

RSNA Statement on Gadolinium-Based MR Contrast Agents
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The Radiological Society of North America (RSNA) is committed to excellence in patient care through education and research.

- Radiologists, radiology technologists, radiology nurses and other radiology professionals are committed to conscientious implementation of imaging studies that utilize gadolinium-based contrast agents. Radiologists also apply appropriateness criteria in a variety of ways, including consultation with patients' physicians and other providers who order imaging examinations to guide the patient to the best procedure to address the clinical circumstance.
- Gadolinium-based contrast agents have been used for diagnosis and treatment guidance in more than 100 million patients worldwide over the past 25 years. These agents enhance the quality of MR images by altering the magnetic properties of nearby water molecules in the body. By improving the visibility of specific organs, blood vessels or tissues, contrast agents help physicians diagnose and treat a wide variety of medical conditions.
- Gadolinium-based contrast agents are approved by the FDA for use with MRI to provide improved images of body organs and tissues. Gadolinium-based contrast agents are also used for magnetic resonance angiography (MRA), an imaging procedure used to evaluate blood vessels.
- Gadolinium is a paramagnetic metal ion. Gadolinium-based contrast agents are manufactured by a chelating process, a procedure in which large organic molecules form a stable complex around the gadolinium. The chelate reduces the chances of toxicity that could result from exposure to gadolinium. This stable complex is eliminated predominantly via the kidneys.
- Most gadolinium-based contrast agents are contraindicated in patients with severe acute or chronic renal failure, with a glomerular filtration rate (GFR) < 30, because of the risk of nephrogenic systemic fibrosis (NSF). NSF is a rare but serious systemic disease characterized by fibrosis of the skin and other tissues throughout the body.
- Several preliminary studies have demonstrated the presence of residual gadolinium concentrations in the brains of patients with no history of kidney disease. The clinical significance of this observation is unknown at this time, but warrants attention.
- Patients should not be unnecessarily deprived of crucial, sometimes life-saving medical data from gadolinium contrast-enhanced MRI. At the same time, the potential risk associated with residual gadolinium concentrations in the brain should be taken into consideration. This risk must be weighed against the clinical benefit of the diagnostic information or treatment result that MRI or MRA may provide for each individual patient.
- On September 8, 2017, the Medical Imaging Drugs Advisory Committee (MIDAC) of the FDA recommended adding a warning to labels about gadolinium retention in various organs, including the brain, for gadolinium-based contrast agents (GBCAs) used during MRI. The FDA highlighted several specific patient populations at greater risk, including children and pregnant women. On December 19, 2017, the FDA issued a safety announcement requiring a new class warning and other safety measures for all GBCAs used for MRI. These include requiring a new patient Medication Guide and a requirement for manufacturers of GBCAs to conduct human and animal studies to further assess the safety of these contrast agents. For further information on this and other FDA statements on GBCAs, visit <https://www.fda.gov>.

Through its peer-reviewed journals and education programs, RSNA continually informs radiologists, medical physicists, radiation oncologists and other radiology professionals of the latest technologies and research developments designed to optimize dose and improve patient safety.

The RSNA Scientific Assembly and Annual Meeting, one of the world's largest annual medical meetings, provides a forum for the exhibition of state-of-the-art medical imaging equipment, the presentation of radiologic research findings and the exchange of knowledge in education courses and plenary sessions.

For more than 25 years, RSNA's Research and Education Foundation has sought to improve patient care by providing funding grants and awarding individuals and institutions that advance radiologic research, education and practice.