



RECOMMENDED GUIDELINES ON SAFETY FOR COCHLEAR IMPLANT USERS

Updated July 2005

IMPORTANT

This document has been produced by the British Cochlear Implant Group with input from the major UK suppliers of cochlear implants and members of several UK cochlear implant teams. The information contained in this document aims to provide realistic guidance to cochlear implant users to enable them to gain the maximum benefit from their implants and to minimise potential problems, but is given as general guidance, parts of which may not be applicable to all cochlear implant users.

All cochlear implant users should read and understand the instructions given by the manufacturer / supplier of their cochlear implant and should take advice from their clinician on their own particular circumstances. (Cochlear implant users may find it helpful to go through these guidelines with the staff at their cochlear implant centre.)

BUT.....

do remember that most people with cochlear implants are able to lead normal lives as long as they take a few sensible precautions. Although the information in this leaflet may seem daunting, in most cases the risks are very small!

Sporting activities, leisure and play



The following guidelines may help, but you need to weigh up the issues involved, including:

- protecting the equipment
- protecting the head
- avoiding moisture damage
- hearing instructions and warnings
- practicality
- comfort

Individual cochlear implant centres may give more specific instructions.

You should remember that the implant is quite vulnerable in the first 6 weeks after surgery, so special care should be taken at this time.

Standard play activities and non-contact sports

(e.g. tennis, golf, badminton, running, rounders)

The headset and speech processor should be securely worn and protected from physical damage such as knocks, water, sand, etc.

Vigorous sports (e.g. football, netball, hockey and squash)

It may be advisable to remove the external parts of the system. If there is some risk of blows to the head the external parts should be removed and a form of head protection worn (e.g. a scrum cap).

Contact sports (e.g. boxing, kick boxing, rugby, and ice hockey)

Cochlear implant users should not participate in sports where physical injuries, pressure and blows to the head are inevitable or likely.

Martial arts which involve throwing

There is a risk of blows to the head which could damage the implant so cochlear implant users should not participate in these activities.

Sports where a helmet is recommended (e.g. cycling, riding and sailing)

These sports are acceptable. A helmet will help to protect the cochlear implant site from any blows. The helmet should be of high quality. If possible the external equipment should be left on. It is advisable to try different makes and types and to check for comfort and fit. It is especially important that the helmet fits well around the site of the implant to make sure that no pressure is applied directly onto the body of the implant or the scar. You should discuss this further with your cochlear implant centre.

Gymnastics

Gymnastics should be undertaken with caution. A scrum cap will provide some protection. Once again the external parts of the implant system should be removed.

Tai Chi

There is no risk from Tai Chi.

Swimming, shallow diving, snorkelling, scuba diving and most water sports

Most **water sports** should cause no problems as long as the external parts of the implant system are removed. If goggles are worn care should be taken to ensure that the strap is not too tight over the site of the implant receiver under the skin. For sailing and canoeing a helmet is advisable. Some implant wearers have balance problems and they should never swim alone. They may become disorientated if they swim under water and must be taught how to identify the direction of the surface. There may be risks from **scuba diving**, or diving to any depth, because of the pressure, wearing tight fitting masks/headgear, and other possible medical risks. So it is a good idea to talk to your Cochlear Implant centre first.

Activity park rides, bungee jumps, artificial ski slopes, etc

It is not known if there are any extra risks for cochlear implant users associated with these activities, but they are certainly not advisable in the first 6 weeks after surgery. If cochlear implant users do decide to undertake them, they should remove the

external equipment to prevent it from flying off.

Virtual reality headsets

These headsets are thought to be safe but the user should ensure that they do not fit too tightly over the site of the implant. The sound quality may be poor and the microphone may be on only one side so it is important to check if it is on the same side as the implant.

Treadmills in gyms

Check that the equipment is properly earthed or you may receive a static electric shock (see following section). It is advisable to remove the external equipment.

Plastic gym mats

The external equipment should be removed to protect it and avoid damage from static electricity (see following section).

Laser Quest type activities

There may be a risk due to the static electricity generated by the nylon suits (see later section on static electricity) so it is probably advisable to remove the external equipment. Care should also be taken that the strap of the goggles does not fit too tightly over the site of the implant package.

Sun beds

Using sun beds cannot damage the internal components of your implant, but the external equipment should be removed to protect it from perspiration.

Damage to external equipment.

Remember at all times to keep all the cochlear implant equipment dry and free of sand and dust.



Medical matters



General medical advice for cochlear implant users

1. Meningitis

You are advised to follow the guidance of the Department of Health, which at the time of writing (July 2005) is that everyone who has a cochlear implant (or is about to receive one) should be vaccinated against pneumococcal meningitis. Further details are available from your cochlear implant centre.

2. Ear infections

Ear infections in the implanted ear must be treated as an *emergency* by the Cochlear Implant Centre or GP so that antibiotics can be prescribed as necessary. If the GP arranges the treatment, it is important to inform the cochlear implant centre as soon as possible.

