

Advancing Global Cancer Research through Coordination, Collaboration, and Communication



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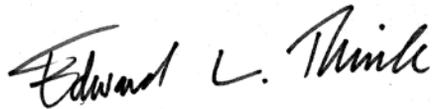
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Message from the Director

Today, more so than any other time in our history, we have an opportunity to work together to decrease the global burden of cancer. In 2008 alone, nearly 7.6 million people worldwide died from cancer¹ and by 2030 the number of cancer deaths may be as high as 13.1 million due to population growth and aging.²

The success achieved in controlling infectious diseases worldwide suggests that using a similar approach—coordinated basic research, translational research, clinical trials, implementation science, and capacity building—will also be effective against non-communicable diseases, such as cancer. With this approach in mind, the National Cancer Institute (NCI) established the Center for Global Health (CGH) in 2011 to advance global cancer research; build expertise and leverage resources across borders; and reduce cancer deaths worldwide, focusing on low- and middle-income countries. CGH plays an integral role in engaging other NCI divisions, offices, and centers as well as the National Institutes of Health (NIH) in these efforts.

The following report highlights some of CGH's recent activities, as well as those of NIH and our international partners,* who are focused on efforts to create sustainable international partnerships, support programs that address global gaps in research and scientific training, and disseminate information and best practices that drive improvements in cancer research and cancer control.



Edward L. Trimble, M.D., M.P.H.
Director, NCI Center for Global Health

*This report includes a sampling of the activities that CGH has undertaken and is not necessarily comprehensive of all of the activities and partnerships underway.

¹ Fast Stats: Most frequent cancers. GLOBOCAN 2008. International Agency for Research on Cancer. Accessed September 25, 2013.

² Cancer Incidence, Mortality, Prevalence and Disability-adjusted life years: Number of cancer deaths in 2030. GLOBOCAN 2008. International Agency for Research on Cancer. Accessed September 25, 2013.

Overview

The vision for CGH is to be a catalyst for reducing the global cancer burden through coordination, collaboration, and communication with a diverse range of international stakeholders.

To advance this vision, CGH has identified four priority areas in which to focus its programs and activities.

To allow for close coordination and collaboration with partners and foreign organizations, CGH leverages three offices abroad:

East Asia: The office in Beijing, China, serves as a bridge between NCI resources, experts, networks, and cancer researchers and public health professionals in cancer prevention and control in East Asia.

South Asia: The office in Delhi, India, focuses on building partnerships to strengthen cancer research capacity and networks in the region.

Europe: The Liaison Office in Brussels, Belgium, coordinates collaborations with a range of European and international partners to promote cancer research and control in Europe and elsewhere.

CGH Priority Areas

Cancer Research and Cancer Control Planning



Partnerships



Monitoring Research Efforts



Information Dissemination and Capacity Building



Partnerships

Sustainable international partnerships are integral to the center's work. CGH collaborates with partners, including foreign governments, nongovernmental organizations (NGOs), pharmaceutical and biotechnology companies, and U.S. government agencies to build research capacity, assess cancer burden, share knowledge, and build on evidence-based research to inform global cancer control in low- and middle-income countries.

In addition, CGH engages with NCI grantees across the United States to identify ways to support and facilitate their independent global cancer research activities and works closely with the NIH Fogarty International Center (FIC), which seeks to advance the NIH mission internationally and to coordinate international partnerships and activities.



Cancer Research and Cancer Control Planning

CGH facilitates research efforts to decrease the global burden of cancer by collaborating with international partners. In addition to facilitating research, CGH supports the implementation of cancer control plans. As countries streamline their health care systems, they recognize the value of instituting cancer prevention, screening, early diagnosis, and treatment programs.

United States–China Program for Biomedical Research Cooperation

This cooperative effort between the United States and China was launched to strengthen collaboration in basic biomedical research. NIH provides funding to support U.S. scientists, and the National Natural Science Foundation of China (NSFC) matches the funding to support Chinese scientists. The program's working group won an NIH Director's Award in June 2013 in recognition of its innovative program to foster United States–China collaboration in biomedical research.



