The Impact of the Coronavirus Pandemic on Cancer Prevention, Diagnosis, Care and Research

Norman E. Sharpless, M.D.

National Coalition for Cancer Survivorship Policy Roundtable

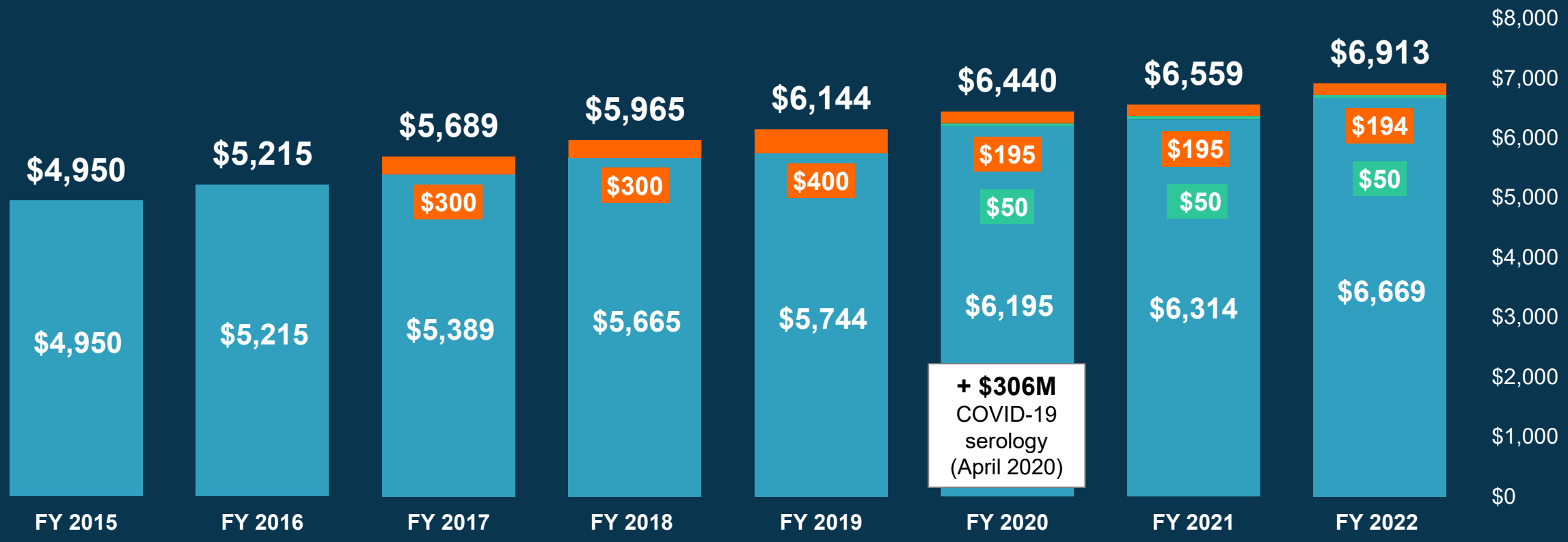
March 30, 2022

@NCIDirector
@TheNCI

NIH NATIONAL CANCER INSTITUTE

NCI Appropriations FY 2015 – 2022 (in millions)

21st Century Cures Act - orange
Childhood Cancer Initiative - green



Also, ARPA-H: $1B
(available FY 2022 - 24)

White House Commitment to New Cancer Moonshot Goals

"I'm proud to announce our plan to supercharge the Cancer Moonshot as a central effort of the Biden-Harris administration... This is a presidential priority. I will do my part on funding and using my authority as president to speed breakthroughs. I challenge and encourage all of you to do your part."

— President Joe Biden (February 2, 2022)

Science 19 June 2020

COVID-19 and cancer

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With the spread of coronavirus disease 2019 (COVID-19), countries and states have instituted lockdowns. These decisions have been difficult and are sometimes described as benefiting the public health at the expense of the economy. Fear of contracting the coronavirus in health care settings has dissuaded people from screening, diagnosis, and treatment for non-COVID-19 diseases. The consequences for cancer outcomes, for example, could be substantial. What can be done to minimize this effect?

