of randomised controlled trials. *Anesth Analg* 2002;**94**:453–460.

Further information

Anaesthetists are doctors with specialist training who:

- discuss the type or types of anaesthetic that are suitable for your operation. If there are choices available, your anaesthetist will help you choose what is best for you
- discuss the risks of anaesthesia with you
- agree a plan with you for your anaesthetic and pain control
- are responsible for giving your anaesthetic and for your wellbeing and safety throughout your surgery
- manage any blood transfusions you may need
- plan your care, if needed, in the intensive care unit
- make your experience as calm and pain free as possible.

Common terms

General anaesthesia – This is a state of controlled unconsciousness during which you feel nothing and may be described as ‘anaesthetised’.

Regional anaesthesia – This involves an injection of local anaesthetic which makes part of your body numb. You stay conscious or maybe sedated, but free from pain in that part of your body.

You can find out more about general and regional anaesthesia in the patient information booklet *Anaesthesia explained*, which is available from the College website via:

rcoa.ac.uk/documents/anaesthesia-explained



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Risks and probability

In modern anaesthesia, serious problems are uncommon. Risk cannot be removed completely, but modern drugs, equipment and training have made anaesthesia a much safer procedure in recent years.

The way you feel about a risk is very personal to you, and depends on your personality, your own experiences and often your family and cultural background. You may be a 'risk taker', a 'risk avoider', or somewhere in between. You may know someone who has had a risk happen to them, even though that is very unusual. Or you may have read in the newspapers about a risk and be especially worried about it.

People vary in how they interpret words and numbers. This scale is provided to help.



Your anaesthetist will give you more information about any of the risks specific to you and the precautions taken to avoid them. There are some rare risks in anaesthesia that your anaesthetist may not normally discuss routinely unless they believe you are at higher risk. These have not been listed in this leaflet. You can find more information leaflets on the College website:

rcoa.ac.uk/patientinfo

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Reviewed 2016

This leaflet has been reviewed by the RCoA Patient Information Group which consists of patient representatives and experts in different areas of anaesthesia.

Disclaimer

We try very hard to keep the information in this leaflet accurate and up-to-date, but we cannot guarantee this. We don't expect this general information to cover all the questions you might have or to deal with everything that might be important to you. You should discuss your choices and any worries you have with your medical team, using this leaflet as a guide. This leaflet on its own should not be treated as advice. It cannot be used for any commercial or business purpose.

For full details, please see our website: rcoa.ac.uk/patientinfo/resources#disclaimer



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Information for healthcare professionals on printing this leaflet

Please consider the visual impairments of patients when printing or photocopying this leaflet. Photocopies of photocopies are discouraged as these tend to be low quality prints and can be very difficult for patients to read. Please also make sure that you use the latest version of this leaflet, which is available on the RCoA website: rcoa.ac.uk/patientinfo/risk-leaflets

Tell us what you think

We welcome suggestions to improve this leaflet. Please complete this short survey at: surveymonkey.co.uk/r/testrisk. Or by scanning this QR code with your mobile:



If you have any general comments, please email them to: patientinformation@rcoa.ac.uk

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Fifth Edition 2017

This leaflet will be reviewed within five years of the date of publication.

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