The Essential Role of Public Health in Preventing Disease, Prolonging Life, and Promoting Health of Cancer Survivors

Natasha D. Buchanan, PhD¹, Keisha A. Houston, DrPH¹, and Lisa C. Richardson, MD, MPH²

¹Division of Cancer Prevention and Control, Epidemiology and Applied Research Branch, CDC, Atlanta, Georgia
²Division of Cancer Prevention and Control, Office of the Director, CDC, Atlanta, Georgia

Cancer Survivorship as an Area of Public Health Importance

Public health’s longstanding mission has been to “prevent disease, prolong life, and promote health” through organized efforts across societies, organizations, communities, and individuals.¹ The public health community has worked to achieve this mission of combating both infectious and chronic disease through research and surveillance, public health programs, health communication activities, and policy and system changes. Cancer survivorship serves as an example of the dynamic work of the public health community in addressing this issue.

In the U.S., 14.5 million men, women, and children were estimated to be living after a cancer diagnosis (cancer survivors) in 2014.² Cancer survivors routinely face physical, psychosocial, neurocognitive, spiritual, and financial challenges. The public health community has an essential role in addressing the needs of survivors and is uniquely positioned to intervene through prevention of recurrences, second cancers, and the side effects or consequences of cancer treatment to improve quality of life for each survivor.

CDC’s Work in Cancer Survivorship

CDC is the Federal government’s lead public health agency, which for more than a decade has employed an interdisciplinary public health approach to examine and address survivors’ needs. CDC and its survivorship workgroup have conducted research, surveillance, and programmatic work aimed at improving the experiences of survivors, their family members, friends, and caregivers across the cancer continuum.

In 2004, CDC co-sponsored, with LiveStrong, the development of “A National Action Plan for Cancer Survivorship (NAPCS): Advancing Public Health Strategies.”³ The NAPCS, designed with feedback from nearly 100 experts in cancer survivorship, clearly outlined goals, activities, and priorities for addressing the needs and issues faced by cancer survivors in the U.S. CDC continues to collaborate with national organizations, states, tribes,
territories, and Pacific Island jurisdictions to address “priority needs” cited in the NAPCS.

4–6

CDC has also addressed issues faced by cancer survivors through documentaries, museum exhibits, and national campaigns. The powerful stories of cancer survivors have been shared through the agency’s support of the award-winning production, “A Lion in the House,”7,8 and the acclaimed CDC museum exhibit, “Cancer Survivors in Focus,”9 which continues to be shown as a traveling exhibit. Awareness and education campaigns10 have also shared stories from survivors pertaining to hereditary breast cancer, breast cancer risk, family history of cancer, and breast health to educate future generations of young women at risk for early onset breast cancer.

CDC’s ongoing surveillance activities continue to contribute to population-based descriptions of the health and treatment experiences of survivors in the U.S. CDC supports state and territorial cancer registries to collect and maintain high quality data through the National Program of Cancer Registries.11 Along with the National Cancer Institute’s Surveillance, Epidemiology, and End Results data, CDC’s National Program of Cancer Registries is used to collect Federal government statistics for cancer incidence, along with data on initial treatment. These data provide baseline data on cancer survivors for local comprehensive cancer control programs as well as informing applied research activities.

CDC has worked with several governmental partners to create new surveys and add questions to existing surveys to collect information that describes survivors’ needs and life experiences including the Behavioral Risk Factor Surveillance System,12 National Health Interview Survey,13 and the “Experience with Cancer Survivorship Supplement” on the Medical Expenditure Panel Survey.14

CDC-led publications (e.g., book chapters, journal supplements, Morbidity and Mortality Weekly Reports) have also brought awareness and action related to topics including, but not limited to the health status, behaviors, and quality of life of cancer survivors; economic burden of survivorship; the uptake and utilization of cancer survivorship care plans; adherence to cancer-specific, long-term follow-up guidelines; health equity; estimating infertility among survivors; genetics; and psychosocial concerns facing survivors.15–23 CDC has also leveraged inter- and intra-agency partnerships to create venues for dissemination of information (i.e., co-sponsoring and planning conferences,24 previous supplement issues25). Publication findings have also been used to shape research agendas, provide technical assistance to grantees and their networks, and outline opportunities for innovative approaches26 to addressing the needs of cancer survivors.

