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Accelerating Innovation: Strategies for Translating Medical Physics Research into the Clinic

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Hospital based medical physicists are uniquely positioned at the interface between fundamental research and direct patient benefit. Translating innovations from academia and industry into the hospital setting, however, presents both opportunities and challenges. Translational pathways typically involve the progression of prototypes through feasibility testing, clinical trials, and eventual commercialisation. At each stage, challenges emerge. Ethics and governance approvals can significantly delay studies, while questions of intellectual property (IP) ownership between universities, hospitals, and industry partners often require lengthy negotiation. This presentation will draw on examples of translational research at St. George Hospital Cancer Care Centre within the medical physics group. From these experiences, key recommendations can be made, focussing on early engagement: when academic groups, hospitals, and potential industry partners establish clear frameworks for collaboration at the outset, both time and uncertainty can be reduced.

Our research team has developed several strategies can help overcome these barriers. Early pre-submission ethics consultation, can streamline approval timelines. Standardised IP frameworks and early negotiations on scope and ownership reduce uncertainty and conflict between partners. Engaging hospital-based medical physicists and clinicians at the earliest stages of research ensures user-centred design, improving both clinical relevance and commercial potential. More broadly, formalised partnerships across academic, clinical, and industrial sectors, supported by shared infrastructure and joint appointments, can provide the continuity needed to move innovations efficiently along the translation pathway.

Looking ahead, building stronger and more integrated collaborations will be essential for maximising the impact of medical physics research. By aligning scientific innovation with practical implementation, the physics community can accelerate the delivery of new technologies to patients and ensure that breakthroughs in the laboratory translate into meaningful clinical outcomes.

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