The programs that follow are some of CGH's promising collaborations in this area that bring stakeholders together to create national cancer control plans, particularly as they relate to tobacco.

Since 2011, the program has issued three calls for proposals to support research partnerships in multiple fields. In the United States, NCI, the National Institute of Allergy and Infectious Diseases (NIAD), the National Institute of Mental Health (NIMH), the National Institute of Neurological Disorders and Stroke (NINDS), and the NIH Office of AIDS Research (OAR) have contributed funding for 108 awards granted between 2011 and 2013. Some of the awards have supported:

- Collaboration between American and Chinese experts to address a common scientific question
- Novel technologies developed in the United States that are used to study unique patient populations in China at high risk for certain types of cancer or infectious diseases
- Comparative studies to understand population differences in the development of cancer and/or HIV, and other infectious diseases among U.S. and Chinese cohorts
- Mechanistic studies of Traditional Chinese Medicine products reported to have anticancer activity

United States–Latin America Cancer Research Network (US–LA CRN)

The US–LA CRN was established in 2009 to increase cancer research capacity in Latin America. NCI formalized bilateral agreements with the governments of Argentina, Brazil, Chile, Colombia, Mexico, Peru, Puerto Rico, and Uruguay, to facilitate interactions at the government, institution, and investigator levels.

In 2011, the US–LA CRN launched a breast cancer study, “Molecular Profiling of Stage II and III Breast Cancer in Latin American Women Receiving Standard of Care Treatment” (MPBC). The investigators are studying the molecular profile distribution of invasive stage II and III breast cancers among Latin American women to improve diagnosis and treatment, correlate molecular subtypes with long-term survival and response to therapy, and identify indolent-disease subpopulations of cancer patients, which may enable future personalized cancer management.

To date, approximately 1,100 women from 5 countries and 24 clinical sites have been enrolled in the study. Patients enrolled in the study consent to donate research specimens, including blood and tissue samples from tumor biopsies and surgical resections, which will be used in genetic and/or genomic studies and gene expression profiling.



Some of the unique features of this collaborative study include: harmonizing procedures; building biobanks to manage biospecimens from across the clinical sites; establishing a bioinformatics platform to capture clinical data and specimen characteristics; implementing a comprehensive study monitoring plan to ensure specimen and data integrity; producing a manual of operations in English, Spanish, and Portuguese; convening training workshops to standardize procedures and advanced technologies that lead to best practices; and developing an epidemiology questionnaire to correlate with clinical annotation. The MPBC is changing clinical practice and improving breast cancer management in Latin America, and providing a better understanding of the disease both in Latin America and in the United States.

African Organisation for Research and Training in Cancer (AORTIC) Beginning Investigator Grant for Catalytic Research (BIG CAT)

CGH and the NCI Office of HIV and AIDS Malignancy (OHAM) partnered with AORTIC to cofound BIG CAT, a grant program to advance cancer research in Africa and build research capacity to address the growing cancer burden there. Six grants were awarded in the first cohort to early-career investigators advancing research on “see and treat” cervical cancer screening assessment, esophageal cancer prevalence, childhood cancer survival, prostate cancer genomics, cervical cancer screening in HIV populations, and the role of traditional healers in cancer diagnosis and treatment.

Dr. Chibuiké Chigbu, a BIG CAT grant recipient, published the results of his research in the *International Journal of Gynecology and Obstetrics*³ in a paper entitled, “Motivations and Preferences of Rural Nigerian Women Undergoing Cervical Cancer Screening via Visual Inspection with Acetic Acid.”

Another six awards were issued as part of the second cohort in July 2013. They are focused on enabling research in early breast cancer detection (Ghana), clinical guidelines for Kaposi sarcoma (Nigeria), nasopharyngeal carcinomas (Nigeria), cervical cancer treatment (Nigeria), breast carcinoma among HIV-positive and HIV-negative women (South Africa), and quality of life for cancer patients with advanced-stage cancer (South Africa).



