



**NCI Center for Global Health**

*Celebrating 10 years and Looking Ahead*

*Satish Gopal MD MPH*

*NCI 5<sup>th</sup> Virtual Meeting of the  
Board of Scientific Advisors*

**NOTHING WILL  
STOP US** 50 YEARS  
NATIONAL CANCER ACT

**CGH 10** YEAR ANNIVERSARY



*The 50<sup>th</sup> Anniversary of the National Cancer Act is an opportunity to commemorate the tremendous progress made in cancer research, consider the needs that remain, and affirm our unwavering commitment to patients.*

*The 10<sup>th</sup> Anniversary of the Center for Global Health is an opportunity to recognize and build on prior successes, learn from past failures, and ultimately achieve the impact that improves people's lives worldwide.*

# Global cancer research successes, failures, and inequities



Burkitt, Br J Surg 1958

**Burkitt lymphoma discovery**

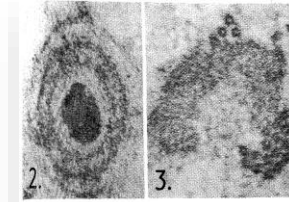
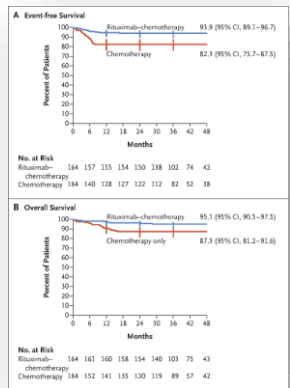


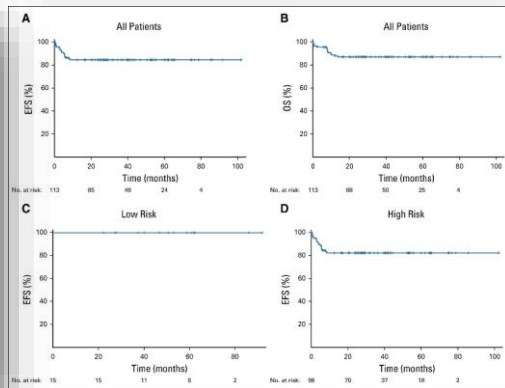
Fig. 3—Detail of a mature particle lying within a small membrane-bounded cytoplasmic space; the nucleoid has stained heavily with the uranyl acetate used as a contrast stain. Slight microtomy compression is present. Electron micrograph - 284,000.  
Fig. 3—Detail of group of crystals cut transversely. Where the crystals lie at right-angles to the plane of the section their hollow tubular construction is evident. Electron micrograph - 106,700.

**EBV discovery**

Epstein, Achong, Barr, Lancet 1964



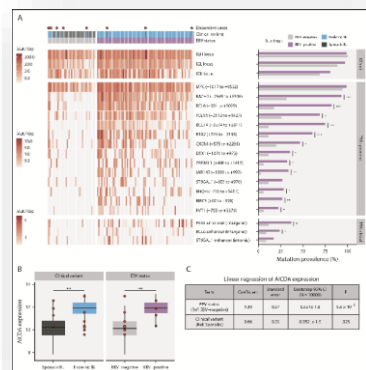
Minard-Colin et al, N Engl J Med 2020



Roschewski et al, J Clin Oncol 2020



**Therapy optimization**



**Molecular profiling**

Grande et al, Blood 2019



**Multiagent chemotherapy discovery**

## TREATMENT RESULTS OF 54 AMERICAN PATIENTS WITH BURKITT'S LYMPHOMA ARE SIMILAR TO THE AFRICAN EXPERIENCE

JOHN L. ZIEGLER, M.D.

**Abstract** Burkitt's lymphoma in Africa may be curable by chemotherapy alone; in nonendemic regions results are reportedly less favorable. Fifty-four Americans with Burkitt's lymphoma were treated with two sequential combined treatment regimens that incorporated therapeutic approaches from clinical trials in Africa. Four patients died during induction therapy, and 48 of the remaining 50 achieved complete remissions. Twenty-two relapsed at a median of three months from the start of therapy. The overall two-year actuarial survival was 54 per cent; younger patients (<12 years old) and patients with minimal tumor burden (stages A, B and AR) had significantly better survivals than older patients ( $P < 0.02$ ) and patients with advanced abdominal tumors (stages C and D) ( $P < 0.01$ ). No differences in survival were detected between patients treated at the National Institutes of Health and those treated in their regional institutions on either protocol. Complete response rates, relapse frequency and survival in American patients are similar to results in Africa. (N Engl J Med 297:75-80, 1977)