CDC’s partnerships with national organizations, state health agencies, and other key groups are essential in the development, implementation, and promotion of effective cancer control practices related to cancer survivorship. CDC’s funded work and collaboration with key partners has led to the development and implementation of comprehensive cancer control plans27 utilized by states, tribes and tribal organizations, territories and Pacific Island jurisdictions, and their partners to identify and act on public health priorities such as cancer survivorship. CDC’s support of the National Cancer Survivorship Resource Center28 also

Am J Prev Med. Author manuscript; available in PMC 2018 August 03.
led to the development and distribution of a broad range of cancer survivorship informational materials addressing healthy behaviors to reduce late and long-term effects of cancer and its treatment and improve care and screening practices to detect cancer recurrence.

**Supplement Overview and Corresponding Articles**

The current supplement, “Addressing Cancer Survivorship Through Public Health Research, Surveillance, and Programs” offers a collection of articles highlighting CDC’s recent public health-focused research, surveillance, and programmatic work directed at cancer survivors. Articles in this volume represent a collection of work conducted by CDC and its national, state, and local partners and showcase public health approaches to improving service delivery and use of quality clinical services; addressing mental and physical healthcare needs and access to programs and interventions; increasing secondary prevention of behavioral and clinical concerns; evaluating health professional- and survivor-focused educational and resource initiatives; and providing support to those who require additional information and education regarding genetic testing, psychosocial care, and reproductive care.

To further illustrate the role of public health in cancer survivorship, Moore and colleagues describe how CDC adapted the social ecological model, as a guide for implementing strategies across systematic and societal levels as outlined in the NAPCS. Smith et al. then take a closer look at approaches to addressing health disparities and the needs of underserved and under-resourced cancer survivors. In this supplement, other authors explore the use of quality clinical services and healthcare expenses for cancer survivors. Hall and Smith examine decision making for prostate cancer treatment and promotion of active surveillance as a treatment option. Guy and colleagues examine the burden of out-of-pocket healthcare expenses for cancer survivors and Underwood et al. examine the impact of activities implemented by five CDC-supported national comprehensive cancer control grantees. Two other manuscripts examine the mental and physical healthcare needs of young breast cancer survivors. Buchanan and colleagues explore neurocognitive impairment after receiving chemotherapy and adjuvant treatment, while also examining factors associated with provider discussion and receipt of treatment for neurocognitive concerns. Johnson-Turbes et al. present findings from an evaluation of two national organization’s efforts to provide psychosocial and reproductive health support to young African American breast cancer survivors.

This supplement also contains three articles focused on increasing health behaviors that will lower the risk of new and secondary cancers among colorectal cancer survivors. Hawkins and colleagues describes colorectal cancer survivors’ awareness of U.S. Department of Agriculture dietary recommendations, current eating habits, and barriers to following recommended dietary patterns. Rodriguez and colleagues also report on the impact of being physically active on health-related quality of life among long-term colorectal cancer survivors. An article by Ryerson et al. describes innovative uses of the National Program of Cancer Registries infrastructure and data for comparative effectiveness and patient-centered outcomes research as a recruitment source for survivorship research studies and
behavioral interventions, as well as for the collection, consolidation, and dissemination of treatment summaries for cancer survivors and their providers. Finally, the supplement concludes with a paper by White and colleagues\(^{39}\) highlighting findings from all articles included in this supplement from the perspective of future needs and opportunities for public health work in cancer survivorship.

This collection of articles provides an overview of CDC’s recent research, surveillance, and programmatic activities over the past decade to identify and address the needs of cancer survivors in the context of public health. As the nation’s lead prevention agency, CDC will continue to work with a variety of partners to improve the lives of cancer survivors and their families.