³ Chigbu, C.O., Onyebuchi, A.K., Ajah, L.O., & Onwudiwe, E.N. [2013]. Motivations and Preferences of Rural Nigerian Women Undergoing Cervical Cancer Screening via Visual Inspection with Acetic Acid. *International Journal of Gynecology & Obstetrics*, Vol. 120, Issue 3, 262-265.

International Cancer Control Partnership (ICCP)

ICCP is a collaboration of governments, United Nations agencies, and NGOs tasked with ensuring that countries have national cancer control plans.

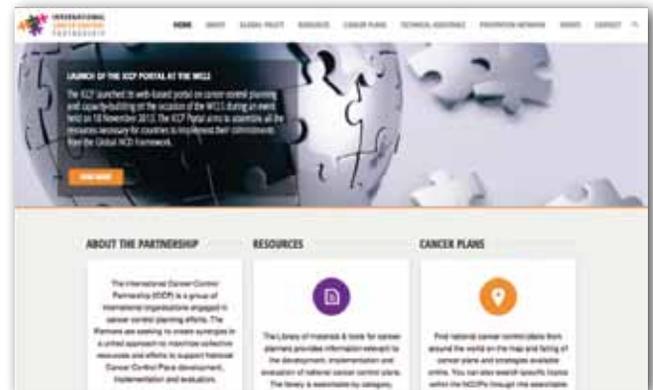
The partnership's priorities are to:

- Encourage decision makers to prioritize cancer control
- Assist countries in developing cancer control plans
- Coordinate efforts to develop and disseminate cancer control planning materials and tools, technical assistance, and training to address data gaps, when identified

The partnership created a “one-stop shop” online portal (www.iccp-portal.org) for cancer planners that includes:

- A searchable database of published national cancer control plans
- A library of tools and materials for cancer planners
- Information on worldwide case studies and best practices

CGH is part of the ICCP steering committee, which also includes the NCI Division of Cancer Control and Population Sciences (DCCPS), Union for International Cancer Control (UICC), International Atomic Energy Agency Programme of Action for Cancer Therapy, World Health Organization (WHO), and International Agency for Research on Cancer (IARC). The partnership, initiated by CGH, took form in November 2012 and officially launched in South Africa in November 2013.



Global Cancer Research Day

Global Cancer Research Day, a satellite meeting of the Consortium of Universities for Global Health's (CUGH) 2013 Annual Conference, was initiated by CGH to facilitate information exchange between global health and cancer research professionals from CUGH, NCI-designated cancer centers, and elsewhere. Interactive discussions drew input from the 160 participants on a variety of topics to foster network building. Information sharing has resulted in identification of potential partnerships in certain regions and technical areas.

Notes collected during the meeting are being used to: identify themes, new ideas, and next steps for the field and for CGH; determine how the work and priorities of NCI-designated cancer centers align with CGH signature themes and priorities; and inform a potential publication about global cancer research priorities.

The meeting strengthened NCI's relationship with CUGH. As a result, an NCI representative from CGH will serve on the advisory board for the CUGH 2014 meeting, ensuring that cancer remains on the agenda for this annual meeting.

Tobacco Control

CGH contributes to global tobacco control efforts through numerous partnerships.

NCI Tobacco Control Research Branch (TCRB):

CGH partners with TCRB, within NCI DCCPS, to work on international tobacco control issues via grant funding, capacity-building workshops, education to national ministries of health, partnerships with international organizations, funding innovations in mobile health (mHealth), and providing technical tobacco control research expertise.

CGH and TCRB have partnered with the Centers for Disease Control and Prevention (CDC) to host "Data to Action" tobacco control workshops for scientists from low- and middle-income countries, including one at a recent international tobacco control conference in India.