Advice about specific treatments

The following information is intended as general guidance. Warnings and precautions for individual manufacturers and specific devices are summarised on the Cochlear Implant Patient Identification card. **The user should carry this at all times.** A copy should also be kept at home and, for children, an additional copy **must** be kept in the school records. Extra copies of the cards can be obtained from the cochlear implant centre. **It is highly advisable for users to wear 'MedicAlert' bracelets or pendants (details can be supplied by your cochlear implant centre).**

Please remember that the effects of a number of procedures are unknown. **If you are in doubt you must consult the implanting surgical team.**

Treatments that must NEVER be carried out on people with cochlear implants

1. Electrosurgery

Monopolar electrosurgical instruments must never be used in the head and neck region. Bipolar electrosurgical instruments must never be used within

2cm of the implant. Note that this includes dental surgery.

2. Therapeutic diathermy

Therapeutic diathermy is an optional treatment for purposes such as pain relief, reducing joint contractures, reducing pain and swelling after surgery, and promoting wound healing.

There is ***potentially a very serious risk to health*** for implant users from **short wave diathermy** and **microwave diathermy** and these should **NEVER** be used.

Note that these treatments are used by a variety of professionals, including physiotherapists, nurses, chiropractors, dentists and sports therapists. They may refer to it as 'deep heat' or similar.

Ultrasound diathermy is acceptable below the head and neck.

3. Neurostimulation

Neurostimulation must not be used directly over the cochlear implant as it could lead to damage to the cochlea tissue or to the implant.

4. Electro-convulsive therapy

Electro-convulsive therapy must never be used on a cochlear implant patient.

5. Electric head lice combs

People with cochlear implants should not use these devices.

Treatments that can SOMETIMES be carried out on people with cochlear implants

1. MRI

MRI must be approached with extreme caution. A person with a cochlear implant must never have an MRI scan without first seeking the advice of the medically responsible person from their cochlear implant team, who should also contact the implant manufacturer. An MRI machine has the potential to damage the implant, or cause potentially harmful effects due to the magnetic and electrical properties of the internal implant (the effects can not be avoided by simply taking off the speech processor). For these reasons, a person with a cochlear implant should also not be

near an MRI machine, whether it is in use or not.

Nuclear Magnetic Resonance (NMR) machines, which are sometimes used in research facilities and universities, are similar to MRI machines, so also should not be approached.

Some cochlear implants can be compatible with certain types of MRI procedure. Others can be made temporarily compatible by a minor surgical procedure. Some may not be compatible.

The surgical team who carried out the cochlear implant operation must be contacted before any MRI procedure is carried out.

2. Ultrasound

The use of ultrasonic diagnostic equipment and ultrasonic tooth cleaners is not thought to pose any significant risk of damage to the implant but ultrasound should not be applied directly over the site of the implant and you should remove the external parts of the implant when ultrasound is in use.

3. TENS machines (as used for pain relief)

TENS machines should not be used on the head. For treatment of neck problems and before embarking on any course of physiotherapy electrotherapeutic treatment you should refer to the Implant Centre before proceeding.

4. X rays

X rays can be undertaken but the speech processor should be switched off and kept well away from all X ray equipment.

5. Gamma cameras

External equipment must be removed.

6. Electrolysis

Electrolysis must not be carried out within 1cm of any part of the cochlear implant. (Note that the eyebrows could possibly be close to some of the internal parts). The external equipment should be removed during the process.

7. Devices for electronic pain therapy (including pain relief pens)

These devices may cause damage to the implant if they are used on the head or neck. They may be used below the neck.

8. Radiotherapy (eg cobalt units or linear accelerators)

The cochlear implant is only at risk of failure if it is exposed to the direct beam. Scattered radiation is unlikely to cause any damage. As a precaution the external equipment should be removed and kept outside the treatment room. It is advisable to leave the equipment off for 2 hours after the treatment. The Cochlear Implant team should be informed of any cochlear implant users undergoing radiotherapy.

9. Ultrasound diathermy

This is acceptable below the head and neck.

10. Dental treatments

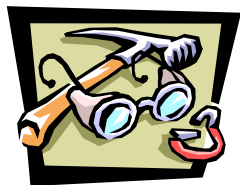
Dental probes, i.e. electrical pulp testers, can be used on people with cochlear implants. See section above for information about ultrasonic tooth cleaners.

Treatments that CAN be carried out on people with cochlear implants

Treatments that are known to be safe for cochlear implant users include:

- laser hair removal
- laser treatment for cataracts.
- use of body mass index scales

Employment issues



Car repairs

If working on a running car engine, normal safety procedures should be followed and the external equipment should be removed. Care must be taken to avoid high voltage electric shocks, which could damage the implant even if the external equipment is removed.

Welding

Arc and MIG welding do not pose a threat to the implant but the user may hear interference. Ideally the external parts should be removed to protect them from sparks, but the user needs to weigh up the relative risk of not being able to hear.

Use of hard hats

Please refer to advice regarding helmets for use when cycling etc in the Sporting Activity and Play' section above.