Ziegler, N Engl J Med 1977

**c-myc discovery**

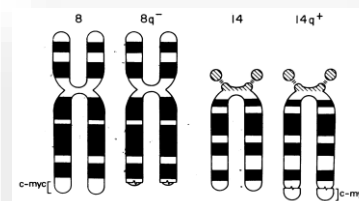


FIG. 5. Diagram of the (8;14) chromosome translocation observed in Burkitt lymphoma. The reciprocal translocation results in the formation of two marker chromosomes: 8q<sup>-</sup> and 14q<sup>+</sup>. The results of the experiments described in Table 1 indicate that the human c-myc homologue is distal to the breakpoint on human chromosome 8 in both Burkitt lymphoma cell lines that were analyzed.

Dalla-Favera et al, Proc Natl Acad Sci USA 1982

## A compelling counterpoint



# Excerpts from the National Cancer Act of 1971

## SEC. 407.

(b) In carrying out the National Cancer Program, the Director of the National Cancer Institute shall:

(4) Collect, analyze, and disseminate all data useful in the prevention, diagnosis, and treatment of cancer, including the establishment of an international cancer research data bank to collect, catalog, store, and disseminate insofar as feasible the results of cancer research undertaken in any country for the use of any person involved in cancer research in any country.

(6) Support research in the cancer field outside the United States by highly qualified foreign nationals which research can be expected to inure to the benefit of the American people; support collaborative research involving American and foreign participants; and support the training of American scientists abroad and foreign scientists in the United States.



# Creation of NCI Center for Global Health

...we have recently established the NCI Center for Global Health, which will develop an appropriate research strategy to help incorporate cancer control into global health programs; foster relevant research activities throughout the NCI's own extramural and intramural divisions; and work closely with the many potential collaborators who have displayed an interest in shared objectives.

Strikingly, many...questions are not only relevant to cancer in the developing world, they address problems that can be solved only by giving more attention to cancers in other parts of the globe.

## COMMENTARY

### POLICY

## Integrating Cancer Control into Global Health

Harold Varmus\* and Edward L. Trimble

Many in the global health community have recently proposed that current efforts be expanded to include diseases typically associated with advanced economies, such as heart disease, mental health disorders, diabetes, and cancers. Here, we discuss ways in which the National Cancer Institute's newly formed Center for Global Health plans to stem the rising cancer burden in developing countries.

Over the past two decades, the world's leading economies have given growing levels of attention to the health of people in low- and middle-income countries, with increasing evidence of success. These efforts to improve what is now called "global health" are founded, in part, on the conviction that better control of disease is generally a precondition, not just a consequence, of economic development; equally important, investments in global health are viewed as a manifestation of a nation's humanitarian concerns and a useful element in international relations (1–3). The ambitions of the global health movement have recently broadened. In this Commentary, we describe how a newly formed Center for Global Health at the National Cancer Institute (NCI) can contribute to improved control of cancer throughout the world, even in the poorest countries (Fig. 1).

### EXPANDING THE FOCUS OF GLOBAL HEALTH

Most of the action in the emerging field of global health has been directed at disease-related problems in developing countries that traditionally are considered to be the most common, the most important, or arguably the most solvable: infectious diseases (especially malaria, tuberculosis, and HIV/AIDS); maternal and infant mortality; and nutritional deficiencies. Recently, however, numerous commentators have noted the need to give greater attention to those chronic and generally noncommunicable diseases that are the major focus of medical prevention, care, and research in advanced economies—cardiovascular diseases, obesity and diabetes, cancers, and mental disorders (4–7). As one highly visible example of this change in perspective, the United Nations has convened a High Level Meeting (September 2011) on

National Cancer Institute, National Institutes of Health, Department of Health and Human Services, Bethesda, MD 20892, USA.

\*Corresponding author. E-mail: harold.varmus@nih.gov

noncommunicable diseases (NCDs) in the developing world, the first time that this prestigious forum has focused on health issues other than HIV/AIDS (8).

