MRI Checklist for MED-EL CI models

**Mi1200 SYNCHRONY | Mi1200 SYNCHRONY PIN**

If the conditions or instructions herein are NOT followed, **INJURY** to the patient and/or **DAMAGE** to the implant may result!

- **VALID** for all intracochlear electrode variants
- **VALID** for all body regions

In case of additional implants, e.g., a hearing implant in the other ear: MRI safety guidelines for this implant need to be considered in addition.

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### GENERAL CONDITIONS

- **PERMITTED**, static magnetic field strength: 0.2 T, 1.0 T, 1.5 T, 3.0 T
- **MAXIMUM PERMITTED SAR (at 0.2T, 1.0T, 1.5T)**: NORMAL OPERATING MODE
  - 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.

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### PREPARATION

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

- **IMAGE ARTEFACT**
  - Is an accurate diagnosis 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.
  - **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 1.0 T, 1.5 T, 3.0 T)
  - Inform the patient not to tilt their head to either side.

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

- **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.

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

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### 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** (only applicable at 1.0 T, 1.5 T, 3.0 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.

- **OPERATING MODE** (only applicable at 0.2 T, 1.0 T, 1.5 T)
  - Run sequences in "Normal Operating Mode" only.
  - **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:

<table>
<thead>
<tr>
<th>SAR (Head)</th>
<th>SAR (Whole-Body)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6 W/kg</td>
<td>&lt;35 cm from the top of the head</td>
</tr>
<tr>
<td>1.0 W/kg</td>
<td>≥35 cm from the top of the head</td>
</tr>
<tr>
<td>2.0 W/kg</td>
<td>Whole Body</td>
</tr>
</tbody>
</table>

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

**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

If the conditions or instructions herein are NOT followed, INJURY to the patient and/or DAMAGE to the implant may result!

- VALID for all intracochlear electrode variants
- VALID for all body regions

In case of additional implants, e.g., a hearing implant in the other ear: MRI safety guidelines for this implant need to be considered in addition.

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.

GENERAL CONDITIONS

- PERMITTED, static magnetic field strength: 0.2 T, 1.0 T, 1.5 T
- 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
  - OK

- **IMAGE ARTEFACT**
  Is an accurate diagnosis possible even with the expected image artefact?
  - YES → continue
  - NO → STOP
  - OK

- **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

- **HEAD ORIENTATION** (only applicable at 1.0 T, 1.5 T)
  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

- **HEAD BANDAGE** (only applicable at 1.0 T, 1.5 T)
  Place a supportive headband over the implant.
  NOTE: The bandage may be an elastic bandage wrapped tightly around the head at least three times.
  - OK

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** (only applicable at 1.0 T, 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

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+**

If the conditions or instructions herein are NOT followed, INJURY to the patient and/or DAMAGE to the implant may result!

- **VALID** for all electrode variants
- **VALID** for all body regions
- **VALID** for unilateral as well as bilateral implant provision

<table>
<thead>
<tr>
<th>The external components of the MED-EL Implant System (audio processor and accessories) are MRI Unsafe and need to be removed prior to scanning.</th>
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### GENERAL CONDITIONS

- **PERMITTED**, Static Magnetic Field Strength
  - 0.2 T, 1.0 T, 1.5 T
- **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
  - **OK**

- **IMPLANT CONDITION**
  - Is the implant housing mechanically intact? (not fractured or shattered)
  - **YES** → continue
  - **NO** → STOP

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

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

- **IMAGE ARTEFACT**
  - Is an accurate diagnosis 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.
  - **OK**

- **HEAD ORIENTATION** (only applicable at 1.0 T, 1.5 T)
  - 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**

- **HEAD BANDAGE** (only applicable at 1.0 T, 1.5 T)
  - Place a supportive headband over the implant.
  - NOTE: The bandage may be an elastic bandage wrapped tightly around the head at least three times.
  - **OK**

### EXECUTION

- **PATIENT POSITIONING** (only applicable at 1.0 T, 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**

**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.

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