Overexposed Patients Incident

Scenario

In separate incidents, two people in your community were crossing a U.S. border when radiation detectors detected gamma radiation emanating from them. The two were patients at _____ ***(medical facility name),*** *where they underwent positron emission tomography (PET) myocardial perfusion imaging scans. The scans were conducted on the patients 2 and 4 months earlier, respectively.*

The PET scan device uses a strontium (Sr)-82 generator to produce a rubidium (Rb)-82 radiotracer injection. The radiation emanating from one patient was found to be from strontium (Sr)-82. The radiation emanating from the second patient was found to be Sr-82 and Sr-85. Because Rb-82's half-life is 75 seconds and because both patients reported that they had no other exposure to a radioactive substance, health physicists think the residual radiation is likely due to an undetected strontium breakthrough.

According to a report on the incident, "The radiation exposure that a patient would typically receive from an injection of Rb-82 chloride (approximately 2.8 mSv) is generally less than that associated with other radiotracer cardiac diagnostic scans. The radiation exposure that the two patients received due to strontium isotope exposure appears to substantially exceed exposures typically associated with the PET scan device. This assessment is based on modeling performed by the Los Alamos National Laboratory. This modeling suggests that the excessive radiation exposure (approximately 90 mSv) associated with the strontium isotopes appears similar to the amount of cumulative radiation exposure some patients receive during cardiac diagnostic evaluations with other radionuclides."

The FDA believes it is "unlikely that this excessive exposure posed significant risks to patients, though exposure to any excessive radiation is undesirable."

While the investigation of these two incidents was underway, a third international traveler who was treated at _____ ***(medical facility name)*** *set off radiation detectors at a border crossing.*

Currently, the total number of patients who have received doses from the PET scan device is unknown.

Artificialities and Assumptions

The following artificialities and assumptions have been identified for the purposes of the scenario:

1. *Your community has a medical center with PET myocardial perfusion imaging scan technology.*
2. *The authors picked this scenario as an example. Such a scenario could involve other radionuclides and medical imaging procedures.*

3. *The national news media is reporting on the incidents, which is making people in the community nervous.*

Key Issues

- Patient and staff health and safety
- Public information needs
- Hospital public relations concerns

Real-Life and Exercise Scenario Examples

FDA: Stop Using CardioGen-82 Due to Increased Radiation Exposure

IMPORTANT SAFETY INFORMATION: Disseminate to all health care professionals at your facility who perform or supervise PET imaging with CardioGen-82 (Rubidium Rb 82 Generator)

CardioGen-82 Information