Cancer is a complex set of diseases whose prognoses are influenced by the timing of diagnosis and intervention. In general, the earlier one receives cancer treatment, the better the results. There already has been a steep drop in cancer diagnoses in the United States since the start of the pandemic, but there is no reason to believe the actual incidence of cancer has dropped. Cancers being missed now will still come to light eventually, but at a later stage ("upstaging") and with worse prognoses. At many hospitals, so-called "elective" cancer treatments and surgeries have been deprioritized to preserve clinical capacity for COVID-19 patients. For example, some patients are receiving less intense chemotherapy and/or radiotherapy, and in other cases, patients' operations to remove a newly detected tumor are being delayed. There can be no doubt that the COVID-19 pandemic is causing delayed diagnosis and suboptimal care for people with cancer.

Modeled cumulative excess deaths from colorectal and breast cancers, 2020 to 2030*

What will be the likely impact of the pandemic on cancer mortality in the United States? Modeling the effect of COVID-19 on cancer screening and treatment for breast and colorectal cancer (which together account for about one-sixth of all cancer deaths) over the next decade suggests almost 10,000 excess deaths from breast and colorectal cancer deaths; that is, a ~1% increase in deaths from these tumor types during a period when we would expect to see almost 1,000,000 deaths from these two diseases types.* The number of excess deaths per year would peak in the next year or two. This analysis is conservative, as it does not consider other cancer types, it does not account for the additional nonlethal morbidity from upstaging, and it assumes a moderate disruption in care that completely resolves after 6 months. It also does not account for regional variations in the response to the pandemic, and these effects may be less severe in parts of the country with shorter or less severe lockdowns.

Beyond clinical care, the COVID-19 pandemic has caused an unprecedented disruption throughout the cancer research community, shuttering many labs and slowing down cancer clinical trial operations. Many scientists and clinicians are pivoting their cancer research activities to study the impact of SARS-CoV-2 on cancer. The scientific community must ensure that this pause is only temporary, because trials are the only way to make progress in developing new therapies for cancer. Given the long timeline between basic cancer research and changes to cancer care, the effects of pausing research today may lead to slowdowns in cancer progress for many years to come.

Collective action by the clinical and research communities and by governmental agencies can mitigate this potentially substantial impact. The U.S. National Cancer Institute (NCI), for example, has started to address this challenge (see www.cancer.gov). The NCI has worked with the U.S. Food and Drug Administration to increase flexibility and support for clinical trials during the pandemic. For example, allowances have been made to accept "remote" informed consent, and other protocol deviations. In addition, the NCI has announced several new clinical trials and funding opportunities aimed at addressing the relationship between COVID-19 and cancer. Of particular note is the NCI COVID-19 in Cancer Patients Study, a prospective longitudinal study that will collect blood samples, imaging, and other data to understand how COVID-19 affects cancer patients.

Clearly, postponing procedures and deferring care as a result of the pandemic was prudent at one time, but the spread, duration, and future peaks of COVID-19 remain unclear. However, ignoring life-threatening non-COVID-19 conditions such as cancer for too long may turn one public health crisis into many others. Let's avoid that outcome.

–Norman E. Sharpless

*See supplementary materials (science.sciencemag.org/content/368/6497/1290/suppl/DC1).

10.1126/science.abd3377

The Washington Post

By Laurie McGinley

June 18, 2020 at 7:30 p.m. EDT

Nation's cancer chief warns delays in cancer care are likely to result in thousands of extra deaths in coming years

