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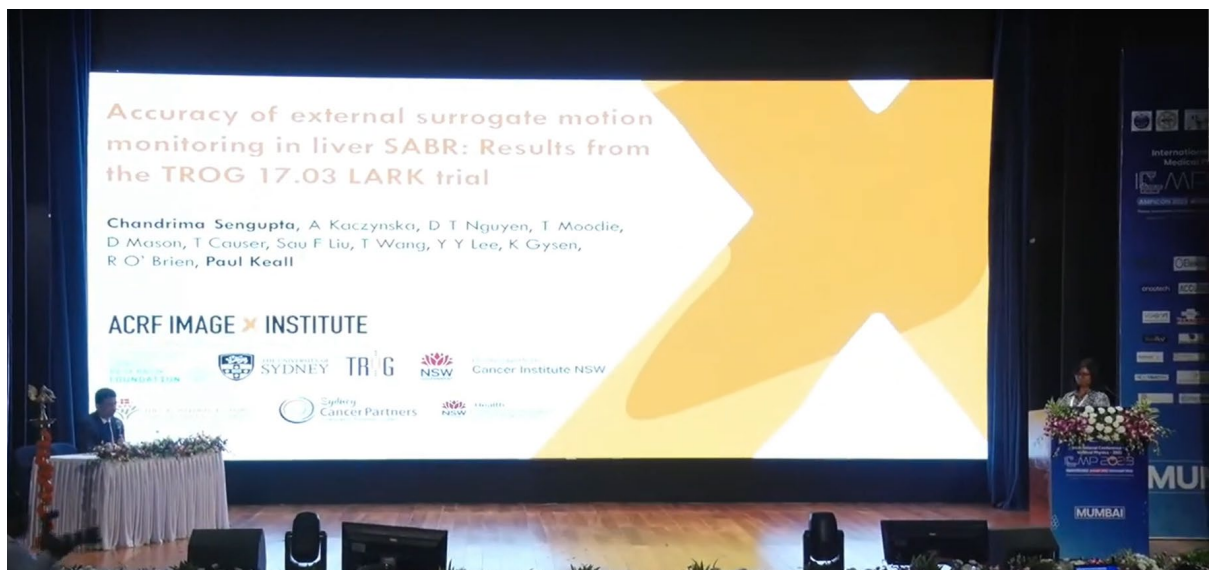
**Full Reference:** Chandrima Sengupta, Doan T Nguyen, Trevor Moodie, Alicja Kaczynska, Daniel Mason, Trent Causer, Sau F Liu, Tim Wang, Yoo Y Lee, Kirsten V Gysen, R O' Brien, Paul J Keall.  
*Internal motion monitoring improves treatment accuracy for liver SABR: Results from the TROG 17.03 LARK trial*

**Conference/Meeting Name:** International Conference on Medical Physics 2023

**Location:** Mumbai, Maharashtra, India

**Dates:** 6-9 December, 2023

**Presentation Type:** Oral presentation



Picture taken during my oral presentation acknowledging, my team, collaborators and funding bodies including Sydney Cancer Partners, Cancer Institute NSW and Cancer Australia.

The International Conference on Medical Physics (ICMP) is the 25<sup>th</sup> International Conference of International Organization for Medical Physics, attended by over 1000 attendees including medical physicists, radiation oncologists and researchers from all over the world. The conference covered different aspects of physics in medicine including current and future technologies of medical imaging and radiation therapy. A number of renowned experts presented lectures on the most up-to-date topics of interest in the field of medical physics, radiation technology, radiation oncology, medical imaging and associated radiation safety. The participants had the unique opportunity to take advantage of the formal and informal discussions with the experts.

This year the conference's theme was Innovations in Radiation Technology and Medical Physics for Better Healthcare, particularly focussing on automation in radiation therapy. The invited talks, discussion sessions and debates focussed on the importance of automation and machine learning applications in radiation therapy that enables faster treatment workflow while reducing human workload and the occurrences of human errors.

I presented my work on implementation of a novel liver tumour motion monitoring device on standard radiotherapy equipment in the TROG 17.03 LARK clinical trial and comparison of the outcomes with standard-of-care treatment. My talk highlighted the key challenges in this field and need for precise

motion monitoring devices. Attending this conference allowed me to engage with experts in the motion monitoring field, discuss the importance of this work and further indications of advancement of this technology. In this context, the commercially available online adaptive methods were discussed and the advantages of using my technology over these methods were discussed during this session. The technology I discussed in this work can be implemented on any standard radiotherapy devices, and a number of medical physicists and head of medical physics expressed their interests to use this technology in the near future at their centers. This opened up new possibilities to expand our research and implement our technology in the Asia-Pacific region, outside Australia. I met a number of students from different institutes in India who expressed their interests in pursuing a PhD and postdoctoral work with us at Image X. These connections will enable us to collaborate with medical physics departments in India.

A session was focussed on particle therapy research and clinical research performed at Hadron Therapy Centres in India, Japan, USA and Singapore. This session provided valuable information on challenges faced in a proton therapy centre, particularly related to motion management and highlighted some of the research indications in this field. This session was useful in providing new research ideas and possible collaboration with particle therapy centres. Other than motion management, the topics of interest in this conference were nuclear imaging, advances in radiosurgery, adaptive radiotherapy, role of genomics and artificial intelligence. A debate session was particularly interesting "Will AI replace medical physicists?", in which the conclusion was "AI will replace those medical physicists who won't be familiar with AI".

The conference also had a session on sustainable healthcare implementation and support in health care, patient care and gender biases in medical physics. The speakers discussed the current status in countries in Europe, Asia-Oceania and the USA, challenges faced and improvements in the system needed to overcome these difficulties. One key message was that by implementing automation in medical physics, many of these issues can be overcome.

Over the course of four days, I came to meet a number of colleagues from India, met some of the world leaders including American Association of Physics Elected president Dr M Mahesh, Asia-Oceania Federation of organization for Medical Physics President Dr Eva Bezak and students from India and Bangladesh who are keen to work with us in the future. The meeting served as a reminder of the importance of face-to-face meetings over online meetings and engagement, collaboration and discussions that are only possible when face-to-face meetings are arranged. I came back with new ideas and research plans.