

Lessons learnt in building a research capability for proton therapy; informing the design of a future Ion Therapy Research facility

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In April 2019 a meeting was held in Birmingham to discuss a future Ion Therapy Research Facility (ITRF). This meeting brought together a multidisciplinary audience including clinicians, clinical scientists, and academic scientists and engineers from across the life and physical sciences. Policy makers and funders also attended the meeting. The meeting agreed a consensus document and roadmap for the ITRF which was published in 2020 and this forms the basis of the ITRF which is being discussed with UKRI.

In Manchester we have practical experience of designing a research capability for ion therapy research. When the NHS clinical proton therapy centre was designed in Manchester the fourth gantry space was set aside so that research capability could be integrated alongside the three clinical treatment gantries. The Christie Charity raised over £5.4M to build and equip this proton therapy research room.

The research room was designed to investigate the key scientific and technological challenges that confront proton therapy and to provide a route for translating research innovations into the clinic for patient benefit. The research room was designed to emulate the clinical delivery of proton beams.

This talk follows the building and commissioning of the proton therapy research room and the challenges encountered during the Covid-19 pandemic. It then goes on to highlight some of our latest results (including experiments conducted under ultra-high dose rate (FLASH)). It also talks about the latest innovations in the research room and how these are being developed to give world leading capabilities. It also demonstrates how working in partnership with clinical colleagues, the research is contributing to new innovations and clinical trials.

Presenter: KIRKBY, Karen (University of Manchester)