Creating a Multidisciplinary Research Programme in Cardio-Oncology, AI, and Health Care

Steve Franklin*

Department of Biomedical Science, McMaster University, Hamilton, Canada

Abstract

To construct a research group focused on utilizing artificial intelligence and bioinformatics for cardio-oncology patients, a multi-institutional multidisciplinary team was formed. Cardio-oncology is a new medical discipline devoted to the prevention, detection, and management of cancer/cancer therapy-related adverse cardiovascular consequences. In cancer survivors, cardiovascular disease is the primary cause of death. These patients have a higher cardiovascular risk than the overall population. However, predicting and preventing unfavorable cardiovascular events in those who have had cancer or have had cancer therapy is difficult. As a result, it was deemed critical to form an interdisciplinary team to develop cardiovascular risk assessment health care decision aids for oncology patients that could be integrated into electronic health records.

Keywords

Oncology, AI, Health Care, Deep Learning

Correspondence to:

Steve Franklin,
Department of Biomedical Science,
McMaster University,
Hamilton, Canada
Email: franklin.s@mmu.edu

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1. Introduction

A team can be defined as a group of people with complementary abilities who are dedicated to a common purpose, set of performance objectives, and approach to which they hold each other accountable. Although this term was created by organizational professionals to define workgroups in the corporate world, it is also applicable to interdisciplinary healthcare teams, including research teams. An American Heart Association Scientific Statement, for example, argues for an interdisciplinary team approach to enhance scientific findings [1].

How can an interdisciplinary multi-institutional team be formed to chart a path for the application of deep learning in cardio-oncology? How can an interdisciplinary multi-institutional team be formed to encompass a variety of expertise and include diverse individuals at various stages of training and career? How can team science be used in conjunction with informatics and a learning health system to anticipate and improve the optimal care and management for cancer survivors who are at risk for cardiovascular events? A learning healthcare system uses scientific knowledge in clinical treatment while also extracting insights from that care to stimulate innovation in healthcare delivery and inspire new research fields [2].

What else should an interdisciplinary team in this situation look like? Who should be a part of the squad? What is the best way to structure the team and why? To develop and optimize collaboration, how should team members from different disciplines communicate? Should there be a single large team or multiple smaller teams? What is the benefit of collaborating across disciplines and institutions?

Is there value in a diversity of perspectives, leveraging a variety of training backgrounds and current practise methods and patterns, sharing experiences across organizations, pooling rather than comparing diagnosis cohorts, testing and validating algorithms, or sharing ideas that could work across institutions rather than focusing on just one? While the solutions to some of these questionnaires may seem self-evident, success in forming interdisciplinary teams to develop and implement projects aimed at promoting equity, improving risk stratification, preventing adverse cardiovascular events, and improving health outcomes for cancer survivors will be contingent on a thorough and unflinching examination of such questions, as well as the sometimes difficult or non-obvious actions necessary to overcome the obstacles they suggest. Why are these questions necessary in the context of cardio-oncology? Cardio-oncology is an interdisciplinary field that brings together physicians, advanced practice providers, pharmacists, and trainees from a variety of fields, including cardiology, hematology, medical oncology, radiation and surgical oncology, radiology, and pharmacy. A multidisciplinary research team is necessary to study this complicated cohort, just as an interdisciplinary team is required for cardio-oncology patient treatment. With over lakh fatalities per year, heart disease is the top cause of mortality in the United States, closely followed by cancer [3].

In fact, coronary heart disease is the second largest cause of death among cancer survivors, after only cancer recurrence or secondary cancer growth. Every year, almost 2 million new cancer diagnoses and over 6 lakh new cancer deaths are estimated. Nearly 17 million Americans are cancer survivors today, with the number anticipated to rise to more than 20 million by 2030. African Americans have been found to have greater incidence of cardiovascular disease than Caucasians among cancer survivors, a gap linked to socioeconomic inequality. In southern Wisconsin, health disparities among African Americans are particularly noteworthy (SE WI). Milwaukee is a major metropolis in the core of SE Wisconsin, with significant health and social inequities [4].

Ai systems, bioinformatics, and learning healthcare systems are relatively newer tools in cardio-oncology that have the potential to improve patient treatment when used in the context of team science. An interdisciplinary team of data scientists, clinicians, and patient advocates must be formed and evolve to operate seamlessly within a learning healthcare system environment in order to achieve optimal success in creating an informatics-rich environment for the benefit of patients in cardio-oncology. Approaching this process with less variety or precision would be a poor choice for cardio-future. oncology‘s The process of forming a well-functioning interdisciplinary research team that spans institutions is described in this article, as well as the team‘s initial results and output [5].

2. Conclusion

The initial findings from the epidemiological cohort, as well as the lessons learnt through forming this team, are presented. To build a multi-institutional interdisciplinary collaboration for cardio-oncology health informatics research, barriers have been knocked down. The team collaborated to develop a database of cancer survivors, which gives preliminary information on cardiovascular outcomes and comorbidities in this cohort.

3. References

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