This broadening of objectives is partly a response to the success of current global health programs. The lengthening of life spans in many poor countries has allowed more people to reach later life stages during which NCDs are most common, and



Fig. 1. Combating cancer worldwide. NCI's new Center for Global Health promotes a collaborative effort to reduce the burden that cancers impose on people and countries around the world.

economic growth has fostered pathogenic changes in diet, physical activity, and other behaviors that increase the incidence of diabetes, heart disease, and cancer.

Rising numbers of cancer deaths in developing countries are among the significant consequences of a confluence of factors—population growth, population aging, and an increased prevalence of risk factors, such as obesity and the use of tobacco and

alcohol, all of which raise the incidence of certain cancers. In 2008, ~7.6 million people died from cancer worldwide, and 64% percent of these deaths occurred in developing countries. These numbers are up from 2002, when there were 6.2 million cancer deaths, and only 55% percent were in the developing world (9, 10). By 2030, the number of cancer deaths may rise as high as 13.2 million, with 69% percent occurring in developing countries.

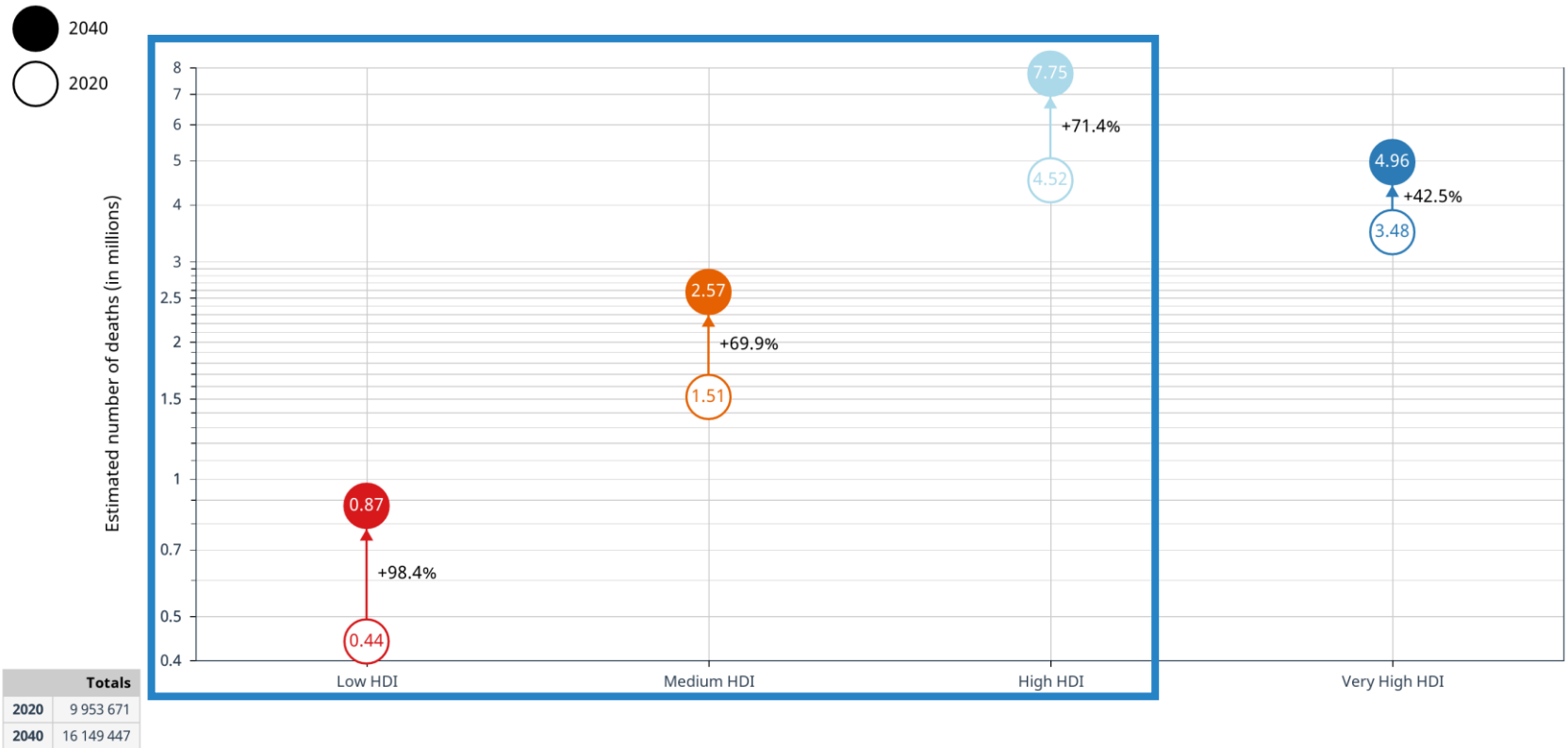
Until recently, proposals to screen for, treat, and even prevent cancers and other NCDs in developing countries have taken a back seat to plans for controlling the traditional targets of global health with measures—such as vaccines and antibiotics, obstetrical care, and food—deemed more affordable and more effective in resource-limited settings. However, while these measures remain important and incompletely implemented, they are increasingly recognized as only one part of what might be done to advance global health. Furthermore, the distinctions between traditional approaches to global health and those required to combat NCDs are not always clear-cut.

