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## **Governance of electrical installations where medical devices are used**

Medical Device Safety is now assured and generally addressed by IEC60601. However, mains powered medical devices need to be supplied by a mains electrical system that ensures any single fault condition does not put the patient at risk.

What is the problem? An electrical safety group should exist that brings together the power electrical installers or designers with clinical staff other than estates. The guidance that is in place for medical locations is not clear and this presentation explains the process that should exist with every new medical location or device replacement such as a new scanner. If the governance process is not followed, patient risks will not be fully minimized.

What are the risks?

1. Voltages on the protective earth may exist if the location is not wired correctly – solution - The protective earth system should be radially connected to one earth point in the room and include supplementary connection points for device potential equalizer leads and every medical IT socket earth should also have a radial conductor.
2. Risk of disconnection – this is resolved by the use of Medical IT supplies.
3. Risk of mains failure: fit UPS.

The system Ian now teaches involves a simplified flowchart process which is discussed in the presentation as well as a quick verification system. A crucial element is knowing when an area or room becomes a medical location.

Ian has also developed a set of questions that electrical installers should ask the clinical team which is easy to follow once the electricians understand the requirements.

Ian has also developed a set of specific definitions which help to explain this radical approach to new installations. This approach can save the hospital significant costs on ensuring the location is installed correctly.

### **Recent Publications**

1. Hospital heroes: being a biomedical engineer during COVID-19
2. Bioengineering Technology in Context of COVID-19 Pandemic: Potential Roles and Applications
3. Biomedical Engineers: The hidden heroes of the COVID-19 crisis

### **Biography**

Ian Chell was an x-ray engineer with Siemens Medical for over 20 years where he obtained his MSc in Medical Electronics and Physics at St Barts. Medical School, London. He then moved to the UK Medical Device Regulator (where he re-wrote the original UK guidance for medical installations) and was then promoted into Central Government Department of Health as Policy Lead for Radiations where he became a fellow of the society for Radiation Protection. He retired early from Government and now has his own training venture, Medical Locations, and is a visiting lecturer at Birmingham City University. He is also a registered UK electrical safety expert and has recently been advising the police and the local Coroner on an issue with a medical location.

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