

Pulsatile tinnitus

This factsheet tells you about pulsatile tinnitus – a rare form of tinnitus where a rhythmical noise is heard that may beat in time with the heart. It explains what causes pulsatile tinnitus, what to do if you think you have it, and what therapies and products can help.

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Medical disclaimer

The information in this factsheet is not medical advice and, by providing it, neither Action on Hearing Loss nor our audiology specialists undertake any responsibility for your medical care, or accept you as a patient. Before acting on any of the information contained in this factsheet, or deciding on a course of treatment, you should discuss the matter with your GP (family doctor) or other medical professional who is treating you.

What is pulsatile tinnitus?

Tinnitus is the name for sounds that some people hear in their ear(s) or head that have no outside source. The sounds are usually described as ringing, hissing, buzzing, roaring or humming noises, which may be continuous or come and go. However, a small number of people hear rhythmical noises that may beat at the same rate as their heart. This is known as pulsatile tinnitus.

 To find out more about the common type of tinnitus, see our factsheet *Tinnitus – causes and therapies*.

What causes pulsatile tinnitus?

There are two main causes of pulsatile tinnitus:

- a change in blood flow (the movement of blood through blood vessels) in the neck, skull and ear(s)
- increased awareness of blood flow near the ears.

It could also be a pulse that's not related to blood supply, which means a muscular cause is more likely. Only in exceptional cases is pulsatile tinnitus a sign of a more serious condition.

What can change blood flow near the ear?

Blood flow near the ear can be altered by several things:

- a general increased rate of blood flow throughout the body, caused by, for example, strenuous exercise, severe anaemia or certain medications
- abnormally shaped blood vessels, which cause blood to flow faster, or blocked blood vessels, which cause surrounding vessels to carry more blood
- the inside of an artery becoming clogged up with fatty substances (known as atherosclerosis) – this prevents blood from flowing smoothly, so blood flow becomes turbulent.

Blood that flows quickly creates more noise than blood that flows slowly. So does blood flow that is turbulent – like a smoothly running river becoming noisy when it reaches rocks or a waterfall. This blood flow is heard as pulsatile tinnitus.

What can cause increased awareness of blood flow?

Increased sensitivity in the hearing system can make the brain more aware of normal noise within blood vessels. As with other forms of tinnitus, the brain will often focus on the sound, as it mistakenly thinks that it has an important meaning.

If you have hearing loss or an ear condition such as a perforated eardrum or glue ear, you may become more aware of sounds within the hearing system. This is because you no longer have the sounds masked by external sounds.

How can muscular activity cause pulsatile tinnitus?

The bones in the middle section of the ear are attached to small muscles. These muscles can twitch involuntarily, causing a rhythmical popping or crackling sound, or giving a 'fluttering-like' sensation to sounds. It's very rare for there to be any underlying serious condition that would cause this.

I think I have pulsatile tinnitus – what should I do?

To confirm a diagnosis, you first need to see your GP. They will refer you to a hospital consultant, who will ask about your medical history and check your eardrum and the blood vessels in your neck and skull.

The consultant will use a stethoscope to see if they can hear the pulsatile noise in your neck and skull – if they can, this is called 'objective tinnitus', because it can be heard by others. Other forms of tinnitus are called 'subjective tinnitus', because only the person with tinnitus can hear it.

The consultant may use imaging techniques, such as ultrasound or magnetic resonance imaging (MRI), to look at how blood is flowing through your body. Such scans are routine and don't mean that the consultant believes there is something seriously wrong with you. MRI scanners can be noisy, so make sure you wear the ear protection provided during the scan.

You will also have a series of hearing tests, which is usual for any type of tinnitus.

Is there a cure for pulsatile tinnitus?

There's no single treatment for pulsatile tinnitus that works in the same way for everyone. If clinicians can find an underlying cause, such as high blood pressure, they may be able to treat that – which, in turn, may get rid of the tinnitus. However, if you have pulsatile tinnitus and clinicians cannot find an underlying cause, they will advise you on the practical steps you can take to manage it.

We are focusing our tinnitus research on better understanding the causes of tinnitus, and using this knowledge to develop treatments ([see page 5](#)).

The good news is that, in most cases, tinnitus improves slowly over time by a process known as 'habituation'. This is where you reach a state of mind where you no longer find your tinnitus bothersome and are no longer overly aware of it. Habituation is the main aim of tinnitus therapies.

