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Patient-specific, AI-based cardiac modelling for radiotherapy risk assessment

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The NSW cancer conference marked a return to in-person meetings for cancer researchers, clinicians and consumers. Alongside an interesting and broad range of scientific content, this meeting provided opportunities to connect with colleagues, discuss the latest developments in cancer research, and participate in workshops. For me personally, the opportunity to present my work provided the chance to develop new professional relationships based on common interests. My area of research includes computational modelling of the heart, and after my presentation a small group of researchers and radiation oncologists had a fruitful discussion of potential translation of the tools I have been working on to an exciting new treatment option for cardiac arrhythmias (radioablation). These new contacts were all from different institutes, and being able to discuss ideas at the NSW cancer conference provided a foundation on which I hope to build ongoing collaborations.

Another highlight was the inclusion of cancer consumers in the program, and in particular the workshop. Involving consumers is critical in research, and this workshop was a great opportunity to learn about how to practically engage with consumers and involve them in meaningful ways. I also really enjoyed hearing the stories the consumers had, which helped me understand and appreciate the real world impact that cancer research can have. It was also useful to be provided with information about the organisations that cancer consumers work for, advice about getting started with building relationships, and the role consumers have in research (a lot!).

A unique benefit of NSW cancer conference is the breadth of topics in cancer research ranging from genomics to epidemiology, and from psychology to radiotherapy. It was fantastic to catch up on recent developments in these different areas, which provided a great deal of benefit to my professional development as it is extremely important to maintain awareness of the current “hot topics” in different fields to identify opportunities to bridge gaps between research areas and to share information and tools. Further, such a range of topics presents a chance to learn interesting facts! I’ll conclude this report with a selection of some of these:

- Adapting cone beam CT imaging to patient breathing patterns can simultaneously improve image quality and reduce radiation dose by 85%.
- For people who had COVID-19, those who were cancer patients had a 66% higher risk of death relative to the healthy (non-cancer) population.
- Africa is the most genetically diverse continent, which has important implications for cancer treatment.
- Microgravity research has led to the development of new pharmaceuticals for the treatment of osteoporosis.
- In the next 25 years, there will be approximately 4.6 million cancer cases in Australia, and 1.5 million cancer deaths.