



*Independent Hearing Care Services*

## **Hearability information sheet**

### **HYPERACUSIS & LOUDNESS RECRUITMENT**

Continuous, loud noise can be a source of irritation to most people. However, some people have especially sensitive hearing and are unable to tolerate ordinary levels of noise. This can occur in people with normal hearing, or in those with a hearing loss. The level at which a sound becomes uncomfortably loud for a particular person is called their loudness discomfort level or uncomfortable loudness limit (ULL).

#### **What is loudness recruitment?**

Recruitment is a condition usually associated with hearing loss. The effect of loudness recruitment is to reduce the range of sound levels that someone with a hearing loss can use efficiently. If all the sound is amplified so that the quiet sounds can be heard, other sounds, which are already loud, like a door banging, or a lorry passing, will be made uncomfortably or painfully loud. This is also known as having a reduced dynamic range of hearing. This refers to the range of sound levels between a person's threshold for hearing sounds and their loudness discomfort level.

#### **Loudness recruitment and hearing aid users**

Most analogue hearing aids will be set to amplify quiet sounds, so that loud sounds will be much too loud for the person who has loudness recruitment. They also tend to amplify sound by the same amount regardless of whether the sound is weak or strong. However, new methods of processing sound have been developed to try and make up for some of these problems. Digital hearing aids use sound compression to compensate for recruitment and is known as automatic gain control (AGC). With AGC, it is possible to amplify quiet sounds more than stronger ones. This means the hearing aid user can hear the quiet sounds but the strong sounds do not become uncomfortably loud and in many cases can be reduced in volume.

#### **What is hyperacusis?**

Hyperacusis is a condition where abnormal discomfort is felt by a normal level of sound. It is not the same as loudness recruitment because it usually occurs in people who do not have a hearing loss and the discomfort is not always related to how loud the sound is.

#### **What causes hyperacusis?**

There are probably a number of different causes for hyperacusis, but it seems to be linked to problems in the way the brain processes information about hearing, rather than problems in the hearing mechanism in the ear. Like tinnitus or a headache it cannot be measured using objective tests. Hyperacusis can occur on its own or along with a range of other conditions, including depression, migraine, visual over-sensitivity or 'photophobia' and also chronic fatigue syndrome. Hyperacusis may first occur after sudden exposure to very high levels of sound, or following a head injury. This suggests that it may be possible to cause damage to the feedback system between the brain and the ear and that this may underlie the hyperacusis.

Most people with hyperacusis don't appear to have any hearing loss as measured and recorded on an audiogram. However, they may have difficulty hearing speech in noisy environments or in

poor listening conditions, even when hearing tests show no hearing loss. This is sometimes called obscure auditory dysfunction or auditory processing difficulty.

### **What treatment is available for hyperacusis?**

There are a number of treatment strategies for hyperacusis, but most will involve learning to understand the kind of noise that can trigger pain or anxiety. It is important not to avoid everyday sounds, as being in the quiet for long periods tends to increase the problems. Earmuffs or plugs should only be worn for short periods, when absolutely necessary.

Hyperacusis can be managed most effectively by using noise generators alongside a programme aimed at reducing the fear and anxiety associated with sound exposure. Noise generators play an important part in the auditory desensitisation process. These small devices look like hearing aids and produce a steady, gentle noise with a volume control, allowing the noise level to be turned up or down. This is an established method of treating hearing over sensitivity and is used in many audiology departments in the UK. Your local audiology department should be able to advise you on the availability of this technique.

### **Further information**

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