**Acknowledgments**

Publication of this article was supported by the Centers for Disease Control and Prevention, Division of Cancer Prevention and Control.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of CDC.

No financial disclosures were reported by the authors of this paper.

**References**

1. Winslow CE. The untilled fields of public health. Science. 1920;51 (1306):23–33. 10.1126/science.51.1306.23.17838891
2. National Cancer Institute. Estimated number of cancer survivors in the U.S 2014 cancercontrol.cancer.gov/ocs/statistics/statistics.html Accessed August 17, 2015.
3. CDC, Lance Armstrong Foundation. A National Action Plan for Cancer Survivorship: advancing public health strategies. 2004 www.cdc.gov/cancer/survivorship/pdf/plan.pdf Accessed April 13, 2015.
4. CDC. The National Action Plan for Cancer Survivorship. 2014 www.cdc.gov/cancer/survivorship/what_cdc_is_doing/action_plan.htm Accessed August 21, 2015.
5. Fairley TL, Pollack LA, Moore AR, Smith JL. Addressing cancer survivorship through public health: an update from the Centers for Disease Control and Prevention. J Womens Health (Larchmt). 2009;18 (10):1525–1531. 10.1089/jwh.2009.1666.19788367
6. Smith JL, Pollack LA, Rodriguez JL, et al. Assessment of the status of a National Action Plan for Cancer Survivorship in the USA. J Cancer Surviv 2013;7(3):425–438. 10.1007/s11764-013-0276-8.23609522
7. A Lion in the House. 2006 lioninthehouse.com/ Accessed August 21, 2015.
8. Abrash B, American University School of Communication School of Social Media. A Lion in the House: a content-centered outreach strategy for public broadcasting. 2006 www.cmsimpact.org/sites/default/files/documents/pages/Lion.pdf Accessed August 21, 2015.
9. CDC. Cancer survivors in focus. 2013 www.cdc.gov/museum/exhibits/cancer.html Accessed August 21, 2015.
10. CDC. Breast cancer in young women. 2014 www.cdc.gov/cancer/breast/young_women/index.htm Accessed August 21, 2015.
11. CDC. National Program of Cancer Registries. 2015 www.cdc.gov/cancer/npcr/ Accessed August 21, 2015.
12. CDC. Behavioral Risk Factor Surveillance System. 2015 www.cdc.gov/brfss/ Accessed August 21, 2015.
13. CDC. National Health Interview Survey. 2015 www.cdc.gov/nchs/nhis.htm Accessed August 21, 2015.
14. CDC. Medical Expenditures Panel Survey (MEPS) experiences with cancer survivorship supplement. 2014 www.cdc.gov/cancer/survivorship/what_cdc_is_doing/meps.htm Accessed August 21, 2015.

15. CDC. Cancer research. 2014 www.cdc.gov/cancer/dcpc/research/index.htm Accessed August 21, 2015.

16. Underwood JM, Townsend JS, Stewart SL, et al. Surveillance of demographic characteristics and health behaviors among adult cancer survivors-Behavioral Risk Factor Surveillance System, United States, 2009. MMWR Surveill Summ 2012;61(1):1–23.

17. Pollack LA, Hawkins NA, Peaker B, Buchanan N, Risendal BC. Dissemination and translation: a frontier for cancer survivorship research. Cancer Epidemiol Biomarkers Prev 2011;20(10):2093–2098. 10.1158/1055-9965.EPI-11-0652.21980017

18. Buchanan N, Hawkins NA, Pollack L. Personalized approach to cancer survivorship In: Lester J, Holmes J, eds. Cancer Rehabilitation and Survivorship: Transdisciplinary Approaches to Personalized Care. Philadelphia, PA: Oncology Nursing Society, 2011.