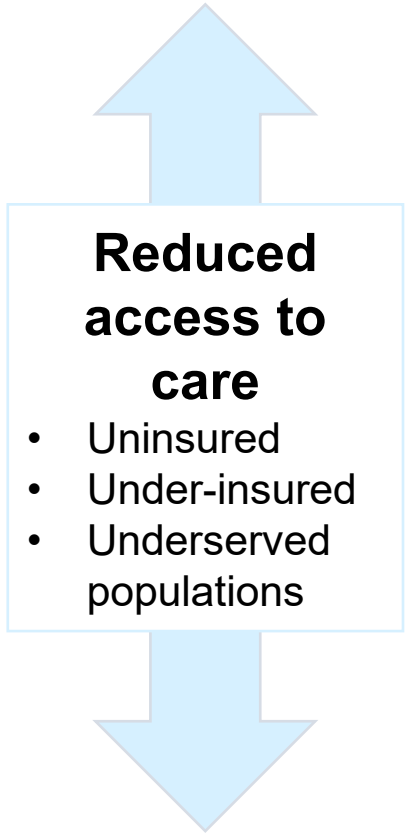
STAT

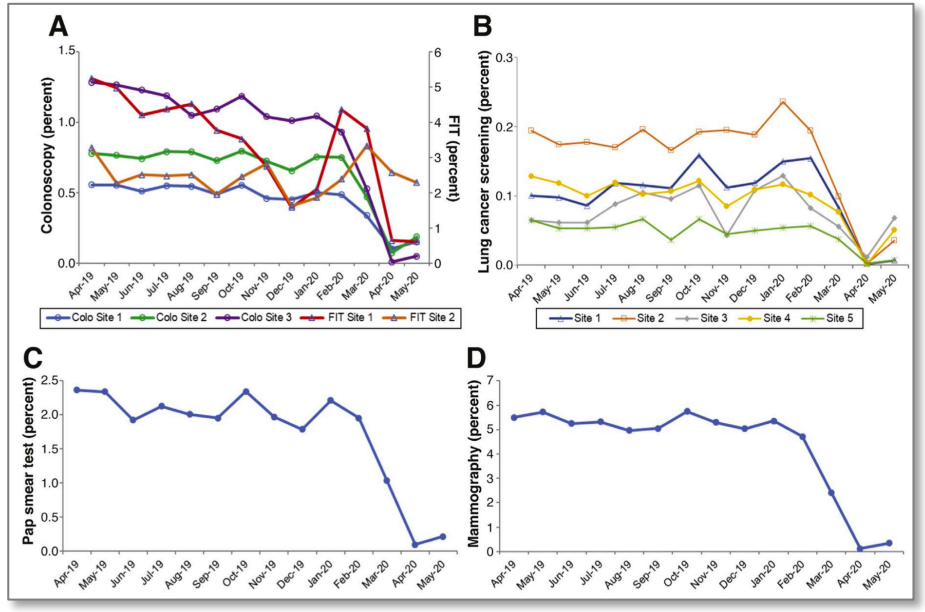
Ignoring cancer care now may trade one public health crisis — Covid-19 — for another, NCI chief warns

By ELIZABETH COONEY @cooney_liz / JUNE 19, 2020

Impacts of the COVID-19 pandemic on long-term trends in cancer statistics

Delayed Diagnosis	• Reduced screening • Reduced follow-up on suspicious findings from screening • Reduced visits to address symptoms	Treatment Delay Increased Mortality
Deferred Care	• Postponed surgery • Postponed radiation • Postponed chemotherapy	Treatment Delay Increased Mortality
Reduced / Non-Standard care	• Less intense chemotherapy • Neo-adjuvant chemo instead of immediate surgery	Reduced Response Increased Mortality





- NCI-funded research network
- 10 diverse healthcare delivery systems across the U.S.
- Goal: To better understand how to **improve the cancer screening process in community healthcare settings** in the United States

PROSPR

Population-based Research to Optimize the Screening PRocess

COMMENTARIES

Cancer Screening During the Coronavirus Disease-2019 Pandemic: A Perspective From the National Cancer Institute's PROSPR Consortium

The severe acute respiratory syndrome novel coronavirus-2 (SARS-CoV-2) virus pandemic and related coronavirus disease (COVID-19), have dramatically altered health care delivery, worsened non–virus-related health outcomes, and increased the potential for disparities. As COVID-19 infections increased, public health and professional organizations issued guidance that all nonurgent surgeries and procedures, including cancer screening, should be delayed.[1] Not surprisingly, early data suggest that these restrictions drastically impacted preventive care that requires direct patient–provider contact. Even for conditions requiring urgent intervention, such as myocardial infarctions,[2] there is evidence that patients recently decreased health care use. An online evaluation by the EPIC health research network suggested fewer cancer screening encounters during the pandemic; however, these analyses did not directly measure recommended cancer screening tests within age-eligible populations and did not examine disparities over time.[3] Thus, the pandemic's broader impact on commonly performed cancer prevention and control measures remains largely unknown.