For instance, about a quarter of life-threatening cancers in the developing world result from infections with viruses, bacteria, and parasites—examples include liver cancers associated with hepatitis B virus (HBV) and hepatitis C virus; cervical cancer caused by human papillomavirus (HPV); gastric cancer caused by the bacterium *Helicobacter pylori*; Kaposi's sarcoma, nasopharyngeal carcinoma, and Burkitt's lymphoma induced by herpesviruses; bladder cancer resulting from infection with *Schistosoma*, a parasitic flatworm; and various cancers associated with HIV infection. For some of these, effective prevention measures already exist: vaccines against HBV and some strains of HPV that protect against hepatic and cervical cancers, respectively; antimicrobial drugs for the treatment of gastric ulcers caused by *H. pylori* to prevent gastric cancer; and methods to prevent infection by *Schistosoma* and consequent bladder cancer.

Other prevention strategies for control of tobacco and alcohol abuse entail behavioral changes that offer multiple, long-term health benefits, generally at a low cost. Moreover, several kinds of cancer treatments that were thought to be prohibitively expensive for use in poor countries may now be affordable. For example, some effective cancer chemotherapies are no longer patent-protected, and the list will grow

# LMICs will have 69% of global cancer deaths by 2040

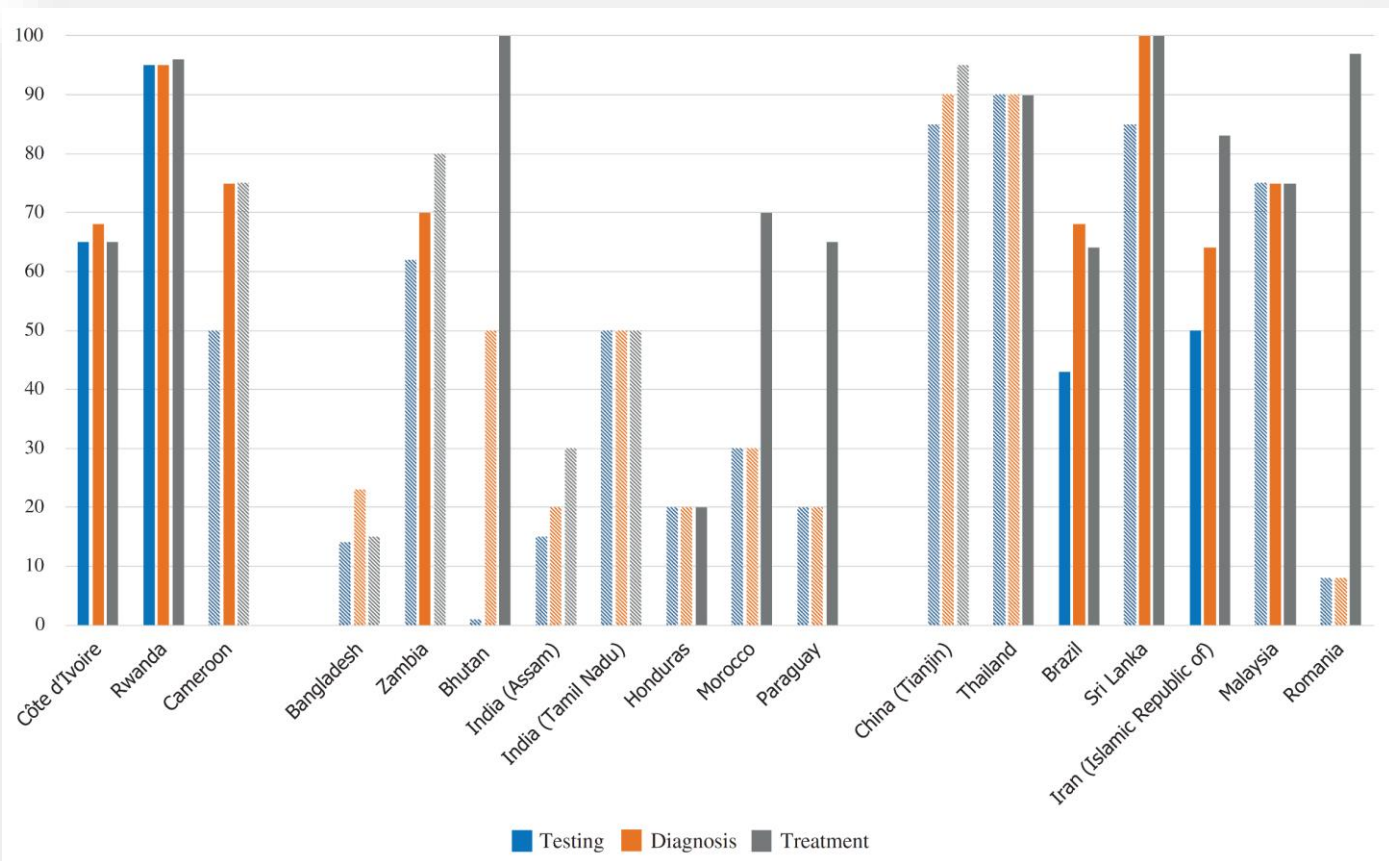
Estimated number of deaths from 2020 to 2040, Both sexes, age [0-85+]  
All cancers



