

### Setting the Stage: Advancing a Cancer Prevention Agenda for Young Adults



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#### SETTING THE STAGE

The Cancer Breakthroughs 2020 program (formerly Cancer Moonshots 2020), one of the most comprehensive cancer collaborative initiatives launched to date, has received international attention for its aim to accelerate the fight against cancer.<sup>1</sup> This audacious goal is creating opportunities for creative worldwide collaborative efforts across scientific disciplines, the harnessing and sharing of big data, and research to expedite the development of vaccine-based immunotherapy to combat cancer.

Complementary to this endeavor is the need to pursue opportunities for primary cancer prevention, to keep people healthy and cancer free. The growing impact of cancer, both in the U.S. and globally, and the prevalence of modifiable cancer risk factors represent a window of opportunity to reduce cancer incidence at the population level.<sup>2</sup> A comprehensive approach to cancer prevention considers the multiple and complex causal factors operating at different points in the life course.<sup>3,4</sup> This approach also requires focusing on specific risk factors and the social determinants of health that contribute to the development of cancer and other preventable diseases.<sup>5</sup>

The papers in this special issue of the *American Journal of Preventive Medicine* examine the evidence linking factors in early adulthood, covering a broad continuum of ages ranging from 18 to 44 years, to subsequent cancer risk and opportunities for putting that evidence into public health practice. The papers reflect a range of cancer types from breast to skin cancer, as well as health behaviors, chronic conditions, and inflammation that have been shown to increase cancer risk. Building upon previous work focused on other phases of life,<sup>6</sup> these papers consider a variety of factors during young adulthood that may influence subsequent cancer risk. These include risks that may be uniquely faced by this age group, as well as opportunities for early intervention.<sup>7</sup> Also, these papers place cancer risk within the framework of social drivers of health, including social and behavioral factors. Together, the researchers highlight contextual factors (e.g., the role of disparities in communities), programs, and policies that shape the type of environment in which

individual decisions are made.<sup>8</sup> For example, research has ascertained how targeted marketing of cancer-causing products, such as tobacco and alcohol, and social inequalities in access to preventive healthcare services, contribute to the environmental context of cancer risk.

#### THE UNIQUE ASPECTS OF YOUNG ADULTS

A nuanced understanding of early adulthood and factors that place this age group at particular risk offers insights on how to avoid the cascade of longer-term negative health consequences as this population ages. Such understanding is based upon available scientific evidence regarding patterns in cancer-related health behaviors and chronic health conditions and effective, tailored interventions, as highlighted in the brief report by White et al.<sup>9</sup> The challenge for knowledge translation is the gap in existing evidence for the specific types of programs, services, and policies that are implemented. An age-focused review of this emerging field also reveals other knowledge gaps, such as the uneven inclusion of specific groups of young adults (e.g., racial, ethnic, and sexual minorities) in previous research.

Sociobehavioral mechanisms also influence the onset of cancer both during and following young adulthood. Similar to a complex mosaic, different contexts and opportunities for early intervention exist, ranging from community settings and recreational spaces (including bars and tanning salons) to worksites and the healthcare system. For example, although not all young people seek healthcare consistently, McKnight-Eily and colleagues<sup>10</sup> examine the low level of alcohol screening by healthcare providers among those who do. The authors offer

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strategies for improving the content of primary care delivery so that young adults receive the alcohol screening and brief intervention they need, given the high prevalence of alcohol use among young adults.<sup>9</sup> This is particularly relevant in light of the estimates of Ekwueme et al.<sup>11</sup> of the medical care costs for breast cancer attributable to alcohol consumption among young women, further highlighting the potential benefits of evidence-based screenings and interventions to reduce alcohol consumption.

Linked to implementing healthcare screenings is the need for system capacity, including provider training and system reimbursement incentives, to ensure that such tools are implemented with fidelity. To address primary care provider concerns about implementing appropriate alcohol screenings, a responsive system needs to be developed that includes young adult support groups, peer outreach, and treatment services. This approach requires multisectoral collaborations, including community, recreational, and faith-based organizations as other entry points into systems for early screening, referral, and care.