Decreases in cancer screening are particularly alarming because routinely screening asymptomatic people decreases morbidity and mortality related to breast, cervical, colorectal, and lung cancers.[4] The current US Preventive Services Task Force recommendations include: biennial breast cancer screening with mammography in women ages 50–74 years; annual lung screening with low-dose computed tomography in adults aged 55–80 years with a >30 pack-year smoking history and a quit date within 15 years; colorectal cancer screening, most commonly completed using annual fecal immunochemical testing (FIT) or colonoscopy every 10 years among average risk adults aged 50–75 years; and periodic cervical screening with cytology with or without human papillomavirus testing in women ages 21–65 years.[4] Thus, almost every adult is recommended to receive multiple cancer screening tests during their lifetime. At present, minimal data are available regarding the pandemic's impact on cancer screening between diverse health care settings, among different cancer types, by various screening tests, and across disparate demographic groups.

To address these knowledge gaps and to formulate a roadmap for resuming cancer screening, the National Cancer Institute's Population-based Research to Optimize the Screening Process (PROSPR) consortium compared breast, cervical, colorectal, and lung cancer screening rates before and after the pandemic and developed pragmatic recommendations. The PROSPR consortium is designed to evaluate and improve cancer screening processes and outcomes. Data were available from eight large health care systems in seven states, covering >11 million individuals (approximately 1 of every 30 people in the United States). Most sites studied rapidly approached zero screening among target-age populations during the early phase of the pandemic, across diverse types of health care delivery systems (Figure 1). Breast cancer screening had the largest decrease (a 96% decrease), from 5.3% of age-eligible persons screened per month in April to September 2019 to 0.23% in April and May 2020 ($P < .01$). Screening for lung, cervical, and colorectal cancers at most sites had similar declines with 62%, 92%, and 82% decreases, respectively.

Two important findings may inform future actions. First, 1 large site in the Western United States continued mailing FIT for colorectal screening, which does

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journal homepage: www.elsevier.com/locate/ypmed

Cancer screening in the U.S. through the COVID-19 pandemic, recovery, and beyond

Jennifer M. Croswell [a,*], Douglas A. Corley [b], Jennifer Elston Lafata [c], Jennifer S. Haas [d], John M. Inadomi [e], Aruna Kamineni [f], Debra P. Ritzwoller [g], Anil Vachani [h], Yingye Zheng [i], for the National Cancer Institute Population-based Research to Optimize the Screening Process (PROSPR) II Consortium

ABSTRACT

COVID-19 has proved enormously disruptive to the provision of cancer screening, which does not just represent an initial test but an entire process, including risk detection, diagnostic follow-up, and treatment. Successful delivery of services at all points in the process has been negatively affected by the pandemic. There is a void in empirical high-quality evidence to support a specific strategy for administering cancer screening during a pandemic and its resolution phase, but several pragmatic considerations can help guide prioritization efforts. Targeting guideline-eligible people who have never been screened, or those who are significantly out of date with screening, has the potential to maximize benefits now and into the future. Disruptions to care due to the pandemic could represent an unparalleled opportunity to reassess early detection programs towards an explicit, thoughtful, and just prioritization of populations historically experiencing cancer disparities. By focusing screening services on populations that have the most to gain, and by careful and deliberate planning for the period following the pandemic, we can positively affect cancer outcomes for all.

