

Cancer in populations of African Ancestry: studies of the African Caribbean Cancer Consortium

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Among all non-communicable diseases, cancer is the second cause of death worldwide. Although some cancers are preventable [1–3] and treatable and even curable, cancer remains the most common cause of death among populations of African Ancestry worldwide [4, 5]. Despite the availability of effective: (1) low-cost early screening techniques for some cancers such as cervical, colon, and prostate and (2) vaccines for 11–26-year-old boys and girls to prevent HPV infection—efforts to address US and global cancer prevention and control in populations of African Ancestry remain a challenge [6–10]. To begin to document this public health crisis in the Caribbean, Latin America, and Africa, the scientific scope of this Special Issue spans molecular epidemiology, prevention, screening, and treatment of cancer in populations of African Ancestry. The studies represent the ongoing research of members of an international collaborative consortium: the African Caribbean Cancer Consortium (AC3) [11–14]. AC3 is supported by the Epidemiology and Genomics Research Program (EGRP) in NCI's Division of Cancer Control and Population Sciences (DCCPS). Over the

past 10 years, the AC3 has built a network of collaborations that is multidisciplinary including Epidemiology, Medicine, Molecular biology, Genetics/Genomics, Behavioral Science, Community Health Science, Cancer Registration, and Advocacy. The goal being to promote collaboration to address cancer in the African Diaspora. Of the 83 collaborative papers to date, the major scientific themes include cancer surveillance (20%), genetics/genomics (16%), HPV studies (18%), cancer screening (11%), and the remaining include review articles, social and behavioral research, basic science, and other biomarker research. By geographic region, published work generated from our research involve primarily US–Caribbean collaborations and to a lesser extent US–Caribbean–Africa collaborations.

Screening and cancer control, trends of cancer incidence and mortality

Cancer prevention and control lies in the realm of both improving screening facilities with timely access and efficient reporting as well as behavioral science to increase screening utilization, adherence to medical care, and enhanced prevention practices including HPV vaccine uptake via community engagement. In the United States, cancer incidence and mortality rates for most cancers are declining, even for African Americans (with the exception of breast cancer in African American women) [15] and is likely attributed to improvements in cancer control programs and screening rates for certain cancers. However, the disparity in incidence and mortality remains, and higher rates are still observed for African Americans in comparison to other US racial/ethnic groups [16]. In contrast, the burden of cancer is rising in Sub-Saharan Africa and cancer control programs, resources for treatment, and early detection of cancer are

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not sufficient to address this need [17]. In this Special Issue, cancer control programs were examined by Franklin et al. for countries that comprise the Caribbean community (CARICOM), (i.e., Caribbean islands and Caribbean countries located on the Latin American continent where more than 80% of populations are of African Descent). Similar to Sub-Saharan African countries, cancer control programs in the Caribbean are at different stages of development and are not adequately addressing the high mortality rates observed in these African-descent populations. This is also underscored by Thomas-Purcell et al. who reports a similar perspective from in-depth interviews of gatekeepers responsible for cancer prevention and cancer care services. The merits of the PAP test in cervical cancer care are undisputable and while much controversy remains to benefits of screening test campaigns in both breast and prostate cancers, the benefits of cancer awareness and positive health-seeking behaviors cannot be ignored. These successes are yet to be duplicated in populations of African ancestry, even in the developed countries. Lack of awareness of cancer risk factors and positive health-seeking remain a constant theme. Addressing these social determinants of health is not insurmountable. Low-cost screening programs with voluntarism and advocacy can action the social determinants of health to close the health equity gap.

Treatment outcomes

Many new and improved treatment modalities have emerged in the PSA era aligned with the increasing incidence of prostate cancer. Unfortunately, for many low-resource countries, these are prohibitive. Where these advanced treatments are available, however, it is incumbent on the health care providers to show that the outcomes match international standards and even in the face of low volume facilities. Equally, low-resource countries must meet the challenges to define local treatment that reflects local cultural practices and their possible benefits. We are forever reminded of the many major drug discoveries that were rooted in local herbal medicinal practices.

Access and availability of cancer treatment continue to be a key contributor to the disproportionate burden of cancer in populations of African Ancestry. Delays in the time from diagnosis to cancer treatment is a key factor attributing to lower survival rates [18, 19]. In this Special Issue, Jones et al. report for the first time examinations of waiting time from diagnosis to cancer treatment in the Bahamas and shows improvements for cervical cancer from 78 to 65 days over the decade 2006–2016. In the same setting, when accounting for risk-stratification, prostate cancer outcomes for Caribbean men diagnosed in the Bahamas with non-metastatic cancer were comparable in treatment and had similar

outcomes to developed countries. The article suggests that at least for prostate cancer, the poor survival rates observed in Black men from the Caribbean may be improved with standardization or comparable treatment strategies. There is a need for further research that more carefully examines treatment and patient outcomes in these populations in order to improve and optimize the delivery of cancer treatment in these populations.

