

VIEWPOINT

Cardio-Oncology and Health Equity

Opportunities for Implementation



Michelle N. Johnson, MD, MPH

Cardio-oncology exists at the intersection of cardiovascular disease and cancer, which are disciplines plagued by inequities in health outcomes driven by social determinants of health. Health equity not only achieves better health outcomes but also reduces the overall cost of health care. In cardio-oncology, health inequities have been identified by the presence of structural barriers, access to services, prevalence of risk factors, and representation in clinical trials.^{1,2} Efforts to bridge these gaps require us to recognize the major root causes of societal imbalances, including systemic racism and social inequality. These factors affect various stages of the health care continuum, all of which affect patient outcomes. Cardio-oncology should tackle these issues by applying lessons learned from implementation science and quality initiatives studied in other fields. Analysis of these initiatives can identify opportunities and strategies to move from evidence to practice, bridge existing gaps, and prevent the formation of disparities as an unintended consequence of systems of care delivery.³

ACCESS TO CARDIO-ONCOLOGY CARE

Basic access to cardio-oncology subspecialty care has been identified as a possible system-level inequity.¹ Historically, cardio-oncology specialists are clustered geographically at academic and tertiary care centers, with recent inroads into safety-net hospitals and community-based practices.⁴ The world of advanced heart failure presents a model for how

subspecialized care can support frontline practitioners. This model requires basic cardio-oncology care and management as a competency for frontline providers, advanced practice practitioners, internists, and primary care providers. Therefore, medical training should also include general cardio-oncology risk factor modification, management during cancer treatment, and survivorship care. When practitioners need to access more sophisticated knowledge in cardio-oncology, they should be able to consult with or refer to cardio-oncology specialists. Professional cardio-oncology societies and academic centers need an implementation framework to broadly disseminate cardio-oncology knowledge and best practices. More academic-public partnerships should build cardio-oncology capacity in places providing care for the underserved and under-resourced.

Telemedicine platforms can now deliver services to underserved remote communities, thus addressing geographic limitations to cardio-oncology subspecialists and survivorship care. Although not a panacea, telemedicine provides direct patient care and broadens the array of options for consultative review between treating physicians and consultative specialists. As the economic viability of such efforts is shaped by insurance coverage, the cardio-oncology community must support calls for continued coverage for patients where geography functions as a barrier to accessing cardio-oncology care.

CARDIOTOXICITY: RISK AND TREATMENT

Cardiovascular comorbidities contribute to disparate cardio-oncologic outcomes.⁵ Optimization of cardiovascular comorbidities prior to engagement in and during cancer care is crucial to mitigating risk. Prompt treatment of cardiotoxicity can affect overall cancer and cardiovascular outcomes.⁶

Artificial intelligence can help identify individuals who are at the highest risk for cardiotoxicity. Through

From the Cardiology Service, Division of Subspecialty Medicine, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, New York, USA.

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early intervention, disease management teams can ensure optimal risk factor modification, trigger early referrals to cardio-oncology specialists to avoid treatment interruptions, and increase the likelihood of eligibility for optimal cancer care. Through artificial intelligence, data on social determinants of health can help cardio-oncology researchers inform their research questions, selection of partners, and intervention approaches. Clinical teams can use established basic survey questions to better understand social risks.⁷ If these data are gathered at the first point of contact, it would allow clinicians to design more personalized recommendations tailored to patients' lived experiences, housing, education, and financial resources. Treatment algorithms that require multiple in-person visits or repeated imaging result in lost income: missing days of work, additional transportation, day care costs, and multiple copays. There are data showing substantial risk for financial toxicity among patients receiving treatment for both cancer and cardiovascular disease. Financial toxicity can contribute to poorer outcomes, loss of follow-up, patient stress, and inequities.⁸

Cardio-oncology practice guidelines need to be designed bearing in mind the costs to patients and the health care system. Organizations and providers can use social determinants of health to inform their population health approaches that meet the diverse needs of cardio-oncology patients, including those in active treatment and survivors. Algorithms can play a crucial role in identifying vulnerable patients and providing interventions that minimize financial impact.

We can draw important lessons for cardio-oncology from strategies used to manage hypertension. These are particularly applicable because multiple cancer therapies may lead to hypertension, which if uncontrolled increases the chance of poor outcomes. Hence the importance of implementation strategies that increase compliance to proven regimens.⁹ Such strategies include targeting medicine reconciliation and technological applications that monitor adherence to medical regimens. System-based quality improvement processes, such as case management and the use of patient registries, can have an impact. Provider-focused interventions, including performance audit and feedback and the use of clinical reminders, can be applied.¹⁰ Clinical trials on enhancing provider communication skills and increasing patient engagement and adherence have shown improved rates of treatment to goal.¹¹ Clinical trials have shown improvement with home blood pressure telemonitoring with pharmacist management.¹² Patient education along with the promotion of self-

management, using reminders, and the incorporation of patient-centered devices have been successful in hypertension control and could be of important value in cardio-oncology.