1. Introduction

As the number of U.S. COVID-19 cases rapidly increased in early 2020, many healthcare systems responded to concerns over SARS-CoV-2 infection risks, hospital bed capacity, and personal protective equipment supply by pausing non-emergent care. Medical societies recommended deferment of cancer screening and even diagnostic evaluation of abnormal screens, in some situations (Colorectal Cancer Alliance, 2020; ASCCP, 2020; Mazzone et al., 2020). Accordingly, cancer screenings plummeted; one study of 11 million people found that the monthly proportion of age-eligible persons screened for breast, lung, cervical, or colorectal cancer dropped 62–96% in April-May of 2020 compared to April-September 2019, depending on cancer site (Corley, 2020). Over the remainder of 2020, screening rates began to creep back as non-emergent care resumed, but most healthcare systems did not return to previous levels of screening and related services (Mast and del Río, 2020; Patt et al., 2020; Van Haren, 2020), likely due to a heterogeneous mix of COVID-19 case surges, resulting or continuing capacity constraints, and patient reluctance to seek out medical care due to perceived or real infection risk (Patt et al., 2020; Cancino et al., 2020; Bakouny, 2021).

Cancer screening is more than the receipt of an isolated test. It encompasses an entire process, including risk assessment, detection, diagnosis, treatment, and follow-up (i.e., surveillance) to realize improved health outcomes (Beaber et al., 2015). Optimal screening balances potential harms and benefits along that *full continuum* for each person. The COVID- 19 pandemic negatively affected this balance, but delays in screening, follow-up, and treatment may bring their own

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0091-7435/Published by Elsevier Inc.

First Lady Jill Biden and NCI Work Together on Returning to Screening

Healthy People 2030 screening targets*		Current uptake**
Lung cancer	**7.5%** of adults aged 55-80 years receive lung cancer screening	**4.5%**
Colorectal cancer	**74.4%** of adults aged 50-75 years have received a colorectal screening test	**67.1%**
Breast cancer	**77.1%** of women aged 50-74 years have received a breast cancer screening	**76.4%**
Cervical cancer	**84.3%** of women aged 21-65 years received cervical cancer screening	**73.5%**

**Targets were set based on the USPSTF recommendations in place at that time.*

***Most recent data available as of July 2021.*

Photo credits: The University of Texas Health Science Center at San AntonioTwitter / Ruben A. Mesa, Moffitt Cancer Center, White House / Ana Isabel Martinez Chamorro, Marquel Coaxum; ABC/Good Morning America

Adapting Clinical Trials during the Pandemic

- Patient care can be transferred to different participating study sites
- Local healthcare providers can provide study activities to provide continuity of care (oversight by responsible investigator)
- NCI and trial sites can ship oral drugs directly to patients
- Alternative procedures that do not compromise safety or the integrity of the study will be considered minor deviations
- NCI CIRB supports “remote” informed consent: telephone discussion in conjunction with patient signature on written document

Centers on Telehealth Research for Cancer-Related Care

Funding Opportunity Announcement (FOA)

RFA-CA-21-029

To fund P50 Centers dedicated to **advancing a national telehealth research agenda** focused on improving cancer-related care and outcomes across the cancer control continuum.

Anticipate awards this Spring.

The NEW ENGLAND JOURNAL of MEDICINE

Perspective

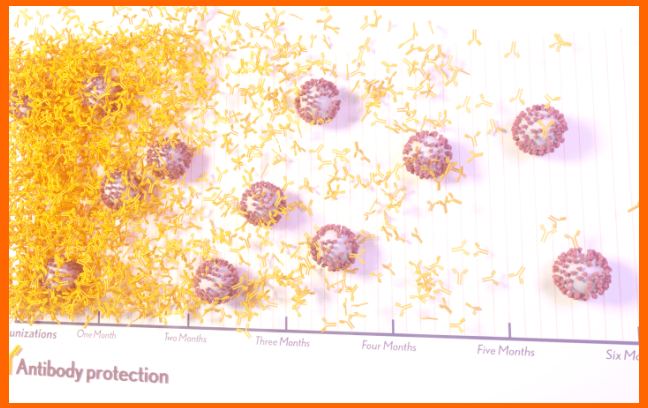
The FDA's Experience with Covid-19 Antibody Tests

Jeffrey Shuren, M.D., J.D., and Timothy Stenzel, M.D., Ph.D.