IARC - All Rights Reserved 2020



# Marked cancer service disruptions reported by LMICs due to COVID as of 9/2020



\*Administrative Supplement Opportunity to Study the Impact of COVID-19 on Global Cancer Prevention and Control (NOT-CA-21-033)

**FIGURE 1** Rating of screening, diagnostic and cancer treatment services as on the date of in-depth interview compared to pre-COVID time by the participants from the countries (grouped by HDI category and in ascending order, from left to right, of HDI value) on a sliding scale ranging between 0 (no activities) and 100 (same as pre-COVID time). Total suspension of the service for at least 1 month during the outbreak (generally in lockdown) was represented in diagonal dashed lines [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.com)]

Villain et al, Int J Cancer 2021



# Mission, vision, values

## NCI mission

Lead, conduct, and support cancer research across the nation to advance scientific knowledge and help all people live longer, healthier lives.

## CGH mission

Support the NCI mission by advancing global cancer research, and by coordinating NCI engagement in global cancer control.

## CGH vision

Reduced worldwide cancer suffering through global scientific discovery and dissemination.

## CGH core values

Impact, equity, collaboration

# Goals

Primary focus  
on LMICs for  
CGH-led  
programs

## Research

Support innovative, impactful research that (a) addresses key scientific issues in global cancer control and/or (b) leverages unique or unusual scientific opportunities afforded by collaboration with global partners.

## Research training

Support cancer research training that enables equitable, impactful scientific collaboration with global partners.

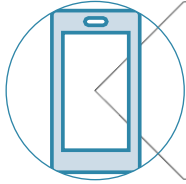
## Dissemination

Promote the integration of current scientific knowledge into global cancer control policies and practice.

## Partnerships

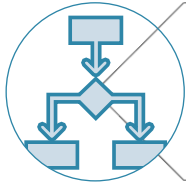
Represent the NCI and promote its engagement with key partners in global cancer research and control.

# Research themes and programs



***Accelerate innovative, effective, and deployable technologies for global cancer control.***

- Cancer Prevention, Detection, Diagnosis, and Treatment Technologies for Global Health (RFA-CA-21-030)
- Notice of Special Interest: Innovative Molecular Analysis Technologies for Low-Resource Settings Globally (NOT-CA-21-025)
- Harnessing Data Science for Health Discovery and Innovation in Africa (RFA-RM-20-015/016/017/018)
- Mobile Health: Technology and Outcomes in Low- and Middle-Income Countries (PAR-19-376)
- Cancer Prevention, Diagnosis, and Treatment Technologies for Low-Resource Settings SBIR/STTR (PA-18-801/18-802)