Implementation research in hypertension has shown reduction of disparities through interdisciplinary collaborations at every point in care delivery. Cardio-oncology could build on the successful model of Black barbershops and pharmacists engaged to control blood pressure. Multitiered efforts that target both patients and clinicians and both communities and health care systems are more likely to have a sustainable impact.^{9,13} Particularly in under-resourced populations, interventions that leverage a team-based approach, as well as a quality improvement component, are more effective than standard of care for blood pressure control.^{9,14}

SURVIVORSHIP: ADDRESSING GAPS

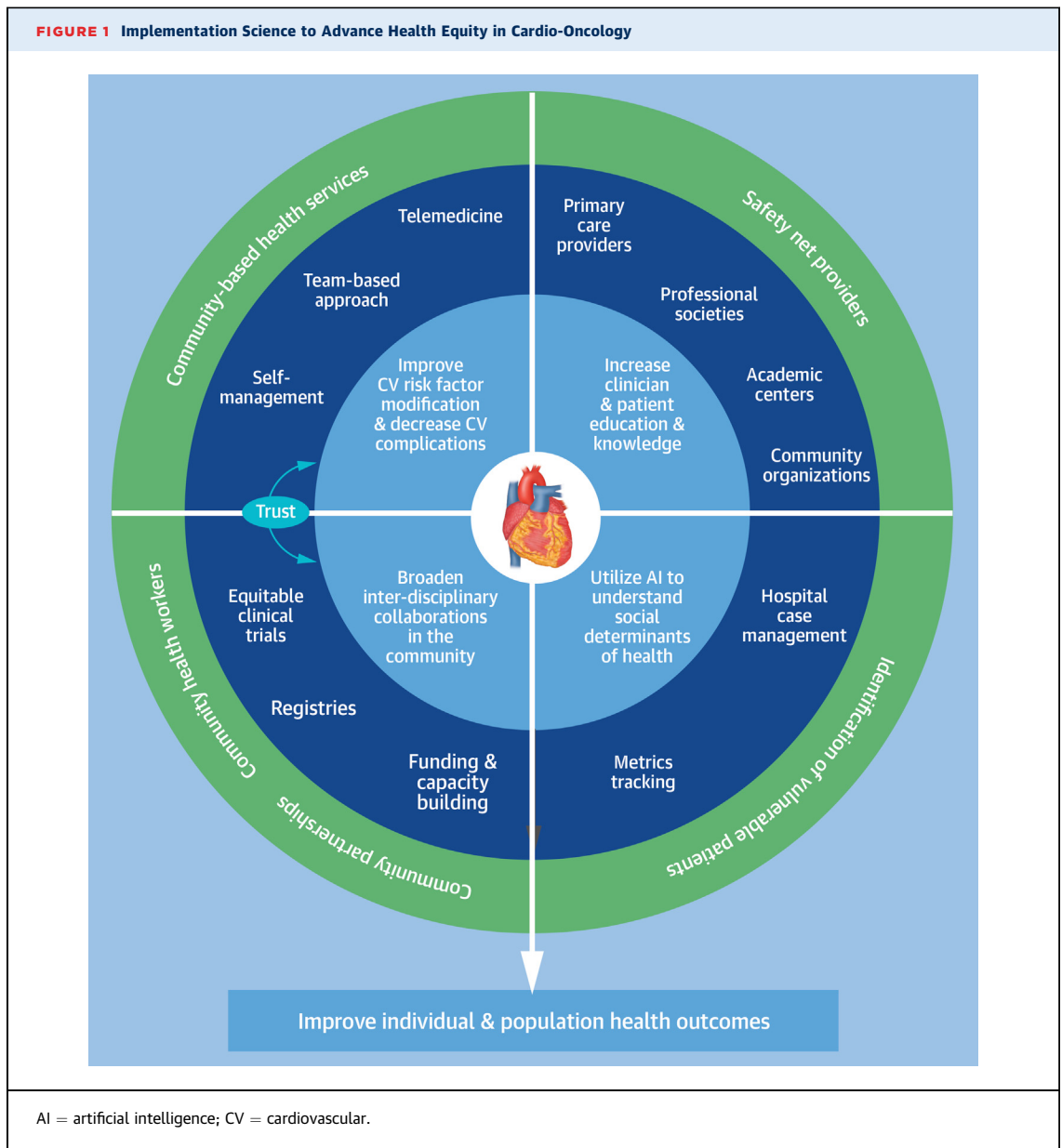
These strategies have applications for patients with active cancer and are also of particular importance for cancer survivors, who are known to be at increased risk for cardiovascular disease and for whom risk factor control is crucial. There are significant gaps in care delivery among cancer survivors. Recent work raises the possible application of artificial intelligence-enhanced electrocardiographic algorithms to screen for reduced ejection fraction.¹⁵ Such applications could help address cardio-oncologic need for screening and surveillance in under-resourced communities.

