

Number of days up to which patients might trigger radiation alarms after receiving radioisotopes

Radionuclide	No of days
Fluoride-18	1
Technetium-99m	3
Iodine-123	3
Indium-111	14
Gallium-67	30
Thallium-201	30
Iodine-131	95

In the first report (1986), two patients tried to enter the White House for a public tour four days after exercise stress testing with a thallium scan. They set off the radiation alarm and were detained till the cause of the security breach was established.<sup>3</sup>

In 1988, the day after having a thallium stress test, a 65 year old patient went to his bank to examine the contents of his safety box. The security alarm sounded when he entered the bank vault. He continued to set off the alarm on subsequent visits to the vault until the ninth day after his thallium stress test.<sup>4</sup>

In 2004, 25 days after having been treated with 150 MBq of radioiodine for toxic multinodular goitre, a 76 year old man set off the radiation alarm at Vienna international airport and was investigated thoroughly. After this, a radiation protection certificate was designed and given to patients receiving radionuclide treatment in Vienna, so that similar problems could be avoided.<sup>2</sup>

In 2004, two days after having a thallium-201 (<sup>201</sup>Tl) myocardial perfusion scan, a 55 year old pilot triggered the radiation detector alarms while travelling as a crew member to Moscow. After extensive investigations, he was released later that day. Four days later he set off the security alarm again at the same airport and was again detained but later released. He was then given a card by airport security that explained that the thallium scan was likely to set off alarms.<sup>5</sup>

When Zuckier et al studied the sensitivity of some security radiation detectors, they found that after receiving radioisotopes, patients might trigger radiation alarms for up to a varying number of days depending on the radioisotope.<sup>6</sup> The table shows that patients receiving <sup>131</sup>I, for example, may trigger the alarm for a substantial period of time (up to 95 days) because of the long half life of the isotope.<sup>6</sup>

Since the case of our patient described above, our nuclear medicine department has added the following statement to the radionuclide card given to patients: "Airport alarms may be triggered for up to 12 weeks after receiving your therapy dose."

Airports worldwide are deploying more sensitive radiation detection systems, and one would therefore expect more such cases unless we take the responsibility of forewarning our patients. Hence, we felt that it was important to dissipate this information in the hope that this will prevent further unnecessary harassment and embarrassment to patients.

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## A memorable patient

### Passing time

He had been an active farm labourer until his admission to hospital in his late 70s. He was tall (though when I met him he was no longer strong enough to stand) and, by all accounts, had had an impressive physique at admission. His elective admission had been with a colovesical fistula, a complication of diverticular disease. Unfortunately, he had had a troubled postoperative course which lasted many months. After the initial repair there had been an anastomotic leak with subsequent peritonitis, and he required a defunctioning ileostomy. Things became worse when he developed an enteric fistula to the wound and another from proximal to distal small bowel.

The cascade continued as his nutrition deteriorated. His weight chart showed a dramatic U-shaped curve—catabolic losses initially and now increasing fluid retention owing to his gross oedema. He picked up several infections, and his wounds never healed. He was not well enough for further intervention. Total parenteral nutrition failed on two occasions after line infections, and, as I'm sure you can imagine, peripheral access was by now impossible. Thankfully, careful nursing meant he was spared the added insult of bedsores.

Throughout his ordeal, however, he remained dignified—his eyes truly sparkled, he always smiled, and he thanked staff for the most simple of duties that he could no longer do for himself. He seemed genuinely to look forward to our daily chat and review. I, unfortunately, was starting to dread my ward round. He was dying slowly, and watching this happen was unbearable. It seemed even worse that there was nothing I could do for him: I could not hoist him, turn him, or feed him, and I could not prescribe him analgesia as he was not in pain. I felt I was failing him. All I could do was talk to him on my round, when he would ask about my girlfriend, my family, and my work. We said goodbye when I moved to another hospital.

Shortly after he died I received a parcel from his family. It contained a cigar (we had talked about my elective to Cuba) and a set of wine glasses for my first house that I was buying. It reminds me that, while our practices are increasingly audited and rationalised, some of our most important efforts remain far less tangible.

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