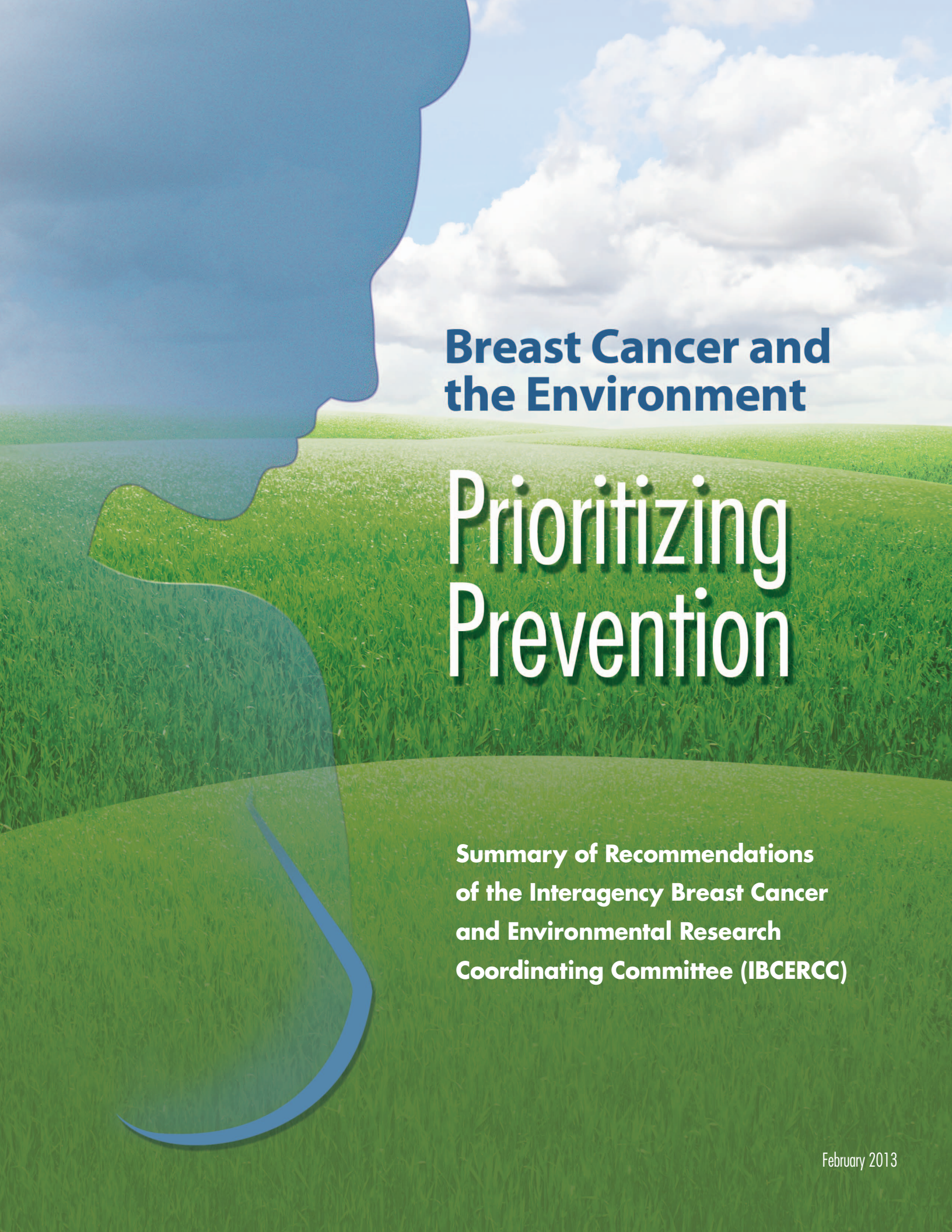

Breast Cancer and the Environment

Prioritizing Prevention

Summary of Recommendations of the Interagency Breast Cancer and Environmental Research Coordinating Committee (IBCERCC)

February 2013

INTRODUCTION

Breast cancer takes a tremendous toll on women and men of all ages, races, and ethnicities, as well as their families and communities. Breast cancer also has a huge impact on the health care system that treats and monitors those people who have been diagnosed with the disease and provides end-of-life care for those who die from it. Prevention is the key to reducing the emotional, physical, and financial burden of breast cancer. Despite decades of productive breast cancer research, the number of women diagnosed with the disease continues to rise. In 2012, about 227,000 women and 2,200 men in the United States will be diagnosed with breast cancer, and 40,000 women will die from it (American Cancer Society, 2012).