Implementation science suggests that gaps could be addressed by engaging the support of community health workers.¹⁶ These health advocates perform outreach, help patients with self-management goals, assist in the navigation of health care, and connect patients to other follow-up services.

PROCESS MEASURES

Implementation science has shown that engaging patients, frontline providers, and staff members as stakeholders produces tailored approaches that are both scalable and sustainable.¹⁷ Thus, cardio-oncology efforts must involve both patients and clinicians and make systemwide, team-based adjustments. Health systems, professional organizations, and grant funders must be allies in supporting community-based participatory interventions, as such alliances have the greatest impact on health outcomes (Figure 1).

Standardization of consensus practice guidelines in cardio-oncology presents an opportunity to embed equity in quality measures of care. Unless equity is



defined a priori as a goal, quality efforts do not guarantee that we will see more equitable care. Internal measures of control assurance, such as equity dashboards, must include patient outcomes based on race, ethnicity, language, insurance type, and socioeconomic status. Metrics tracking delays in treatment implementation, interruptions of care, and access to preferred medications can uncover potential systemic barriers and allow iterative corrections and solutions.¹⁴ Analyses of who gets referred to cardio-oncology specialists should be

performed to ensure equitable access by diagnosis code. Similar analyses could be applied to patients with cancer to ensure equitable access to cardiac specialists by diagnosis code, insurance type, language, and presentation.

RESEARCH OPPORTUNITIES

Representation of diverse patients in cardio-oncology research trials continues to be an area of inequity.¹ Efforts, such as the recently launched American

Heart Association-based Cardio-Oncology Strategically Focused Research Networks will help address such gaps. Underenrollment of patients from diverse backgrounds hampers researchers' ability to identify factors that disproportionately affect specific subpopulations.

Diverse representation in clinical trials, computational genomics, and population science is critical, particularly for those cancers that have a disproportionate impact on historically marginalized communities. Successful efforts in diversifying trial participation rely heavily on participatory implementation science, its bedrock being collaborative partnerships among communities, safety-net hospitals, and academic centers. Such partnerships cannot exist without including patients and addressing patient trust. Recruitment efforts have been most successful when there are established lines of trust fostered over years of community engagement and responsiveness to community identified areas of concern.

Building a team capable of learning from one another requires developing trusting relationships between scientists, clinicians, patients, caregivers, and other stakeholders. Research teams should look to include community representatives and leaders early in the study process, and implementation science should be part of the initial planning strategies.

Cardio-oncology teams need a framework for the dissemination, implementation, and translation of their research. Cardio-oncology also needs cross-disciplinary input from clinicians, patients, scientists, social scientists, and health equity scholars to define, operationalize, and measure health equity in cardiac outcomes in the cancer domain. Therefore, research teams need training in cultural competency, implicit bias, and cultural humility. Then, results of clinical trials can be returned to the community with means to implement pertinent findings. Funders should continue to support capacity through cross-disciplinary collaboration on joint cardio-oncology research teams.

WORKFORCE DEVELOPMENT

To achieve real equity in cardio-oncology, we need a well-educated, diverse clinical and research workforce. It is increasingly recognized that diverse teams are more productive and innovative. Recruitment efforts should include attention given to holistic review of candidates to better identify diverse talent.

Cardio-oncology can support clinicians and scientists from diverse backgrounds by expanding collaborations with minority-serving institutions (eg, historically Black colleges and universities and Hispanic-serving institutions), thus contributing meaningfully to developing the pipeline. Grant funding that supports and recognizes efforts to engage and build capacity in minority-serving institutions needs to be encouraged. There are easy means of creating opportunities for exposure through electives, sabbaticals, fellowships, and online educational efforts. In summary, there is much to be done in cardio-oncology toward achieving the goals of health equity. Collaborations and lessons learned from other disciplines provide real opportunities for cardio-oncology.

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ADDRESS FOR CORRESPONDENCE: Dr Michelle N. Johnson, Memorial Sloan Kettering Cancer Center, Department of Medicine, Division of Subspecialty Medicine, Cardiology Service, 1275 York Avenue, New York, New York 10065, USA. E-mail: johnsom1@mskcc.org.

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