MRI Checklist for MED-EL CI models

**GENERAL CONDITIONS**

→ **PERMITTED** static magnetic field strength

1.5 T, 3.0 T

→ **PERMITTED** spatial gradient field

up to 29 T/m (2,900 G/cm)

→ **MAXIMUM PERMITTED** SAR (at 0.2 T, 1.0 T, 1.5 T)

NORMAL OPERATING MODE

3.2 W/kg (Head), 2.0 W/kg (Whole-Body)

→ **MAXIMUM PERMITTED** SAR (at 3.0 T)

Head: 1.6 W/kg

Whole Body <35 cm from the top of the head: 1.0 W/kg

Whole Body ≥35 cm from the top of the head: 2.0 W/kg

**NOTE:** For head examinations and examinations of the body that are less than 35 cm from the top of the head, the MRI system must have the ability to set a reduced maximum specific absorption rate (SAR) or to display the estimated maximum SAR value.

**PREPARATION**

- **PATIENT ID CARD**
  Request patient ID card in order to identify the implant type

  ➤ ✓ OK

- **IMPLANT CONDITION**
  Is the implant mechanically and/or electrically intact?

  ➤ YES → continue
  ➤ NO → STOP

- **IMAGE ARTEFACT**
  Is accurate diagnostic possible even with the expected image artefact?

  ➤ YES → continue (next bullet point)
  ➤ NO → decide if the magnet should be removed

- **MAGNET REMOVAL**
  Has the implant magnet been surgically removed?

  ➤ YES → continue
  ➤ NO → STOP

- **AUDITORY/NON-AUDITORY SENSATIONS**
  Inform the patient about possible auditory and non-auditory sensations during the examination.

  ➤ YES → OK

  NOTE: The likelihood and intensity of auditory and non-auditory sensations can be reduced by selecting sequences with a lower Specific Absorption Rate (SAR) and slower gradient slew rates.

- **HEAD ORIENTATION**
  Inform the patient not to tilt their head to either side.

  ➤ ✓ OK

- **EXTERNAL COMPONENTS**
  Remove audio processor and accessories before entering the scanner room.

  ➤ ✓ OK

  **OPTIONAL HEAD BANDAGE**
  A supportive head bandage over the implant using an elastic bandage wrapped tightly around the head for at least three times can optionally be used.

  ➤ ✓ OK

**NOTE:** In rare cases the patient might perceive a clicking sound upon entry in the MRI scanner tube.

**EXECUTION**

**NOTE:** To reduce the likelihood and degree of patient discomfort, the patient should keep their head away from the scanner wall near the entrance of the scanner.

- **PATIENT POSITIONING**
  The patient should be lying in the scanner in a supine, prone or side position with the head kept straight.

  ➤ ✓ OK

  NOTE: When lower extremities are to be examined, it is recommended that patient’s legs are positioned in the scanner first.

- **OPERATING MODE**
  **(only applicable at 1.5 T)**
  Apply “Normal Operating Mode” only.

  ➤ ✓ OK

  **NOTE:** max. 3.2 W/kg for Head scans, 2.0 W/kg for Whole-Body scans

- **OPERATING MODE**
  **(only applicable at 3.0 T)**
  Apply maximum permitted SAR according to following table only:

  | SAR (Head) | SAR (Whole-Body) |
  |<35 cm from the top of the head | ≥35 cm from the top of the head |
  |1.6 W/kg | 1.0 W/kg |
  |2.0 W/kg | 2.0 W/kg |

- **ACCESSORIES**
  **(only applicable at 3.0 T)**
  Do not utilize head transmit coils or multi-channel transmit coils.

  ➤ ✓ OK

**NOTE:** In rare cases temporary pain or discomfort may occur in the implant area during MRI even if all protocols and bandaging instructions are followed.
MRI Checklist for MED-EL CI models

**GENERAL CONDITIONS**
- **PERMITTED** static magnetic field strength
  - 0.2 T, 1.5 T
- **PERMITTED** spatial gradient field
  - up to 8 T/m (800 G/cm)
- **MAXIMUM PERMITTED** SAR
  - NORMAL OPERATING MODE, i.e.
    - 3.2 W/kg (Head), 2.0 W/kg (Whole-Body)

**PREPARATION**
- **PATIENT ID CARD**
  - Request patient ID card in order to identify the implant type
  - Yes → continue
  - No → STOP

- **IMPLANT CONDITION**
  - Is the implant mechanically and/or electrically intact?
  - Yes → continue
  - No → STOP

- **IMPLANTATION STATUS**
  - Has the implant been implanted for at least six months?
  - Yes → continue
  - No → STOP

- **IMAGE ARTEFACT**
  - Is accurate diagnostic possible even with the expected image artefact?
  - Yes → continue
  - No → STOP

- **AUDITORY/NON-AUDITORY SENSATIONS**
  - Inform the patient about possible auditory and non-auditory sensations during the examination.
  - NOTE: The likelihood and intensity of auditory and non-auditory sensations can be reduced by selecting sequences with a lower Specific Absorption Rate (SAR) and slower gradient slew rates.