Prioritizing Prevention – Identifying and mitigating the environmental causes of breast cancer is the key to reducing the number of new cases.

Researchers have long known that genetic and environmental factors individually contribute and interact with each other to increase breast cancer risk. Studies show that breast cancer rates can vary with changing environmental circumstances. Furthermore, the large majority of cases occur in women with no family history of breast cancer. Environmental factors are more readily identified and modified than genetic factors and, therefore, present a tremendous opportunity to prevent breast cancer.

On October 8, 2008, Congress passed the Breast Cancer and Environmental Research Act. The act required the U.S. Secretary of Health and Human Services (HHS) to establish the Interagency Breast Cancer and Environmental Research Coordinating Committee (IBCERCC), comprised of federal and nonfederal members, to examine the current state of breast cancer and the environment research and make recommendations for eliminating any knowledge gaps.

By urgently pursuing research, research translation, and communication on the role of the environment in breast cancer, we have the potential to prevent a substantial number of new cases in the 21st century.

Based on a review of the state of the science, current programs, and investments by federal agencies and nongovernmental organizations, as well as relevant communication efforts and policies, the IBCERCC offers seven recommendations to highlight the urgent need for coordinated, targeted efforts to identify and mitigate the environmental causes of breast cancer.

Recommendations of the Interagency Breast Cancer and Environmental Research Coordinating Committee (IBCERCC)

1 Prioritize Prevention

The IBCERCC recommends a national breast cancer prevention strategy to prioritize and increase federal government investments in breast cancer prevention.

Breast cancer prevention is underfunded at the federal level, in both research and public health programs, and future investments are needed. There are remarkably few examples of advances in breast cancer prevention, and finding ways to identify and mitigate the environmental causes of the disease has not been a priority. Increased funding would facilitate sustained coordination across research and regulatory agencies, with the objective of reducing or eliminating harmful environmental exposures and modifying social and lifestyle factors implicated in breast cancer.

2 Transform How Research Is Conducted

The IBCERCC recommends investigation into compelling scientific themes using a transdisciplinary approach.

The complexity of breast cancer necessitates increased investment in research to explore compelling themes, such as mechanisms underlying breast cancer and breast density; epigenetic alterations — heritable changes that do not involve changes in DNA sequence — that occur over the life course; and gene-environment interactions. Exploration of the impact of environmental factors on breast development is also needed, as altered development may influence breast cancer risk. In addition, research must evaluate the impact of multiple risk factors and periods when the breast may be most susceptible to exposures, and investigate how certain populations, such as underrepresented minorities, have disproportionate exposures and different levels of breast cancer risk. By engaging researchers from many disciplines, new ways of thinking about breast cancer prevention can be developed.

3 Intensify the Study of Chemical and Physical Factors

The IBCERCC recommends research on the effects of chemical and physical factors that potentially influence the risk of developing, and likelihood of surviving, breast cancer.

Research efforts to close the knowledge gap about potential risk factors are needed. Certain chemicals, such as endocrine disruptors, and physical agents, such as low-dose radiation, require further research that integrates animal and human research to fill knowledge gaps on how environmental exposures affect the mammary gland. Improved understanding of the different subtypes of breast cancer, the availability of high-throughput testing, and integration of different types of chemical testing, in addition to the study of biological mechanisms, such as epigenetics, may help explain how environmental factors influence breast cancer risk. Characterizing the myriad of exposures in our environment in diverse population groups is also part of this important challenge.