February 18, 2021

Photo: FDA

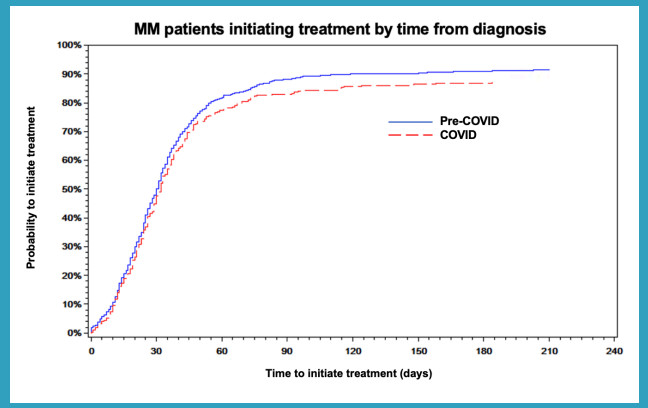
Recent publications on COVID-19 and cancer



Neutralizing antibody responses elicited by SARS-CoV-2 mRNA vaccination wane over time and are boosted by breakthrough infection

Science Translational Medicine

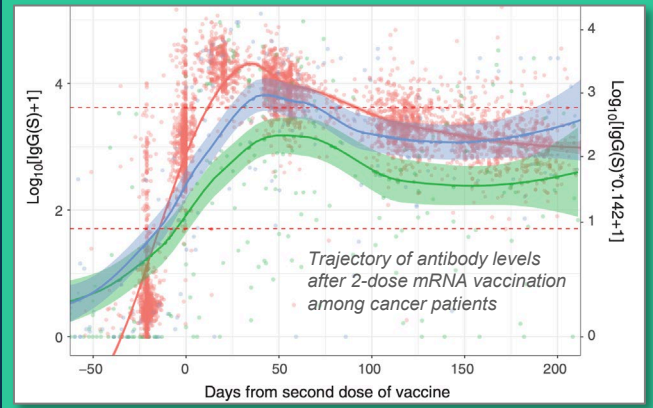
February 15, 2022



Changes in Multiple Myeloma Treatment Patterns during the Early COVID-19 Pandemic Period

Blood

November 5, 2021



Longitudinal SARS-CoV-2 mRNA Vaccine-Induced Humoral Immune Responses in Patients with Cancer

Cancer Research

December 5, 2021

Lessons from the Impact of the COVID-19 Pandemic on Oncology

March/April 2022
Volume 28 - Issue 2

Beyond the COVID-19 Pandemic: Sustaining and Improving Equitable Cancer Care and Research
Schilsky, Richard L.

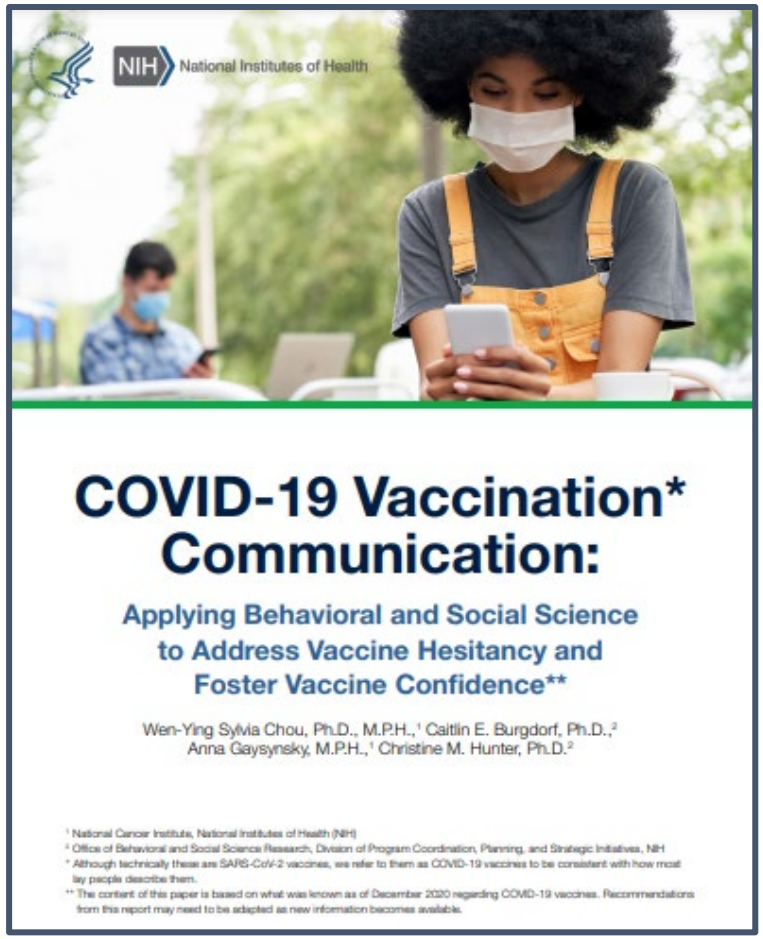
Cancer Care at the Beginning of the COVID-19 Pandemic: Effects on Patients and Early Interventions to Mitigate Stresses on Care
Davidson, Nancy E.; Knudsen, Karen E.; Nasso, Shelley Fuld; et al.