Security systems



1. Shops

The most common type of security system is the one found in many shops, where an alarm goes off if an item goes through which has not been paid for. There is no risk of damage to the implant or equipment from these detectors but some users prefer to switch off their speech processor because they may hear a sound as they pass through. Occasionally the security system may be activated by the implant so it is a good idea to have the ID card to hand.

2. Airports, etc

More sophisticated security systems, such as those in airports, produce magnetic fields which can cause the speech processor's programme to become corrupted (see below). These systems will carry a warning that people with **heart pacemakers** should not go through. If you see this type of sign **remove the speech processor and switch it off**. The speech processor may be passed through an X-ray machine safely as long as it is switched off. Carry your ID card and user manual to show to the staff. Again, the internal parts of the implant may activate the alarm so ask for a **hand scan** to be done. If you are in an airport which has a special check-in facility for disabled people you are recommended to use it.

If a speech processor's map **does** become corrupted it can easily be reprogrammed at

the cochlear implant centre. If the processor allows storage of more than one programme you can usually use one of the others in the meantime.



Air travel



The speech processor must be switched off during take off and landing while the plane has the 'Fasten Seatbelts' sign illuminated. This is because it emits a signal which can cause temporary interference with the pilot's equipment. You should follow any instructions issued by the airline with regard to the use of personal computers and other electronic devices, and if you are travelling alone then do tell the staff that you are deaf.

You should also refer to the previous section which contains information about airport security systems.



Static electricity



When two surfaces rub together and positive and negative electrical charges become separated, this can cause a build up of static electricity. Cochlear implant systems have some inbuilt protection from static electricity but occasionally static electricity has corrupted the map of processors and very rarely caused damage to the internal implant. **Cochlear implant users should never deliberately generate static electricity eg rub themselves or their clothes with a balloon.**

The accumulation of electrostatic discharge can be minimised as follows:

Handling implant equipment

- If touching the speech processor or headset while being worn by an implant user, touch them before touching their processor or headset.
- Touch the table before picking up the processor from it.

Getting out of cars

- Implant users should keep hold of the car until their feet touch the ground.
- Young children should be helped out of the car.

Children's play equipment and toys

- The speech processor and headset should be removed (not just switched off) before playing on any plastic equipment eg plastic slides, crawl tunnels, ball pools, bouncy castles.
- Implant users should not play with static generating toys eg plasma balls, plasma plate.

School science lessons

- Cochlear implant users should never use Van der Graaf generators as these produce very high levels of static electricity.
- When experimenting with static electricity as part of science lessons the speech processor and headset should be removed (not just switched off).

TV screens and computer monitors

- The implant equipment or the implant user should not touch a TV screen.
- Computer screens made since 1996 are TCO compliant and there is no risk from static electricity. As a further precaution use the rubber on the end of a pencil can be used with a touch screen computer.

Clothing

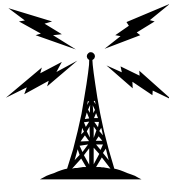
- Natural fibres such as cotton build up less static charge than man made fibres and the use of fabric conditioner can also reduce static build up.
- Body worn processors and leads should be worn under clothing so they do not rub against anything that is charged.
- When dressing put on the speech processor last, and when undressing take the speech processor off first. This

avoids charge building up from clothes being put on or taken off.

Thunderstorms

- All metal objects should be removed if out in a thunderstorm therefore if a cochlear implant user is outside during a thunderstorm they should remove the external parts of the implant system because it contains metal parts.

Interference (something NOT to worry about!)



Cochlear implant users sometimes hear interference from equipment round about them. This is temporary and will not damage any part of the implant system or the ear. You *may* hear a buzzing noise when you are:

- Near to over head power lines
- Within 2km of TV or radio transmission masts, including those used by taxis, emergency services, etc
- Within 2m of a mobile phone. (It is often possible for implant users to use mobile phones but it is essential to try them first).
- Using a games console with wireless controller
- In the same room as the server for a wireless computer network

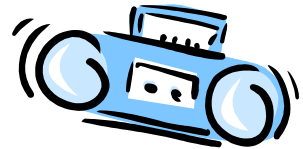
You are **not** likely to experience any interference from:

- Mobile phone transmitter masts
- Wireless computer networks (unless you are in the same room as the server)

Sometimes the cochlear implant may cause interference to computer speakers, radio controlled toys, etc. This will not cause any damage to the implant equipment or the

user, but may cause the other equipment to perform in abnormal ways.

Personal stereos, audio equipment, TV, etc



Never connect a speech processor directly to any equipment powered by mains electricity. Always use the special adaptor recommended for your device. For battery operated devices special cables may be needed so ask the advice of your implant centre.

Miscellaneous

Electric fences

Cochlear implant users should take care not touch or crawl underneath electric fences because if the head touches the fence there is a risk of damage to the implant.

Induction cookers

If a speech processor is within 50cm of the cooking surface it could heat up, so extra care should be taken by adults using body worn speech processors on a belt, and children. Users may hear a clicking sound when close to the cooker.

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