4 Plan Strategically Across Federal Agencies

The IBCERCC recommends that federal, state, and nongovernmental organizations coordinate and collaborate to accelerate the pace of scientific research on breast cancer and the environment.

A limited number of federally directed research programs and researcher-initiated projects focus specifically on breast cancer and the environment. To close this critical gap, as part of a national breast cancer prevention strategy, federal agencies must plan strategically for breast cancer and the environment research to be developed across the government to foster innovation and collaborative science. Joint planning and better coordination of the efforts of both governmental and nongovernmental funding agencies would increase the visibility of research on breast cancer and the environment; promote the goal of breast cancer prevention; facilitate sharing of resources, such as funding, data, and research tools; help identify the most critical scientific questions; and facilitate the monitoring of progress toward answering these questions.

5 Engage Public Stakeholders

The IBCERCC recommends that the research planning, implementation, and translation process include stakeholders who represent the public and affected communities at every stage.

To ensure effective translation and dissemination of breast cancer research findings as the field progresses, active participation of breast cancer advocates, community representatives, and members of the public in research planning and prioritization must increase. These stakeholders provide unique perspectives and expertise on research priorities, optimal modes of public engagement, and best practices for translating and disseminating research findings to the public. Furthermore, as agencies develop and apply standards for testing the effects of chemical and physical exposures, public participation can provide information about the exposures of greatest concern to the general public and specific communities.

6 Train Transdisciplinary Researchers

The IBCERCC recommends federal programs that encourage and enable scientists to engage in transdisciplinary research.

Accelerating research on breast cancer and the environment will require increasing the numbers of large, transdisciplinary activities. Currently, opportunities for scientists to learn how to function in a transdisciplinary environment are limited. Scientists from many disciplines must be engaged to develop new ways of thinking about breast cancer prevention. Scientists require training across the career trajectory — from undergraduate to researcher — to develop the skill sets necessary for active and effective engagement in transdisciplinary research. Opportunities and incentives for acquiring these skills are needed to promote involvement.

7 Translate and Communicate Science to Society

The IBCERCC recommends that the translation and dissemination of research findings be built from the start into every funded program that focuses on breast cancer and the environment.

Primary prevention of new breast cancer cases requires identifying and reducing exposures that increase the risk of the disease, and fostering behaviors that may help to prevent it. It is critical that advocates and other community stakeholders participate in the research translation process to interpret and communicate findings to diverse audiences in ways that facilitate their application to public concerns. Translation, dissemination, and communication of research findings must proactively protect public health and guide the advancement of regulatory policies that create measurable changes in environmental factors linked to breast cancer incidence, morbidity, and mortality.

Conclusion

Prevention is the key to reducing the burden of breast cancer.

Science must seek greater understanding of the environmental and genetic factors that influence risk, susceptibility, and the progression of the disease. Enhanced investment in prevention research — from the initial concept of studies, built on strong partnerships between breast cancer advocates and scientists, to the timely dissemination and translation of research findings — will ultimately reduce the incidence of breast cancer in future generations.

These recommendations provide a vision toward reducing or eliminating environmental exposures and modifying social and lifestyle factors implicated in breast cancer. Sustained coordination across research and regulatory agencies, as well as nongovernmental organizations, will be necessary to achieve this vision.

The full report of the IBCERCC can be found on the NIEHS website at http://www.niehs.nih.gov/about/boards/ibcercc.

In their words...

Kathi R.
"As a nurse, I believe that efforts to prevent disease should receive as much attention, if not more, as those that treat and diagnose disease. If we can understand the links and educate others on how to reduce their risk of breast cancer before it starts, then we are taking huge steps forward."

Andi G.
"There are so many of us who are hungry for information about what we can do to reduce the environmental exposures that may have brought us to that moment in the doctor's office when we heard the devastating news that changed our lives forever."

Leticia C.
"While my genetics were the loaded gun, something in the environment was delegated the duty of pulling the trigger."

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The IBCERCC is managed by NIEHS, in collaboration with NCI.