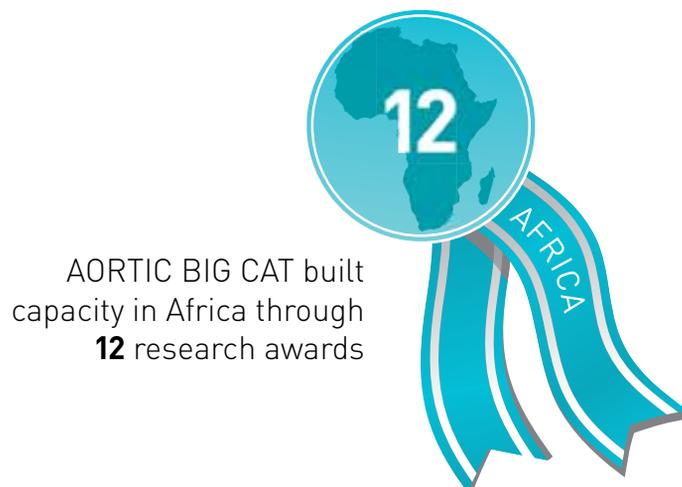
CGH and TCRB have also provided technical expertise and participation in healthy lifestyle forums in Russia with a focus on tobacco control policy and intervention.

For more information please visit cancercontrol.cancer.gov.

Research



108 Funding awards made through the US—China Program for Biomedical Research Collaboration



AORTIC BIG CAT built capacity in Africa through **12** research awards



8 countries collaborating in the US—Latin America Cancer Research Network
*Including Puerto Rico

The International Tobacco and Health Research and Capacity Building Program (TOBAC): TOBAC is a collaboration funded by FIC and its partnering institutions, NCI, the National Institute on Drug Abuse (NIDA), and the NIH Office of Behavioral and Social Sciences Research. NCI has been a key partner in this initiative since its creation more than 10 years ago and participated in co-funding a new round of grants in 2012.



Its aim is to support tobacco control research and increase research capacity by awarding 5-year R01 grants for collaborations between investigators in high-income countries (including the United States) and researchers and institutions in low- and middle-income countries. Recipients of these grants have gathered evidence in epidemiological, behavioral, risk-factor, intervention, cessation, policy, and economic research areas of identified need. Grant recipients represent a

diverse group of countries, including India, China, Hungary, and Kenya, where tobacco control efforts have historically been limited due to resource constraints.

TOBAC grantees have contributed to progress on multiple articles of the WHO Framework Convention on Tobacco Control with evidence generation that has informed policy in low- and middle-income countries.

The International Tobacco and Health Research and Capacity Building Program (TOBAC)



Supported **34 grants** over the past **decade**



More than 416 articles published with TOBAC support



Collaborations established with researchers from more than **30 countries**



Meetings and Forums: CGH participated in or co-hosted several meetings and forums related to tobacco control in partnership with foreign governments and NGOs.

Location	Meeting	Output
China	China's National Cancer Center (NCC)/Cancer Institute and Hospital, Chinese Academy of Medical Sciences Annual Meeting	NCI and the tobacco control office of the China NCC developed a proposal for research collaboration based on discussions from this workshop.
Croatia	Workshop on Cancer Prevention via Tobacco Control and Smoking Cessation	NCI grantee Dr. David Levy (Georgetown University) is working with Croatian colleagues to develop a simulation model to assess the health impact of tobacco control efforts. Work is underway to develop a tobacco control research network for Eastern European countries.
India	<i>Smokeless Tobacco and Public Health in India</i> Authors' Meeting	NCI and CDC will release the <i>Global Smokeless Tobacco Report</i> in early 2014, and are currently working with the Ministry of Health and Family Welfare of the Government of India to complete the <i>Smokeless Tobacco and Public Health in India</i> report.
Russia	3rd All-Russian "Health or Tobacco" Forum	The 3rd All-Russian "Health or Tobacco" Forum approved a resolution calling for increased efforts in tobacco control research and action, and noted the importance of evaluating the new tobacco control law in Russia.
United States	Second Annual Cancer Research Funders Meeting	Dr. Harold Varmus (NCI) and Dr. Harpal Kumar (Cancer Research UK) coauthored a commentary ⁴ based on the conclusions of this meeting, which called for the creation of an international consortium in tobacco control research. Participants representing 15 countries attended.

Tobacco Control



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⁴ Varmus, H. & Kumar, H.S. (2013). Addressing the Growing International Challenge of Cancer: A Multinational Perspective. *Science Translational Medicine*, Vol. 5, Issue 175, 175.