What therapies can help me manage my tinnitus?

There are different therapies that can help you to manage pulsatile tinnitus, reducing the impact that it has on your life:

- **Sound therapy** – soothing background noise can distract you from your tinnitus and help you to relax. There are different products available ([see page 5](#)). You may also find sounds around the house helpful, such as the whirring of a fan. If used regularly, sound therapy can help you to habituate your tinnitus, so you 'train' your brain to 'ignore' it.
- **Counselling** – this allows you to explore difficulties in your life. There are different types of counselling, all of which can help if you have tinnitus and want to talk about it. Talking to someone who will listen and show understanding can be comforting. It can help to relieve your fears and reduce stress. Speak to your GP or audiologist about getting a referral.
- **Relaxation exercises** – you may notice your tinnitus more when you are tired or worried, and this can make you more anxious or stressed. You can learn to control your responses to stressful situations by using relaxation exercises, which you can learn from books, CDs, DVDs, apps (software applications for smartphones and tablet devices) or relaxation classes.
- **Mindfulness** – this is a simple form of meditation that involves paying more attention to the present moment – to your own thoughts and feelings, and the world around you. It may help you notice signs of stress or anxiety earlier, and help you deal with them better.
- **Distraction techniques** – if tinnitus bothers you during the day, try to take your mind off it by distracting yourself – for example, by reading, watching TV or listening to music. If tinnitus troubles you when you're trying to sleep, there are sound-therapy products that can help to distract you ([see page 5](#)).
- **Hearing aids** – if you also have hearing loss, these may help. They will let you hear a greater variety of sounds – those you want to focus on and general environmental noises – that can help to distract you from your tinnitus.

Your tinnitus specialist will discuss with you what therapies may be helpful for you.



To find out more, see our factsheet *Tinnitus – causes and therapies*. For more on mindfulness, see the NHS Choices website: www.nhs.uk/Conditions/stress-anxiety-depression/pages/mindfulness.aspx

What products can help me manage my tinnitus?

There are lots of different products that can help you to habituate your tinnitus, so that you reach a stage where you're not overly aware of it.

The products available include:

- **Behind-the-ear sound generators** – these look a bit like hearing aids and produce a soft 'rushing' noise.
- **In-the-ear sound generators** – these small devices are designed to sit inside your ear canal and produce a soft 'rushing' noise. They don't have as many settings as modern behind-the-ear sound generators and are being used less frequently.
- **Bedside and desktop sound generators** – often known as 'tinnitus relaxers', these play a range of environmental and soothing sounds.
- **Sound pillows** (normal pillows that have speakers inside) and **pillow speakers**, which you can connect to your tinnitus relaxer, stereo or personal music player. They let you listen to sounds in bed without disturbing anyone else, and without the discomfort of earphones.
- **CDs, or albums that you can download**, which play relaxing sounds such as birdsong or rainfall.
- **Combination devices** – these are designed for people with both tinnitus and hearing loss – they contain a hearing aid and a sound generator.

- **Tinnitus apps** – there are now many apps available for smartphones and tablet devices that are designed to help with tinnitus. They have a wide range of sounds to choose from, and some allow you to customise sounds.

Your audiology department may be able to provide you with sound-therapy products if they're suitable. However, what you may be offered will depend on what's available from your NHS service and what's most suitable for your needs.


You can also buy tinnitus products from private tinnitus services and online stores such as the Action on Hearing Loss shop: actiononhearingloss.org.uk/shop

What tinnitus research is Action on Hearing Loss funding?

There are currently no medicines on the market specifically approved to treat tinnitus – we're looking to change this. We're funding a range of projects that focus on improving our understanding of tinnitus, so that this knowledge can be used to develop effective treatments.

We've also awarded a grant to researchers at Newcastle University, who aim to develop a new technique to measure tinnitus more accurately by monitoring brainwave activity. This new technique will help tinnitus researchers take potential new treatments that have been tested in the laboratory to the next stage – testing them on people, a critical step in developing new medicines.

This research should make the future development of effective medicines to treat tinnitus easier and, hopefully, encourage more investment in this area.

 Find out more about the research we're funding at actiononhearingloss.org.uk/biomedicalresearch

Where can I get further information about tinnitus?