19. Ekwueme DU, Yabroff KR, Guy GP, et al. Medical costs and productivity losses of cancer survivors—United States, 2008–2011. MMWR Morb Mortal Wkly Rep 2014;63(23):505–510.24918485

20. Guy GP, Yabroff KR, Ekwueme DU, et al. Estimating the health and economic burden of cancer among those diagnosed as adolescents and young adults. Health Aff (Millwood). 2014;33(6):1024–1031. 10.1377/hlthaff.2013.1425.24889952

21. Roland KB, Rodriguez JL, Patterson JR, Trivers KF. A literature review of the social and psychological needs of ovarian cancer survivors. Psychooncology. 2013;22(11):2408–2418. 10.1002/pon.3322.23760742

22. Buchanan ND, King JB, Rodriguez JL, et al. Changes among U.S. cancer survivors: comparing demographic, diagnostic, and health care findings from the 1992 and 2010 National Health Interview Surveys. ISRN Oncol 2013 Article ID 238017, 9 pages 10.1155/2013/238017.

23. Trivers KF, Fink AK, Partridge AH, et al. Estimates of young breast cancer survivors at risk for infertility in the U.S. Oncologist. 2014;19(8):814–822. 10.1634/theoncologist.2014-0016.24951610

24. CDC. Cancer survivorship research conference. 2014 www.cdc.gov/cancer/survivorship/what_cdc_is_doing/conference.htm Accessed August 21, 2015.

25. Cancer survivorship research: mapping the new challenges. Atlanta Georgia, Supplement to Cancer. Cancer. 2009;115(Suppl 18):i–ii. 10.1002/cncr.24645.

26. Sisters Network, Inc. Young Sisters Initiative: a guide to a better you! 2012 sniyoungsisters.org/ Accessed August 21, 2015.

27. CDC. Comprehensive cancer control plans. 2014 www.cdc.gov/cancer/ncccp/ccc_plans.htm Accessed August 21, 2015.

28. American Cancer Society. National Cancer Survivorship Resource Center. 2015 www.cancer.org/treatment/survivorshipduringandaftertreatment/nationalcancersurvivorshipresourcetcenter/index Accessed August 21, 2015.

29. Moore AR, Buchanan ND, Fairley TL, Smith JL. Public health action model for cancer survivorship. Am J Prev Med 2015;49(6S5):S470–S476.26590641

30. Smith JL, Hall IJ. Advancing health equity in cancer survivorship: opportunities for public health. Am J Prev Med 2015;49(6S5):S477–S482.26590642

31. Hall IJ, Smith JL. Evolution of a CDC public health research agenda for low risk prostate cancer. Am J Prev Med 2015;49(6S5):S483–S488.26590643

32. Guy GP, Yabroff KB, Ekwueme DU, et al. Healthcare expenditure burden among nonelderly cancer survivors, 2008–2012. Am J Prev Med 2015;49(6S5):S489–S497.26590644

33. Underwood JM, Lakhani N, Finifrock D, et al. Evidence-based cancer survivorship activities for comprehensive cancer control. Am J Prev Med 2015;49(6S5):S536–S542.26590649

34. Buchanan ND, Dasari S, Rodriguez JL, et al. Post-treatment neurocognition and psychosocial care among breast cancer survivors. Am J Prev Med 2015;49(6S5):S498–S508.26590645
35. Johnson-Turbes A, Schluter D, Moore AR, Buchanan ND, Fairley TL. Evaluation of a web-based program for African American young breast cancer survivors. Am J Prev Med 2015;49(6S5):S543–S549.26590650

36. Hawkins NA, Berkowitz Z, Rodriguez JL. Awareness of dietary and alcohol guidelines among colorectal cancer survivors. Am J Prev Med 2015;49(6S5):S509–S517.26590646

37. Rodriguez JL, Hawkins NA, Berkowitz Z, Li C. Factors associated with health-related quality of life among colorectal cancer survivors. Am J Prev Med 2015;49(6S5):S518–S527.26590647

38. Ryerson AB, Eheman C, Styles T, Rycroft R, Snyder C. Connecting the dots: linking the National Program of Cancer Registries and the needs of survivors and clinicians. Am J Prev Med 2015;49(6S5):S528–S535.26590648

39. White MC, Hayes NS, Richardson LC. Public health’s future role in cancer survivorship. Am J Prev Med. 2015;49(6S5):S550–S553.26590651