

Information Notice

Medical Devices

CT Imaging of Patients reliant on Electronic Medical Devices



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ISSUE

Routine imaging procedures such as Computed Tomography (CT) are often required for patients who use electronic medical devices such as infusion pumps, cardiac implantable electronic devices (eg. ICDs and pacemakers), and neurostimulators. In general, CT can be performed without adversely affecting the performance of a patient's electronic device.

A small number of recent safety incidents have been reported in the USA however whereby CT may have affected the function of patient's electronic medical devices. The likelihood of occurrence is related to degree of radiation exposure. Electronic interference can occur when there is direct exposure of the circuitry of certain implantable / wearable medical devices to the CT beam. This phenomenon is newly described and precise data pertaining to threshold doses of radiation exposure or safe limits are not yet available. The probability that CT interference can cause clinically significant adverse events is extremely low and certain precautions can help minimise risk.

The HRA would like to emphasise that CT continues to be a valuable diagnostic tool and the presence of the devices mentioned above should not preclude CT imaging where medically indicated. CT continues to be the safer option for patients with devices of unknown magnetic resonance imaging (MRI) safety status.

RECOMMENDATIONS

The HPRA would like to advise that:

- 1 Healthcare professionals check and record if patients have any implantable or wearable electronic devices in advance of CT imaging, so that imaging can be planned appropriately.
- 2 Devices be moved/excluded from the CT beam and/or programmed appropriately for the duration of scanning. Refer to advice and recommendations issued by the electronic device manufacturer. Any changes made to the device settings should be done by a suitably trained person.
- 3 CT radiographs (i.e. scouts or localiser views) be used to identify device location relative to the programmed scan range. CT radiograph scans have not been associated with x-ray interference with electronic medical devices.
- 4 Direct x-ray exposure to the electronics of devices be minimised by lowering the dose and dose delivery rate as far as possible. Extra care is required when imaging with high doses (for example gated CT scanning).
- 5 Where imaging involves directly scanning over the electronics of a device for more than several seconds, there should be additional care and careful monitoring of the device during and after the procedure.
- 6 Electronic devices be checked at the earliest possible opportunity, and where possible on site, to ensure they are working correctly following CT imaging.
- 7 A scan be terminated if the patient experiences adverse symptoms.
- 8 Any device related issues be reported to the HPRA.

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