Cancer risk factors

Cancer care is expensive. The need to apply the adage that an ounce of prevention is worth a pound of cure has never been more applicable. National strategic objectives in populations of African ancestry must be driven by the need for disease prevention and wherever and whenever possible, to early detection and treatment. Vaccination for cervical cancer provides the promise of bypassing the expensive path of treating clinical disease, which in developing countries translates to advance disease care, the most expensive presentation. To recoup these benefits of early detection and prevention, there is a need to delineate the biomarkers that truly reflect the disease variant in populations of African Ancestry, in all cancers.

Established risk factors that contribute to the disproportionate burden of cancer in African Diaspora populations have been documented in the literature. The majority of studies suggest that this disparity is primarily attributed to low socioeconomic status and poor access or utilization of cancer screening and treatment. A focus on biological contribution to cancer disparities has been less studied. Here in this Special Issue, Bassey-Archibong et al. suggest implications of African ancestry in the development of triple-negative breast cancer. Kaiso, a biomarker known to be correlated with aggressiveness of triple-negative breast cancer was examined in breast cancer tissues from Caucasian, African American, Caribbean, and African women. This US–Caribbean–Africa comparison shows higher expression of Kaiso in the women of African descent in comparison to Caucasian women. Thus, another example that supports the biological underpinnings of cancer disparities. More research focused on comparative studies between populations of African ancestry is needed.

Summary

The AC3 contributors to this Special Issue present scientific achievements and milestones in collaborative cancer research. Articles span topics in areas of screening and cancer control, cancer surveillance (trends in incidence and mortality), treatment outcomes, and cancer risk factors

in the African Diaspora. As editors, we underscore the undue burden of cancer among peoples of the African Diaspora. People of African Ancestry living in the US and Europe have the highest overall cancer incidence and mortality compared to other racial/ethnic groups [16]. Similarly, people of African ancestry in the Caribbean and Latin American experience some of the highest cancer incidence and mortality worldwide [20, 21]. Additionally, Africans in Africa suffer the greatest cancer-related mortality in the world [20, 22]. Emerging evidence suggests multilevel factors associated with poorer outcomes including genetics, inherited precocious oncogenes, epigenetics, environmental carcinogen, and behavioral factors. Newer studies are now pointing to the oncogenic role of society including poverty, marginalized social status, and health-care systems and providers including disparate access to and quality of care.

Yet, we are hopeful that this Special Issue will attract much needed attention to the cancer plight of peoples of African ancestry. Addressing the African ancestry oncogenic phenomenon—more aggressive with successful metastatic features—may provide novel keys to the cancer cure for all. Our AC3 leaders have identified practical research opportunities including use of mobile technology, the urgency of primary prevention practices including healthful, plant-based eating, reducing sugars and animal fats, and uptake of HBV and HPV vaccines.

Many Caribbean and African nations have yet to establish national cancer registries. The dictum that you can't manage what you can't measure is the proverbial message in reporting national cancer incidences and mortalities in these regions. The articles in this Special Issue identify the need to document occurrence, treatment, and outcomes to provide reliable data and direct targeted interventions; national as opposed to hospital-based cancer registries remains a major hurdle. In some instances, the ethnicity reflect low prevalence and possibly different cancer biology. In low-resource countries, prudence is paramount and data accuracy cannot be overemphasized.

Clearly, more global industry/private and government/public partnership funding are required. Also critically important is the training and grooming of researchers who are well prepared with access to adequate facilities to conduct rigorous science, clinicians who provide the best available timely treatments delivered with care, policy makers who will take up the call for population health and quality care, and advocates readied to lead in creating and protecting healthy communities. The disparate cancer landscape of the African Diaspora warrants urgent scientific studies with actionable, translational deliverables into clinical and community practice. This action to solution approach necessitates increased, team science with clinicians, policy makers, and advocate-engaged collaborations.

In the new millennium, cancer has emerged as a leading cause of mortality and morbidity in Low Middle Income countries (LMIC), particularly in countries with populations that are predominantly of African descent. The major advances in curbing the disease burden attained through screening, health prevention and promotion, screening, diagnosis, and treatment have eluded most LMIC and technological advances. AC3 has embraced the WHO challenge to curb the high cancer burden by closing the health inequity gap through action on pertinent and relevant social determinants of health. Through our collaborative bench research and population-based initiatives, AC3 seeks to define our genetic risk factors, better the awareness and educational programs, and with emphasis on earlier detection and treatment, improve the health experience and outcomes in our populations of African ancestry. In the first 10 years of our existence, we defined our values and mission and we established and fortified our linkages. This supplement highlights our accomplishments. Thanks to funding from the NIH and the partnerships that AC3 has cemented at the national, regional and national levels, we look forward to advance the health of people of African ancestry in the next decade, and with great optimism.

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