

REPLY:

We would like to thank Dr Antonucci and his colleagues for their recent letter regarding our publication, “Pacemakers in MRI for the Neuroradiologist.” We agree with their assessment that there are factors beyond safety that must be considered before implementing a program for imaging patients with non-MR imaging–conditional cardiac implantable electronic devices. Specifically, the Centers for Medicare and Medicaid Services (CMS) currently does not cover MR imaging in patients with these devices. However, we hope that the recent data published through The MagnaSafe Registry (<http://magnasafe.org/>), a framework that has been recently proposed for securing coverage for these studies by CMS and private insurers, and studies such as ours demonstrating that these imaging studies can be performed safely will provide the necessary momentum to get these much-needed services covered in the near future.^{1,2}

Nevertheless, we wish to point out that ultimately, the number of patients with implantable devices who are imaged after going through the comprehensive screening protocol that we use is very low. Currently, we perform approximately 100 pacemaker studies per year of the nearly 50,000 MR neuroimaging examinations that are performed yearly at our hospital. As part of our screening protocol, a radiologist reviews the details of the case and discusses the need for the examination with the ordering physician, including whether an alternative imaging technique could provide a satisfactory answer to the clinical question. This step helps to filter out examinations that may be unnecessary.

Furthermore, while the reimbursement considerations regarding imaging patients with non-MR imaging–conditional devices are important and problematic, it is our belief that there are other factors, including certain intangible benefits, that ought to be considered when deciding whether to develop a protocol to image these patients. We have found that providing this service results in frequent positive feedback from our ordering clinicians

(emergency medicine, neurology, neurosurgery, and primary care) because it aids their clinical decision-making by giving them access to information often not available using other imaging strategies. Offering access to these studies has increased referrals to our institution, which may compensate, to some degree, for the lack of reimbursement for the MR imaging examination itself. For instance, the physicians in our Brain Tumor Institute are now receiving referrals of patients with pacemakers from surrounding areas who require MR imaging and who often also go on to use a wide array of other medical services that our institution can provide as well.

Finally, it is best practice, regardless of cost issues, to provide our patients with the most effective diagnostic examinations needed for their care. It is our hope that our article, “Pacemakers in MRI for the Neuroradiologist” and ensuing discussions on this topic will help provide radiology departments with a framework for developing their own pacemaker imaging programs. The momentum that is building on this topic in the medical community will hopefully lead to reimbursement for these valuable studies in the near future.

REFERENCES

1. Russo RJ, Costa HS, Silva PD, et al. **Assessing the risks associated with MRI in patients with a pacemaker or defibrillator.** *N Engl J Med* 2017; 376:755–64 [CrossRef Medline](#)
2. Kramer DB, Kesselheim AS. **Coverage of magnetic resonance imaging for patients with cardiac devices: improving the coverage with evidence development program.** *JAMA Cardiol* 2017;2:711–12 [CrossRef Medline](#)

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