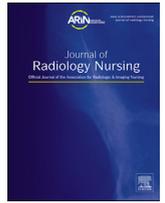




Contents lists available at ScienceDirect

## Journal of Radiology Nursing

journal homepage: [www.sciencedirect.com/journal/journal-of-radiology-nursing](http://www.sciencedirect.com/journal/journal-of-radiology-nursing)



# Incorrect Use of Rubidium Generators Used for PET Imaging Prompts a Reminder From the FDA



Michael C. Talmadge, CHP, DABR \*

Department of Radiation Oncology, Massachusetts General Hospital, Boston, MA

On April 29th, 2019, the FDA issued a statement intended to remind sites that use Rubidium-82 radionuclide generators of the importance of proper elution practices following recently reported incidents in which misuse resulted in medication errors (Anonymous). Rubidium-82 is a short-lived radioactive isotope that is used in myocardial perfusion studies using a PET-CT scanner; however, because the Rubidium has such a short half-life, it must be produced immediately before injection using a radionuclide generator, which contains a much longer-lived “parent” radionuclide that undergoes a nuclear transformation producing the short-lived Rubidium-82. At any point in time, the generator contains quantities of both the “parent” radionuclide (Strontium-82) as well as the “progeny” (Rubidium-82) so an elution process is used in the PET-CT suite to extract the Rubidium-82 from the generator with minimal Strontium contamination to produce a patient injection. Minimizing Strontium contamination, which is often referred to as “breakthrough,” is critical because failure to do so can result in excessive and unnecessary radiation dose to the patient through the deposition of radioactive Strontium in radio-sensitive tissues including the bone marrow. Crucially, the elution must be performed using additive-free 0.9% sodium chloride injection USP to sufficiently minimize Strontium breakthrough. Use

of a solution with additives, calcium in particular, can produce significant Strontium breakthrough. Although these generators are provided with correct instructions and labeling in terms of elution procedures, the FDA has indicated that there have been several recent events in which improper elution procedures produced substantial Strontium breakthrough resulting in excessive radiation exposure to patients.

Specifically, users are asked to ensure that only additive-free 0.9% sodium chloride injection USP is used to elute Rubidium generators and immediately discontinue using any generator that was eluted with the incorrect solution. Furthermore, if a patient is injected with an improperly prepared dose, they should be evaluated to attempt to determine the magnitude of the excess radiation exposure and monitored for any ill-effects from this exposure, notably bone marrow/immune suppression.

### Reference

Anonymous. Retrieved from <https://www.fda.gov/drugs/drug-safety-and-availability/fda-reminds-imaging-facilities-follow-safety-procedures-rubidium-82-generators-used-positron>. Accessed June 20, 2019.

No conflicts to report pertaining to this topic.

\* Corresponding author: Michael C. Talmadge, Massachusetts General Hospital, 294 Arlington Street, Acton, MA 01720.

E-mail address: [mtalmadge1@gmail.com](mailto:mtalmadge1@gmail.com).

<https://doi.org/10.1016/j.jradnu.2019.06.005>

1546-0843/\$36.00/© 2019 Association for Radiologic & Imaging Nursing. Published by Elsevier Inc. All rights reserved.