- **HEAD ORIENTATION**
  - (only applicable at 1.5 T)
  - Inform the patient not to tilt their head to either side.

- **EXTERNAL COMPONENTS**
  - Remove audio processor and accessories before entering the scanner room.

- **HEAD BANDAGE**
  - Place a supportive headband over the implant.
  - NOTE: The bandage may be an elastic bandage wrapped tightly around the head for at least three times.

**EXECUTION**
- **PATIENT POSITIONING**
  - (only applicable at 1.5 T)
  - The patient should be lying in the scanner in a supine, prone or side position with the head kept straight.
  - NOTE: When lower extremities are to be examined, it is recommended that patient’s legs are positioned in the scanner first to minimize any risk of weakening the implant magnet.

- **OPERATING MODE**
  - Run sequences in "Normal Operating Mode" only.
  - NOTE: max. 3.2 W/kg for Head scans, 2.0 W/kg for Whole-Body scans
  - NOTE: In rare cases temporary pain or discomfort may occur in the implant area during MRI even if all protocols and bandaging instructions are followed.
# MRI Checklist for MED-EL CI models

## PULSAR | C40+

### GENERAL CONDITIONS

- **PERMITTED** static magnetic field strength
  - 0.2 T, 1.5 T

- **PERMITTED** spatial gradient field
  - up to 8 T/m (800 G/cm)

- **MAXIMUM PERMITTED** SAR
  - NORMAL OPERATING MODE, i.e. 3.2 W/kg (Head), 2.0 W/kg (Whole-Body)

### PREPARATION

1. **PATIENT ID CARD**
   - Request patient ID card in order to identify the implant type
   - OK

2. **IMPLANT CONDITION**
   - Is the implant mechanically and/or electrically intact?
   - YES → continue
   - NO → STOP

3. **IMPLANTATION STATUS**
   - Has the implant been implanted for at least six months?
   - YES → continue
   - NO → STOP

4. **BONE THICKNESS**
   - Is the bone underneath the implant at least 0.4 mm thick?
   - YES → continue
   - NO → STOP

5. **IMAGE ARTEFACT**
   - Is accurate diagnostic possible even with the expected image artefact?
   - YES → continue
   - NO → STOP

6. **AUDITORY/NON-AUDITORY SENSATIONS**
   - Inform the patient about possible auditory and non-auditory sensations during the examination.
   - NOTE: The likelihood and intensity of auditory and non-auditory sensations can be reduced by selecting sequences with a lower Specific Absorption Rate (SAR) and slower gradient slew rates.
   - OK

7. **HEAD ORIENTATION** (only applicable at 1.5 T)
   - Inform the patient not to tilt their head to either side.
   - OK

8. **EXTERNAL COMPONENTS**
   - Remove audio processor and accessories before entering the scanner room.
   - OK

9. **HEAD BANDAGE**
   - Place a supportive headband over the implant.
   - NOTE: The bandage may be an elastic bandage wrapped tightly around the head for at least three times.
   - OK

### EXECUTION

- **PATIENT POSITIONING** (only applicable at 1.5 T)
   - The patient should be lying in the scanner in a supine, prone or side position with the head kept straight.
   - NOTE: When lower extremities are to be examined, it is recommended that patient's legs are positioned in the scanner first to minimize any risk of weakening the implant magnet.
   - OK

- **OPERATING MODE**
   - Run sequences in "Normal Operating Mode" only.
   - NOTE: max. 3.2 W/kg for Head scans, 2.0 W/kg for Whole-Body scans
   - OK

### Notes

- The external components of the MED-EL Implant System (audio processor and accessories) are MR Unsafe and need to be removed prior to scanning.
- The implant components of the MED-EL Implant System are MR Conditional.

Full MRI Safety Information is available in your "Medical Procedures Manual" and/or on www.medel.com/us/isi-cochlear-implant-systems

Checklist available for download in printout format on www.medel.com/us/isi-cochlear-implant-systems