 Report from a French incident**Exposure of a medical radiographer while assisting a patient (dorsolumbar radiography)****Description of the incident**

An operator in a radiology department is preparing to carry out a dorsolumbar radiography on a hospitalized patient. Prior to bringing the patient in, she positioned the table vertically, with the tube horizontally aligned at pelvis height. She then went out to retrieve the bed-ridden patient, brought the bed as close to the foot rest as possible and helped the patient to position himself.

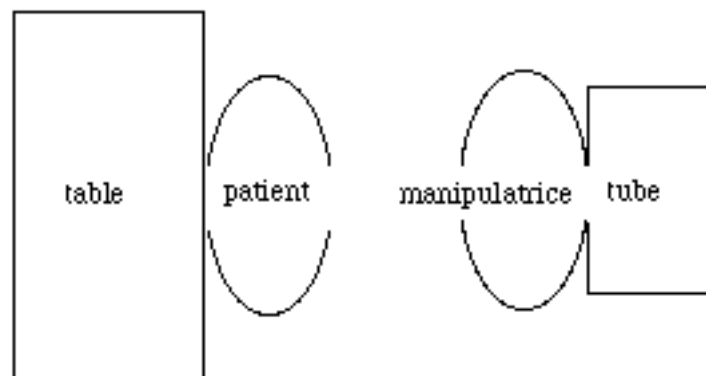


Table = Table

Patient = Patient

Manipulatrice = Operator

Tube = Tube

Top view

After ensuring that the patient was properly set up, the operator went back to the console and then realized that the patient was visible on radioscopy screen even though the operator was not stepping on the radioscopy exposure pedal. Hence, the operator had been in the direct field of the beam the whole time she was helping the patient to get settled (as is depicted by the diagram). The operator then stepped on the radioscopy pedal and the beam stopped after she removed her foot.

Radiological consequences

The dosimeter recorded a dose of 0.06 mSv. But, this dosimeter was located at chest height on the opposite side to the X-ray tube. As a first approximation, the recorded dose was considered to be less than 1/1000th of the dose due in the primary radiation beam.

The regulatory authorities undertook an estimate of the dose likely to have been received during this incident. For an abdominal-pelvic exposure of one minute and 50 seconds in a direct X-ray beam (110 kV, 3mA), the dose received is 50 mSv. This value corresponds to a dose to the skin of 254 mGy taking into account a distance of 50 cm from the source and considering that the irradiation was carried out in a continuous fixed position at the level of the pelvis.

Lessons to be learned from the incident

The immediate cause of the incident was the stuck exposure pedal. It is clearly not a fail-to-safety device, and should be subject to routine inspection and maintenance. Furthermore, the possibility of having a dual command system (hand/foot; hand/hand) to initiate an exposure should be considered.

A radiographic machine is not intended to operate continuously; it would therefore be desirable to have an integral timer, which would stop X-ray emission at the end of a predefined time.

Warning signals (audible or visible) should operate when the radiography equipment is in operation.