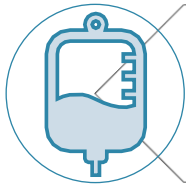
***Accelerate global cancer implementation science.***

- Tobacco Cessation, HIV, and Comorbidities in LMICs (RFA-CA-20-037)
- Dissemination and Implementation Science for Cancer Prevention and Control in Low-Resource Environments (NOT-CA-20-025)



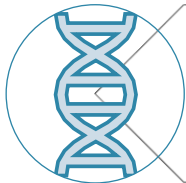
***Understand and address global cancer health disparities.***

- Administrative Supplement Opportunity to Support Global Cancer Stigma Research (NOT-CA-21-026)
- Administrative Supplement to Stimulate or Strengthen Global Cancer Health Disparities Research (NOT-CA-20-032)



***Increase support for cancer clinical trials in LMICs.***

- Supplements to Promote Clinical Research Studies on Pediatric Burkitt Lymphoma in Low- and Middle-Income Countries (PA-16-086)



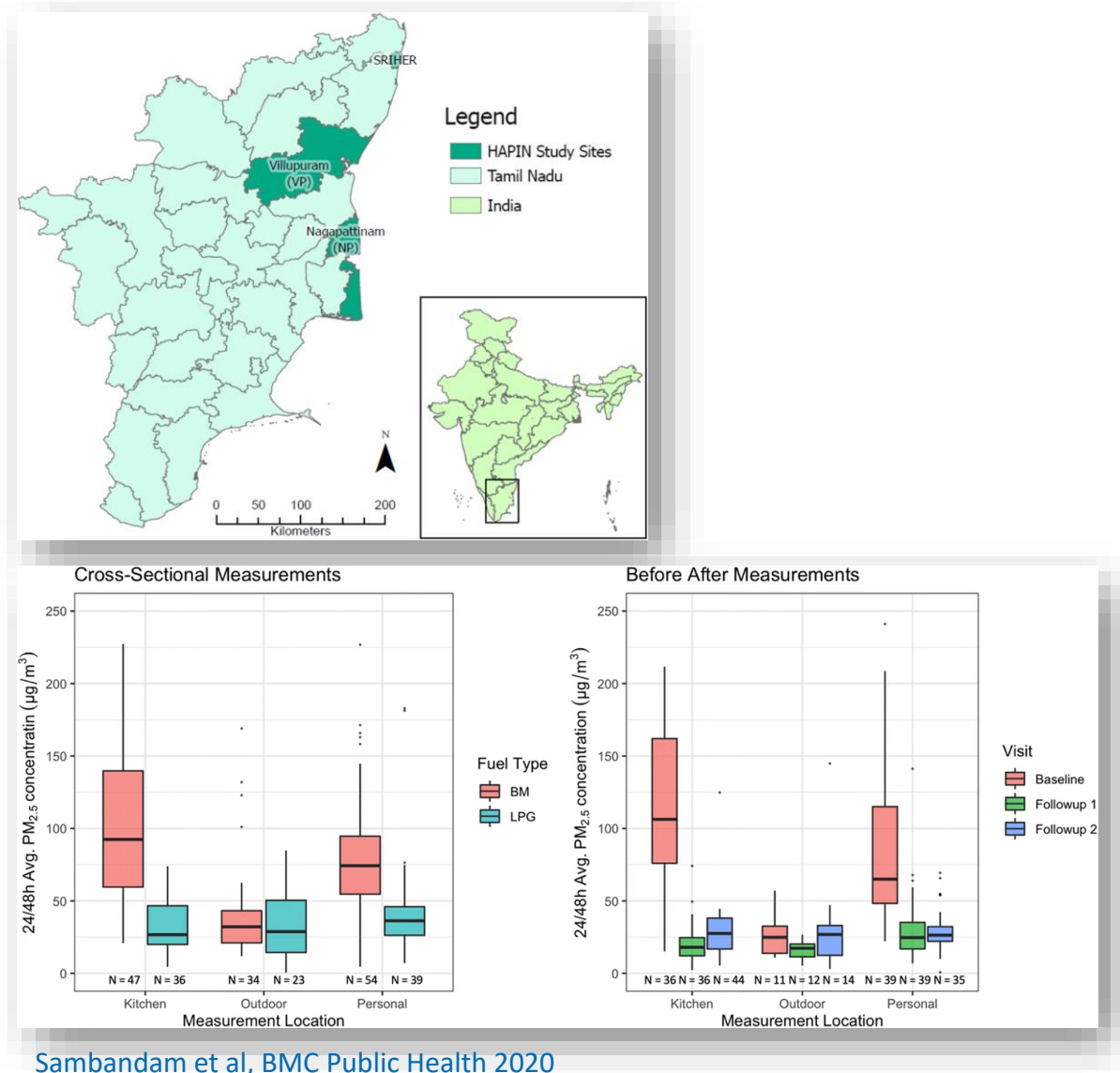
***Increase understanding of cancer etiology and biology through collaboration with global investigators and populations.***