Monitoring Research Efforts

International Activities of NCI-Designated Cancer Centers

In July 2013, CGH released a report, *International Activities of NCI-Designated Cancer Centers* (available online at: <http://www.cancer.gov/aboutnci/globalhealth/announcements/cancercentersreport>), which

provides an overview of the international activities at 53 of the NCI-designated cancer centers. This report is the first of its kind, and serves as a resource to strengthen and coordinate the work of NCI-designated cancer centers and U.S. universities in global cancer control and cancer research.

Information Dissemination and Capacity Building

Creating cancer research and control infrastructure in low- and middle-income countries will enable the development of cancer control plans and increased contributions to global research. CGH's capacity-building programs, some of which are described in the following paragraphs, engage stakeholder groups across the health care spectrum to enhance skills.

Regional Grant-Writing and Scientific Peer-Review Workshops

CGH partnered in grant-writing workshops in June 2012 and November 2013 to: increase the participation of scientists from low- and middle-income countries in the research grant process; develop strategies for sustainable research support and collaborations; and use competitive research as a tool to address global health issues.

Sixty researchers and science administrators from universities and research centers in Central America and the Andean sub-region attended the June 2012 workshop, organized by NIH, NCI, and the Colombian Ministry of Health and Social Protection. Sixty-six participants from sub-Saharan Africa attended the November 2013 session, organized by NIH, NCI, and the South African Medical Research Council (SAMRC).

Several NIH institutes and centers participated in the Central America and Andean sub-region workshop, including the National Heart, Lung, and Blood Institute (NHLBI), Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), NIAID, NIDA, and FIC. Additional participating research funding agencies were the CDC, U.S. Agency for International Development (USAID), Pan American Health Organization (PAHO), UICC, and Wellcome Trust.

The following partners provided funding for the sub-Saharan Africa workshop, helped plan the curriculum, and/or helped coordinated workshop logistics: NCI OHAM, NCI DCCPS, NIH OAR, NHLBI, NICHD, NIAID, NIMH, NINDS, NIH Office of Dietary Supplements (ODS), NIH Center for Scientific Review (CSR), FIC, CDC, USAID, World Health Organization Regional Office for Africa (WHO-AFRO), UICC, IARC, American Cancer Society (ACS), and Wellcome Trust.

See the infographic on page 14 for accomplishments that resulted from the workshops.



Scientific Writing Workshop

In November 2012, CGH participated in a scientific writing workshop to prepare participants to submit articles to peer-reviewed journals and enhance their competitiveness in health research. The workshop, held in Tanzania, was supported by NCI OHAM, NICHD, WHO-AFRO, Muhimbili University of Health and Allied Sciences (Kenya), University of Nairobi (Kenya), and Joint Clinical Research Centre (Tanzania).

Fifty-eight participants from 22 countries in sub-Saharan Africa attended the workshop, and subsequently submitted 10 manuscripts to peer-reviewed publications, including the *Journal of General Internal Medicine*, *Social Medicine*, *Human Resources for Health*, *Bulletin of the World Health Organization*, *Global Journal of Health Science*, and *Nature Reviews Cancer*.

