

To: Department of Radiology, University of Wisconsin-Madison, WI From: Ali Pirasteh (Chair of MRI Safety Committee, Chief of MRI); Re: External Pressure Transducers in MRI environment Revision date(s): February 25, 2025; May 01, 2025 Effective date: May 01, 2025



Context: At UW Health, a disposable external transducer is used for pressure monitoring (e.g., atrial lines, external ventricular drains). The vast majority (if not all) of these are Edward Lifesciences TruWave devices (replacing ICU Medical Transpac Pressure Transducer in early 2025). The transducer is in the purple plastic housing. Plastic (MR-Safe) tubing connects the transducer to the patient; the cable connects to monitoring systems. Although the device is labeled as *MR-Conditional*, the conditions set by the manufacturer are restrictive and may be prohibitive of MRIs for patients in need. Of note, the ICU Medical Transpac Pressure Transducer (being phased out of use at UW Health) does not carry recommendations from the manufacturer with respect to MRI safety and has been associated with heating and damage to the device and the patient when scanned inside the scanner bore. This document reviews the MR conditions set by the manufacturer for the Edwards Transducer and provides guidelines for both transducer devices for use in the MRI environment.

MR Conditions based on manufacturer's labeling (available only for the Edwards Lifesciences TruWave device)

- The transducer may **NOT** be connected to monitoring equipment while in the MR room.
- The transducer must be **OUTSIDE** the scanner bore during active scanning.
- The transducer and may **NOT** be in **contact with the patient** during active scanning.

When above conditions are met, patient may be scanned at 3.0T or lower without SAR or time limits.

Modified MR Conditions at UW Health (to be used for both types of devices)

The following two scenarios apply when considering use of the transducer device in the MRI environment:

Scenario 1: The device does **NOT** need to be in use, and it is **NOT** connected to monitoring equipment. In this scenario, the patient undergo MRI based on manufacturer's labeling, as above. When the device is not actively used, it can be anywhere outside the scanner boar; extension tubing may be used per the discretion of the patient's primary team, and must be placed by them. Towels and/or padding can help separate device from patient when needed. Device can be on either side of the bore (toward head or feet). The transducer may be passed through the bore and placed outside the bore on the far side of the magnet from where the patient entered if this helps positioning. The scanner may **NOT** be actively scanning while the device is passing through the scanner bore.

Scenario 2: The device needs to be in use, and hence it is connected to monitoring equipment. Scanning in this mode is discordant with the manufacturer labeling, but many patients need MRI without having the option of going off of monitoring safely. The manufacturer recommendations are based on absence of data in this setting and not based on known harm to the device. The following conditions have been discussed by the MRI safety leadership as a temporary measure aimed to accommodate patients in need of monitoring by this device, and they must be met prior to/during MRI:

- The transducer may be connected to monitoring equipment while in the MRI room as long as (a) the transducer is outside the scanner bore (b) outside/beyond the 300 gauss line, AND (c) the monitoring equipment (to which the transducer is connected) is also outside/beyond the 300 gauss line.
- The transducer and cable may **NOT** be in contact with the patient during active scanning.
- The anesthesia team, or the team responsible for the device, must be monitoring device function at all times to ensure integrity and function. If failure occurs, this team:
 - Must have an actionable plan (e.g., a backup device)
 - If needed, should alert the MRI technologist to stop scanning to bring the patient outside the MRI room and address the device issues as they see fit.

Please direct questions or concerns to Ali Pirasteh, MD (pager 41570, pirasteh@wisc.edu)

References

Edwards TruWwave Pressure Monitoring Kit with TruWave Disposable Pressure Transducer. Instructions for Use; **Document control Numbers:** 10014979002 A, DOC-0070773 A.