- Intramural collaborations with CCR/DCEG investigators
- Household air pollution multi-country intervention trial through Global Alliance for Chronic Diseases

## Accelerating portable thermocoagulator development to ablate cervical precancer

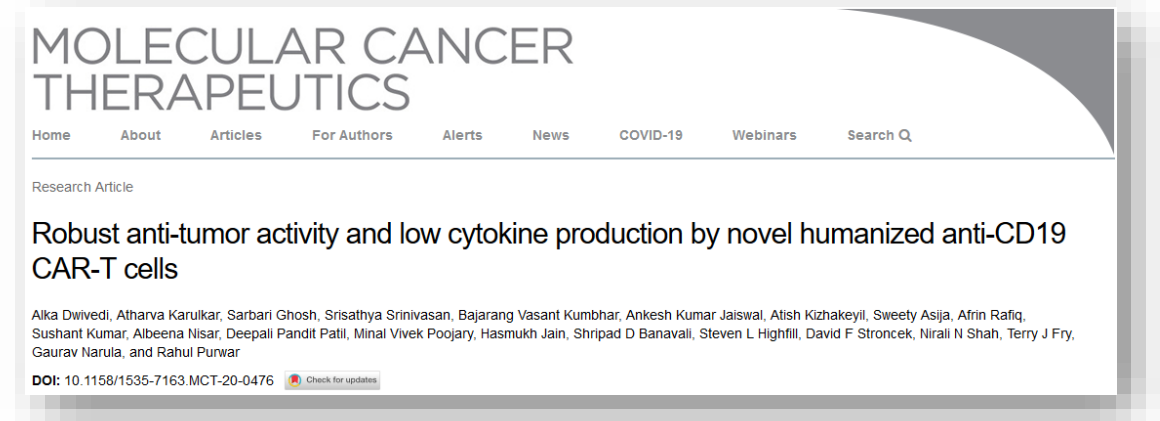


## Evaluating cancer-associated biomarkers in the Household Air Pollution Intervention Network multicenter study



- Strengthening Institutional Capacity to Conduct Global Cancer Research (RFA-CA-20-031)
- International Research Scientist Development Award (PAR-21-104/105)
- Emerging Global Leader Award (PAR-19-051/098)
- Cancer Research Training Travel Awards for LMIC Investigators (extramural)
- Short-Term Scientist Exchange Program (intramural)

## Supporting cellular therapy collaborations between CCR and Indian investigators



- International Cancer Control Partnership
- International Cancer Screening Network
- WHO Collaborating Center
- Annual Symposium on Global Cancer Research

## Emphasizing the continued importance of cancer control during COVID-19



**IJC** International Journal of Cancer 

Editorial | [Free Access](#)

### Why cancer control is fundamental during a pandemic

Jean-Marc Bourque, Zuzanna Tittenbrun, Karin Hohman, Yannick Romero, Kalina Duncan, Lewis Foxhall, Sonali Johnson