Action on Hearing Loss

Our other **Tinnitus** factsheets are:

- *Tinnitus - causes and therapies*
- *Stress and tinnitus*
- *Musical hallucinations*
- *How to help friends and family with tinnitus.*

You can order these from our Information Line ([see last page](#) for contact details) or download them from our website at actiononhearingloss.org.uk/tinnitusfacts

You can also find lots of helpful information about tinnitus on our website: actiononhearingloss.org.uk/tinnitus

Tinnitus Helpline

For tinnitus information and support, contact our Tinnitus Helpline:

Telephone: **0808 808 6666**
Textphone: **0808 808 9000**

SMS: **0780 000 0360**

Email: tinnitushelpline@hearingloss.org.uk

Tinnitus forum

Get in touch with a supportive group of people with tinnitus through our online Tinnitus forum. Share what works for you, and pick up some other great tips: actionhearingloss.org.uk/tinnitusforum

Social networking

You can also get in touch with us, and others, through Facebook and Twitter:

Facebook: [facebook.com/](https://facebook.com/actiononhearingloss)

actiononhearingloss

Twitter: twitter.com/actiononhearing

Other organisations

British Association for Counselling and Psychotherapy (BACP)

BACP can give you a list of therapists in your area.

BACP House
15 St John's Business Park
Lutterworth
Leicestershire
LE17 4HB

Telephone: **01455 883 300**

Textphone: **01455 560 606**

Email: bacp@bacp.co.uk

Website: bacp.co.uk

British Tinnitus Association (BTA)

The BTA campaigns for better services for people with tinnitus. It supports a network of local tinnitus support groups across the UK, has a range of publications and produces a members' magazine, *Quiet*.

Ground Floor
Unit 5
Acorn Business Park
Woodseats Close
Sheffield
S8 0TB

Telephone: **0800 018 0527**
Email: info@tinnitus.org.uk
Website: tinnitus.org.uk

Looking for products to help with tinnitus?

We sell many products, and a range of CDs, that create soothing sounds to help you relax, sleep and manage your tinnitus. Contact our Customer Services team to find out more or to request our free *Products* catalogue:



Telephone: **03330 144 525**
Textphone: **03330 144 530**
Email: solutions@hearingloss.org.uk

Or shop online:
actiononhearingloss.org.uk/shop

Information you can trust

The Information Standard certifies us as producers of high-quality, evidence-based information.

The original version of this factsheet was written by **Don McFerran, Consultant Otolaryngologist, Colchester Hospital University NHS Foundation Trust.**

Thank you to **Magdalena Sereda, Senior Research Fellow in Tinnitus, NIHR Nottingham Biomedical Research Centre, British Tinnitus Association Head of Research,** for helping us review and update this edition, published August 2017.

For a list of references for this factsheet, please email references@hearingloss.org.uk

Did you find this factsheet helpful?

We'd love to know what you think of this factsheet – please email us at reviewpanel@hearingloss.org.uk

If you'd like to join our Readers' Panel, to help us create new publications and improve existing ones, please let us know.

Further information from Action on Hearing Loss

Our expert information covers everything you need to know about:

- hearing loss and deafness
- tinnitus
- ear problems and treatments
- hearing aids and cochlear implants
- useful products and technology
- communication tactics and support
- benefits and grants
- your rights.

Visit our website actiononhearingloss.org.uk or call our Information Line ([see last page](#)) for information, support and publications. You can also find out about services in your area, our hearing research, and how you can get involved.


Please help us support others

We provide our leaflets, factsheets and Information Line service free of charge to anyone affected by deafness, tinnitus or hearing loss in the UK. We rely on the generosity of our supporters to help us do this. We would be very grateful if you would consider making a donation - of as little or as much as you can afford.

Please send a cheque, payable to Action on Hearing Loss, to:

Freepost RTLX-CZKX-BTTZ
Action on Hearing Loss
1-3 Highbury Station Road
London N1 1SE
(No stamp needed)

Donate online at actiononhearingloss.org.uk/icanhelp
Or make a donation over the phone by credit or debit card:

 **0203 227 6182**
 **0203 227 6185**

Thank you.

Our purpose is to help people confronting deafness, tinnitus and hearing loss to live the life they choose. We enable them to take control of their lives and remove the barriers in their way.

To find out more about what we do and how you can support us, go to actiononhearingloss.org.uk

Action on Hearing Loss Information Line

Telephone **0808 808 0123**
Textphone **0808 808 9000**
SMS **0780 000 0360**
(standard text message rates apply)
Email **information@hearingloss.org.uk**

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