MRI Safety Guidelines for Patients with Vascular Stents (Based on Shellock 2025)

Vascular stents include **carotid stents, coronary stents, aortic aneurysm stent grafts, peripheral vascular stents, intracranial flow-diverting stents, and similar vascular implants**.

To date, **no adverse MRI events have been reported with these stents**, provided standard precautions are followed.

General Rule

As is standard practice, attempt to get all implant/stent information. If information is unable to be obtained, you may proceed as below:

All vascular stents may be scanned safely at **3.0 Tesla or less** when the following conditions are met.

MRI Conditions for Scanning Patients with Stents

- **Static Magnetic Field Strength:**
  - Safe at **≤ 3.0 T**
  - No restriction on field direction or spatial gradient
- **Radiofrequency (RF) Exposure (SAR):**
  - If the stent is **inside the RF transmit region** → keep **whole-body SAR ≤ 2 W/kg** (Normal Operating Mode).
  - If the stent is **completely outside the RF transmit region** → up to **whole-body SAR 4 W/kg** (First Level Controlled Operating Mode) is acceptable.
- **Scan Time:**
  - **Maximum of 15 minutes per sequence**
  - Multiple sequences allowed
- **Number of Stents:**
  - Safe with **single or multiple stents**, including overlapping stents, as long as above conditions are observed.

Policy Requirement

- **Any deviation** from these conditions requires **approval from the MRMD (Dr. Kramer) or a supervising radiologist**.

- Guidelines must be **reviewed annually** to ensure no new stent labeled *MR Unsafe* has been introduced.

Parameter	Guideline Value/condition
Static field strength	≤3 Tesla
Spatial gradient	No restriction
SAR (Whole body)	≤2 W/kg if stent inside RF transmit region (normal mode) ≤4 W/kg if stent outside RF transmit region (first level mode)
Max time per sequence	15 min (multiple allowed)
Policy requirement	Must have written policy. Deviations need MRMD/MRSO approval

Shellock FG. *Guidelines for the Management of Patients with Vascular Stents Referred for MRI Examinations.* Los Angeles, CA: Shellock R & D Services, Inc.; May 2025. Available at: MRIsafety.com