

# Medical Treatments With MED-EL Cochlear Implants

MED-EL recipients can undergo many common medical diagnostic methods, therapies and surgeries, but certain precautions may be needed. Here's a quick reference sheet for common indications.

Medical Diagnostic Methods		Implant Types	Notes
X-ray	✓	All implants	<p>Possible on the whole body.</p> <p>The external MED-EL components must be removed.</p>
Mammography	✓	All implants	<p>Mammography is a method of examination with X-rays and can therefore be carried out.</p> <p>The external MED-EL components must be removed.</p>
CT	✓	All implants	<p>Computer tomography (CT) is imaging with X-rays.</p> <p>Possible on the whole body.</p> <p>The external MED-EL components must be removed.</p>
MRI	~	SYNCHRONY	<p>0.2 T, 1.0 T, 1.5 T and 3.0 T Magnetic Resonance Imaging (MRI) is possible</p> <p>Image artefacts in the area of the implant magnet are reduced by magnet removal.</p>
	~	CONCERTO SONATA PULSAR C40+ C40	<p>0.2 T, 1.0 T, and 1.5 T MRI is possible</p> <p>The external MED-EL components must be removed.</p>
Ultrasound	~	SYNCHRONY CONCERTO SONATA C40+ C40	<p>Ultrasound applications cannot be performed near the area of the implant.</p> <p>Ultrasound applications can be performed without restrictions outside of the head area.</p>
	~	PULSAR	<p>Diagnostic ultrasound up to 500 W/m<sup>2</sup> at 2 to 5 Mhz can be performed in the area of the implant.</p> <p>Ultrasound applications can be performed without restrictions outside of the head area.</p> <p>The external MED-EL components must be removed.</p>

✓ Yes

✗ No

~ With Restrictions

## Medical Surgeries/Therapies

## Implant Types

## Notes

Laser Treatments	~	All implants	<p>Highly focused laser beam is typically used.</p> <p>Laser treatments outside the implant area are possible.</p>
Endoscopy	✓	All implants	No known adverse effect on implant or external components.
Radiation Therapies PET, SPECT Scintigraphy	~	All implants	<p>MED-EL cochlear implants resistant to a total radiation dose of 240 Gy.</p> <p>The external MED-EL components must be removed.</p>
Electrosurgery	~	All implants	<p>Monopolar electrochemical instruments may not be used in head or neck area.</p> <p>If the use of monopolar electrochemical instruments is necessary, the top of the cautery must be kept away at least 5 mm from the stimulator, the coil, and all parts of the electrode.</p>
Transcutaneous Electric Nerve Stimulation (TENS)	~	All implants	Possible for neck, throat, and head area, but it is necessary to contact MED-EL first. Necessary information: Name of the device, device pulse, and placement of the electrodes.
Microwave Therapy	~	All implants	<p>Not possible for the head or in the neck area.</p> <p>The microwave therapy belongs to the group of diathermy.</p>
Current Measurement (EEG, EKG)	✓	All implants	<p>EEG and EKG examinations can be carried out.</p> <p>The external MED-EL components must be removed.</p>
Cardiac Pacemaker or Defibrillator	~	All implants	<p>A pacemaker does not have an impact on a CI.</p> <p>However, the manufacturer of the pace maker or defibrillator must be asked if the CI could disrupt the function of the pace maker or defibrillator.</p>
Magnetic Field Therapy	~	All implants	Not in the head or upper body area.

Ultrasonic Tooth Cleaning	⊗	All implants	At the moment, tooth cleaning with ultrasound can not be recommended, because damage to the electrical components of the implant or the active electrode cannot be excluded.
Bioresonance Therapy	~	All implants	Can be carried out if there is no current flow in the implant area.  External MED-EL components may be removed during the examination to avoid measurement artefacts.
Atlas Therapy	⊗	All implants	Therapy causes strong vibrations that go through the whole body in order to relax deep muscles.  Damages to the electrode or a change of the electrode's position cannot be excluded depending on the intensity and duration of the treatment.
Radio-Frequency Ablation	~	All implants	Can be carried out if there is no current flow in the implant area.  External MED-EL components may be removed during the examination to avoid measurement artefacts.
Cryotherapy	~	All implants	Should not be carried out on the skin directly on top of the implant.
Hypertension Therapy	~	SYNCHRONY CONCERT SONATA PULSAR C40+ C40	Safe up to 6 bar absolute pressure.

## Everyday Situations

## Implant Types

## Notes

Sonic Toothbrushes	✓	All implants	<p>Sonic toothbrushes available from specialist retailers offer up to 31,000 rpm.</p> <p>The frequency of the brush stroke motion lies significantly below the ultrasonic frequencies.</p>
Induction Cooker	✓	All implants	<p>Changes in sound or the shutdown of the processor can be caused by the inductive field.</p> <p>The sound impression normalizes immediately if there is sufficient distance to the induction hob.</p>
Body-Fat Scale	✓	All implants	The electrical output released during the measurement is harmless for the implant and external MED-EL components.
Microwaves	✓	All implants	<p>Microwave is electromagnetically shielded from the outside.</p> <p>External MED-EL components may not be put into the microwave.</p>
Vibrating Plate	✓	All implants	No impact on implant or external components are known.
At the Airport	~	All implants	<p>Implant can set off an alarm at the metal detectors.</p> <p>Turned off external MED-EL components can be X-rayed.</p>
Diving	~	All implants	<p>All MED-EL CIs safe up to 50 m diving depth.</p> <p>Medical fitness should be clarified.</p> <p>Avoid any pressure on the implant or electrode from diving goggles.</p>
Sauna	✓	All implants	<p>Using a sauna is possible with any MED-EL implant.</p> <p>However, the external MED-EL components must be removed.</p>
Electrostatic Discharge (ESD)	~	All implants	<p>Processor usually stops automatically when it is electrostatically charged.</p> <p>In rare cases, it can lead to an uncomfortable hearing sensation or a damage of the hearing programme.</p>