Analyzing co-occurring antecedent variables offers opportunities to further understanding of the unique aspects of this age group. Authors, such as Massetti and colleagues,<sup>12</sup> pursue the inter-relationship between cancer risk factors (tobacco, alcohol, overweight/obesity, physical activity, and inadequate sleep), system factors (uneven access to health care), and other risk factors that emerge and are prevalent during young adulthood. Specifically, they identify mental health problems that have traditionally not been part of the mix of factors that may directly and indirectly raise cancer vulnerability.<sup>12</sup> For example, research is needed regarding how mental health and stress contribute to health behaviors and habits that further increase cancer risk. This reflects the importance of going upstream to the root causes of behaviors, such as tobacco and alcohol use, to create nuanced interventions that help young adults deal with factors that place them at risk. The need for a “deep dive” approach is reflected in the limited effectiveness of tobacco, alcohol, and obesity prevention campaigns for some subgroups that focus primarily on providing information. Instead, interventions need to be developed and tested that respond to the underlying factors driving the “self-medication” behaviors related to stress.

## CONCEPTUAL FRAMEWORKS

To advance the field of cancer prevention, conceptual frameworks are needed to shape research. A framework that captures structural, environmental, and social determinants helps ensure that the complexity of developing more effective interventions is not underestimated. For

example, Hiatt et al.<sup>13</sup> advance the use of theories of change to study the complexity of SES and other disparities that contribute to understanding differentiated cancer incidence. Such frameworks can be used to develop and test cancer prevention strategies. Ling and colleagues<sup>14</sup> apply social cognitive theory to research social media and health, including observational studies using social media data sources, delivering cancer-relevant preventive messages via online social media. The authors present creative strategies for bringing relevant messages to vulnerable young adults in alternative settings in which they often congregate. Understanding very specific social and cultural groups, specifically “peer crowds” that have similar values, aspirations, and social activities (e.g., patrons of “Hip Hop” and “Country” bars and nightclubs), offers opportunities for tailored interventions to decrease smoking and binge drinking. Many of these sites have traditionally not been included in cancer prevention.<sup>15</sup>

## YOUTH VOICE

Understanding the specific experiences and context for young adults, including those of color, and engaging them in helping to shape potential interventions is reflected in the research contributions of McCloud et al.<sup>16</sup> and Schillinger and colleagues.<sup>17</sup> Both papers point to the effectiveness of social media and other communication strategies for engaging young adult voices across many subgroups that are not easily categorized. Defining young people merely by their SES or race/ethnicity is too simplistic when developing effective health promotion interventions. Recognition of both audience subgroups and their diverse use of social media is needed to create intended behavioral changes. Schillinger et al.<sup>17</sup> describe how message content is also shaped by the young adults’ underlying values and desire for social justice and inclusion. The young adults’ strategies for effecting change are shaped by a sense of defiance against an authority that limits their community’s future. Developing tailored interventions aimed at increasing vaccinations, increasing physical activity, and controlling weight (among others), is key if the pipeline of upstream behaviors that contribute to higher incidence of cancer later in life are to be reduced.

The use of technology with young adults is also promising in developing preventive interventions. Instead of merely providing one session of health education aimed at increasing the level of consumers’ knowledge regarding their behavioral decisions, technology could be useful in further behavioral reinforcement. For example, tailored interventions could take into account the learners’ risk profile, their information needs,

their interest in incorporating behavioral change,<sup>18</sup> and whether they have the skills necessary to adopt desired changes. The intervention could also be multi-phased, including reinforcement of behavioral change through online behavioral reminders, such as those described by Falzone and colleagues,<sup>19</sup> and other social media efforts.