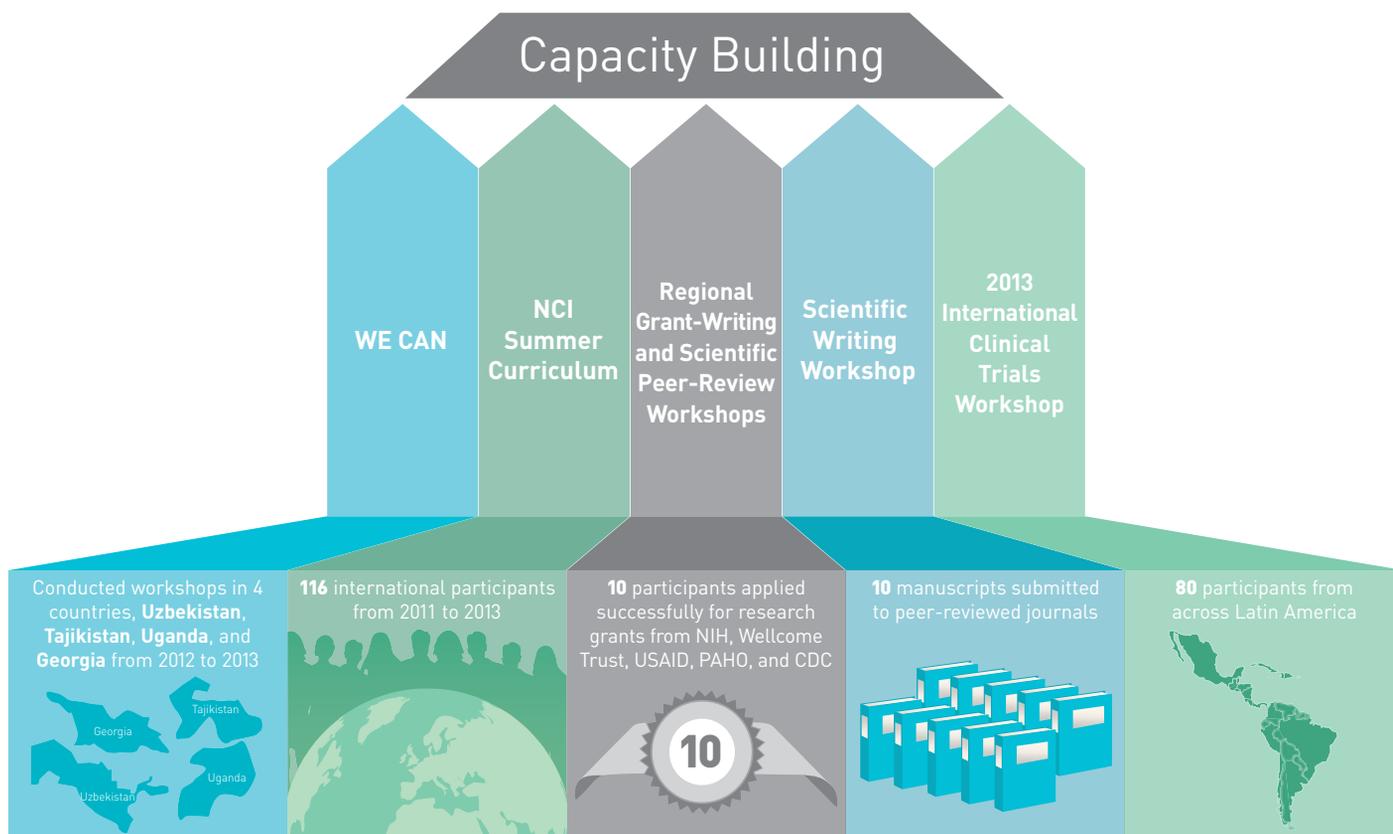
Women's Empowerment Cancer Advocacy Network (WE CAN) Advisory Training: Breast and Cervical Cancers Education and Advocacy Workshop

WE CAN conducts education, awareness, and advocacy workshops in central Europe and central Asia. In August 2013, CGH cosponsored a workshop in Tajikistan to increase awareness of breast and cervical cancers among health care professionals and the general public and to build a community of health care providers that could develop a cancer control program.

One hundred participants attended the workshop, the first of its kind in the region. Participants heard from speakers on topics including: cancer risk factors and risk-reduction strategies, methods of early

detection and diagnosis, evidence-based cancer treatment, coordinated survivorship and supportive care, and the essential components of a cancer control program.

Workshop evaluation results were positive. More than 70 percent of participants stated that their knowledge of global epidemiology and breast and cervical cancer risks significantly increased as a result of the workshop, and 84 percent stated that the conference was unique because it marked the first time oncologists, gynecologists, family physicians, community organizations, and patient groups in Tajikistan had gathered together to consolidate resources. An interactive discussion during the workshop resulted in a health care resolution that the attendees plan to bring to the Tajikistan Parliament by 2014.