First published: 28 December 2020 | <https://doi.org/10.1002/ijc.33432>

## Convening the global cancer research and control community to highlight progress



**Theme:** Global Cancer Research and Control: Looking Back and Charting a Path Forward

**Dates & Times:** Wednesday, March 10 and Thursday, March 11, 2021; 8-11 AM US ET

**Location:** Virtual Satellite Meeting alongside Consortium of Universities for Global Health (CUGH) Annual Conference

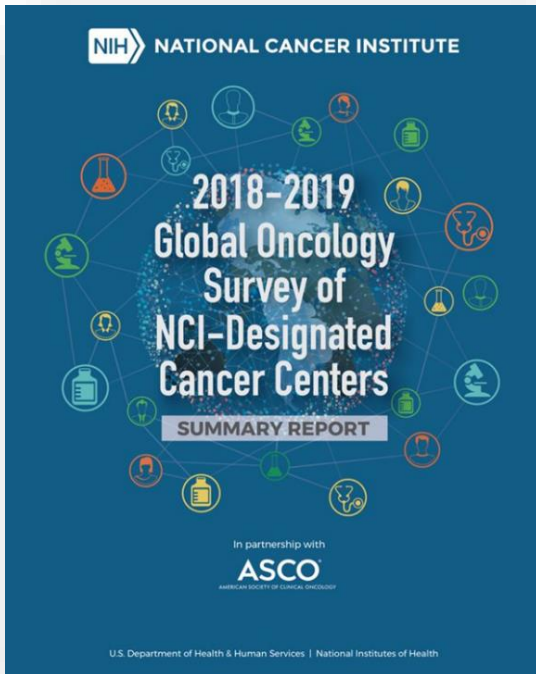
**Website:** <https://events.cancer.gov/cgh/asgcr>

### Scientific Steering Committee Institutions

Aga Khan University Hospital, Kenya  
American Association for Cancer Research  
American Society of Clinical Oncology  
Baylor College of Medicine Dan L. Duncan Comprehensive Cancer Center  
Consortium of Universities for Global Health  
Johns Hopkins University Sydney Kimmel Comprehensive Cancer Center  
Ministry of Health, Mozambique  
Tulane Health Offices for Latin America  
University of Texas MD Anderson Cancer Center  
US National Cancer Institute



- NCI-Designated Cancer Centers Global Oncology Survey
- International Cancer Research Partnership
- IARC Medium-Term Strategy Working Group
- International agreement and collaboration support for NCI



Documenting and supporting the growth of global oncology at NCI-designated cancer centers

Abudu et al, J Glob Oncol 2019

## Increased cancer research productivity in Ireland after the All-Ireland Cancer Consortium

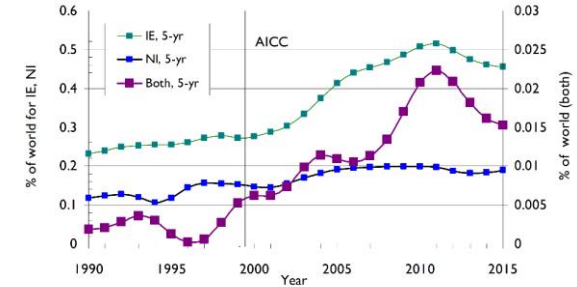


Fig. 1. Outputs of cancer research papers from Ireland (IE), from Northern Ireland (NI), and from both regions, all as percentages of the world total, 1988 to 2017 expressed as five-year running means. AICC, All Ireland Cancer Consortium.

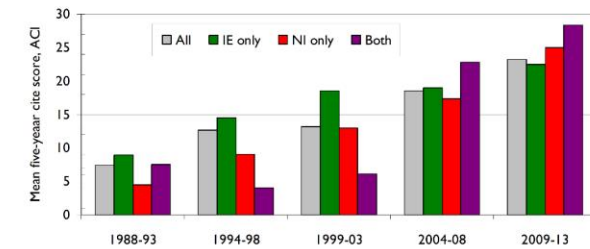


Fig. 3. Five-year citation performance (ACI) of Ireland (IE) and Northern Ireland (NI) cancer papers from 1988 to 2013 (arithmetic means, integer counts).

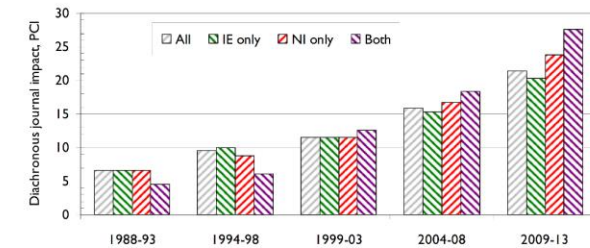


Fig. 4. Five-year diachronous journal impact (PCI) of Ireland (IE) and Northern Ireland (NI) cancer papers from 1988 to 2013 (arithmetic means, integer counts).

# Conclusions

- NCA50 and CGH10 present important opportunities for a renewed and ambitious strategy for global health at NCI
- This effort is central to the NCI mission and its scientific, humanitarian, and equity goals
- CGH seeks to lead an agenda to realize these opportunities and address critical gaps
- This will require leveraging all of NCI and its many external partners





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<https://www.cancer.gov/globalhealth>



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