## OPERATIONALIZING THE IMPLICATIONS OF RESEARCH FINDINGS INTO PRACTICE AND POLICY

Epidemiologic patterns are constructive in pointing to population disparities in the occurrence of cancer incidence and death. However, these patterns are often unable to provide insights into the underlying factors contributing to the data. Many of the cancer risk factors included in the papers, such as Anstey et al.<sup>20</sup> and Yang and colleagues<sup>21</sup> reflect a complex set of proximal and distal variables that may initially not be viewed as impacting cancer risks. For example, the decision not to breastfeed, which may increase a woman's risk for breast cancer, may be driven by a variety of barriers. These include lack of social and cultural acceptability, inadequate support by the healthcare community, and unsupportive work environments. Consequently, interventions need to include multipronged, cultural, environmental, and employment responsive strategies. These include peer counseling, changes in hospital policies, group prenatal education, lactation-specific clinic appointments, and other strategies that are tailored to the diverse health needs of communities of color.<sup>20,22</sup>

To incorporate a "precision public health approach" to individuals, as well as populations, raises important issues. First, even though a number of strategies can be reasonably implemented with existing evidence, there remains a need for further research. For example, is the protective effect of breastfeeding stronger for those who exclusively breastfeed? Is the effect observed consistently across all racial/ethnic and socioeconomic groups? How long would one need to breastfeed to reduce cancer risk? To ensure the utility of such studies, standard measures of breastfeeding across studies are needed. Second, consumers, diverse community agencies, and other stakeholders need to be engaged in shaping the types of interventions being developed and tested. For example, what are optimal ways to support breastfeeding within a low-income and diverse community?

Reflecting the widespread use of social media and other communication channels by young adults, several of the papers focus on the role of communication and health literacy in developing interventions. Researchers, such as McCloud et al.<sup>16</sup> and Simmons and colleagues,<sup>23</sup> point to the challenges of developing such interventions, given the relatively limited research on media consumption,

particularly by young adults' SES, gender, race/ethnicity, and urban or rural setting. The transformation of social media as a platform for targeted marketing to this age group, including tobacco, alcohol, food, and beverage industries that remain unregulated in such settings, has also likely increased exposure to cancer risk-promoting marketing. This will require different types of interventions to be developed, including promoting health information about multiple and concurrent risks that impact the audience.

## NEXT STEPS

Several cross-cutting themes have implications for the nascent field of cancer prevention among young adults within a life course and social determinants perspective. First, there continues to be a need for supporting the availability of national, state, and, ideally, local geospatial data that can be analyzed to identify the variety of social and contextual factors that contribute to cancer risks. These data are key for targeting program and policy interventions. A number of existing data sources could be enhanced, with the addition of relevant variables (e.g., housing security) and linked to other available data sets, such as geomapping, to help with additional neighborhood impact analyses.

Second, the lack of a consistent set of metrics and measures precludes the type of data sharing and analyses that would facilitate more rapid advancements in the knowledge and understanding of cancer risk, as well as effective preventive measures. Third, there is a need and technologic capacity to study the interactions of environmental and biological risk factors and sociobehavioral mechanisms. These include obesity, inflammation, environmental carcinogens, circadian rhythm disruptions, stress, social isolation, and physical inactivity. Other contextual factors include vulnerability to marketing of cancer-causing products. Such studies will likely require linking and analyzing different data sets.

Fourth, greater collaboration is also needed among those who develop and test interventions so that better and more consistent measures, as well as lessons learned, can be more readily shared. This includes the experience of developing and implementing theory-driven interventions and rigorous evaluation designs. The effective use of research evidence in the development of the next generation of effective interventions can occur when open platforms are encouraged to flourish. These enable researchers to build upon shared knowledge of a variety of strategies needed to create more effective interventions as a means of closing knowledge gaps.

Fifth, there is a need for longitudinal tracking of young adults over their life course in order to ascertain whether initial behavioral changes, when they occur, are

maintained over time. In turn, the data would help answer how interventions can contribute to an overall reduction in the incidence of cancers among older adults. This type of evidence will be particularly compelling in making needed prevention investments.

Similar to the Breakthroughs initiative, where collaborative networks of cross-disciplinary researchers aim to expedite immunologic research, parallel efforts are also needed in cancer prevention. Although immunotherapy will take into account the individual's -omics as precision medicine interventions are developed, the structure of the genetic profile is likely to be impacted by individual and neighborhood factors, such as disparities and stress. The latter have been shown to be causal factors in the incidence and prevalence of cancer. Thus, insights from across the spectrum, from primary prevention through early detection, and from treatment to cancer survivorship, could help inform each other's groundbreaking efforts.

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