Summer Curriculum in Cancer Prevention

Each year, NCI offers courses in molecular prevention, advances in cancer prevention, and principles and practices of cancer prevention. CGH nominates and provides financial support to international participants. From 2011 to 2013, 116 professionals from outside the United States participated in the program. CGH is also responsible for a social media platform that allows international participants to network and share information after the curriculum has ended.

In 2013, CGH added lectures to the curriculum that were intended for international participants, especially those from low- and middle-income countries. These lectures provided information and tools that can be used for cancer prevention and control in participants' home countries. The additional lectures—presented by experts from NCI, cancer centers, and public and private organizations—covered topics such as environmental pollution and lung cancer, palliative care and pain control, cancer drug and clinical trials development in low- and middle-income countries, cancer registries, communication tools, and the NIH grants process.

Learn more about the program in “Evaluation of the Impact of NCI’s Summer Curriculum on Cancer Prevention on Participants from Low- and Middle-Income Countries,” published in the *Journal of Cancer Education*.⁵

NCI-American Society of Clinical Oncology (ASCO) International Clinical Trials Workshop (ICTW) and Joint Symposium

In 2012, the ICTW was developed by NCI, ASCO, Sociedade Brasileira de Oncologia Clínica (SBOC), Federación Latinoamericana de Sociedades de Cáncerología (FLASCA), and the Oncology Nursing Society (ONS) to provide a curriculum addressing globally accepted



standards for the conduct of clinical research in Latin America. The 2012 workshop was convened in São Paulo, Brazil.

ICTW partners work to advance clinical cancer research by providing a comprehensive training in the conduct of clinical research. The partners' goals include conducting research to encourage the development of evidence-based treatment strategies appropriate in emerging-economy countries and teaching best practices in the implementation of cancer clinical trials.

ICTW also provides a forum to present and discuss specific research issues, foster meaningful interactions focusing on cancer research, and enhance the development of senior oncology fellows and junior faculty in cancer research and patient care. Past workshop topics have included: roles and responsibilities of the research team, patient accrual strategies, ethical considerations, how to promote clinical trials, perspectives of sponsors, trial design, local and international regulatory issues, and tips on publishing research findings.

In November 2013, NCI and ASCO held the fifth ICTW in collaboration with FLASCA, ONS, and Grupo Oncológico Cooperativo Chileno de Investigación (GOCCHI), in Santiago, Chile. Participants at the 2013 workshop addressed clinical research standards in Latin America, with the goal of training local research professionals to conduct cancer research. Eighty participants from across Latin America attended the workshop.

⁵ Williams, M.J., Otero, I.V., & Harford J.B. (2013). Evaluation of the Impact of NCI’s Summer Curriculum on Cancer Prevention on Participants from Low- and Middle-Income Countries. *Journal of Cancer Education*, Vol. 28, Issue 1, 27-32.

Future Directions

CGH will continue to work with partners around the world to reduce the burden of cancer for all people.

For example, the center is working to increase the availability of low-cost, portable technologies for cancer diagnosis, imaging, and treatment in low- and middle-income countries. As part of this effort, CGH worked with other NCI divisions, offices, and centers to publish an RFA, *Cancer Detection, Diagnosis, and Treatment Technologies for Global Health* (<http://grants1.nih.gov/grants>) that will support teams of engineers, oncologists, and global health and business experts using the cooperative agreement mechanism to adapt existing technologies in areas such as minimally-invasive treatment and point-of-care imaging and in vitro technologies for diagnosis and detection.

In addition to addressing unmet needs and the global cancer burden, technology development supported by this initiative has the potential to reduce cancer care costs in the United States. CGH will work to ensure that this initiative is integrated into other NIH-sponsored global health technology initiatives.

CGH also plans to undertake additional programs and collaborations focused on cancer research and cancer control planning, partnership development, research monitoring, and information dissemination and capacity building. And CGH will pursue training, integration, and communication opportunities with scientists worldwide to improve cancer surveillance.

Training the next generation of cancer researchers and care providers, and tobacco control and cessation efforts remain at the forefront of our work, as does developing palliative care initiatives. And the work conducted over the past years provides a solid foundation on which to build.

To learn more about CGH, visit cancer.gov/globalhealth

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