Telemedicine Across the Cancer Care Continuum: Evidence and Opportunities for Clinical Care, Research, and Policy
Nekhlyudov, Larissa; Fleisher, Lee A.; Jacobsen, Paul B.

Clinical Evidence Generation During a Pandemic: Lessons Learned for Sustaining Progress
Rivera, Donna R.; Kluetz, Paul G.; Abdallah, Kald; Lowy, Douglas R., et al.

Patterns of Enrollment in Cancer Treatment Trials During the COVID-19 Pandemic at National Cancer Institute–Designated Cancer Centers
Prindiville, Sheila A.; Sarosy, Gisele A.; Loose, David; et al.

NCI Research on Vaccine Hesitancy



"…communication about COVID-19 vaccines can benefit from drawing on the extant social and behavioral science literature about successful strategies to influence health decisions and behaviors."

NCI
Wen-Ying Sylvia Chou, Ph.D., M.P.H.
Anna Gaysynsky, M.P.H.

NIH Office of Behavioral and Social Sciences Research
Caitlin E. Burgdorf, Ph.D.
Christine M. Hunter, Ph.D.

New White House Cancer Mortality Goal

1990 **215** deaths per 100,000

2019 **146** deaths per 100,000

In 25 years…

73 **deaths per 100,000**

"The goal is to cut the cancer death rate in half in the next 25 years."

— President Biden

Feb. 2, 2022

Ending Cancer As We Know It

DIAGNOSE CANCER SOONER

Increase access to screening, support patients through diagnosis, evaluate new technologies like multi-cancer detection tests

PREVENT CANCER

Explore mRNA technology, address environmental exposures to cancer

ADDRESS INEQUITIES

Ensure every community in the nation has access to diagnostics, therapeutics, and clinical trials

TARGET TREATMENTS TO THE RIGHT PATIENTS

Learn more about genetics, immune responses, and other factors, to tell which combination of treatments will work best in an individual patient

SPEED PROGRESS AGAINST DEADLIEST & RAREST CANCERS

Invest in a robust pipeline for new treatments

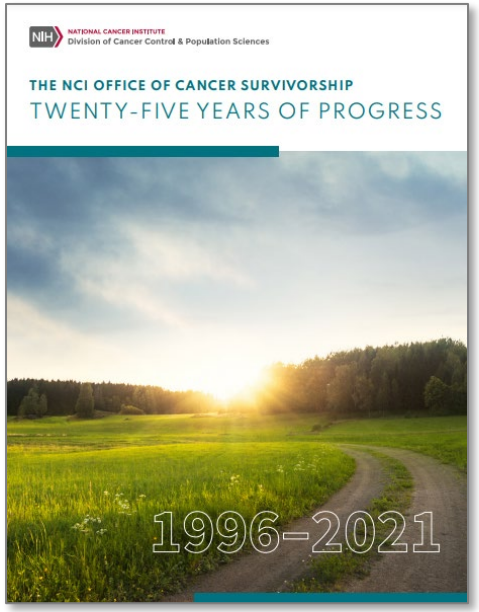
SUPPORT PATIENTS, CAREGIVERS, & SURVIVORS

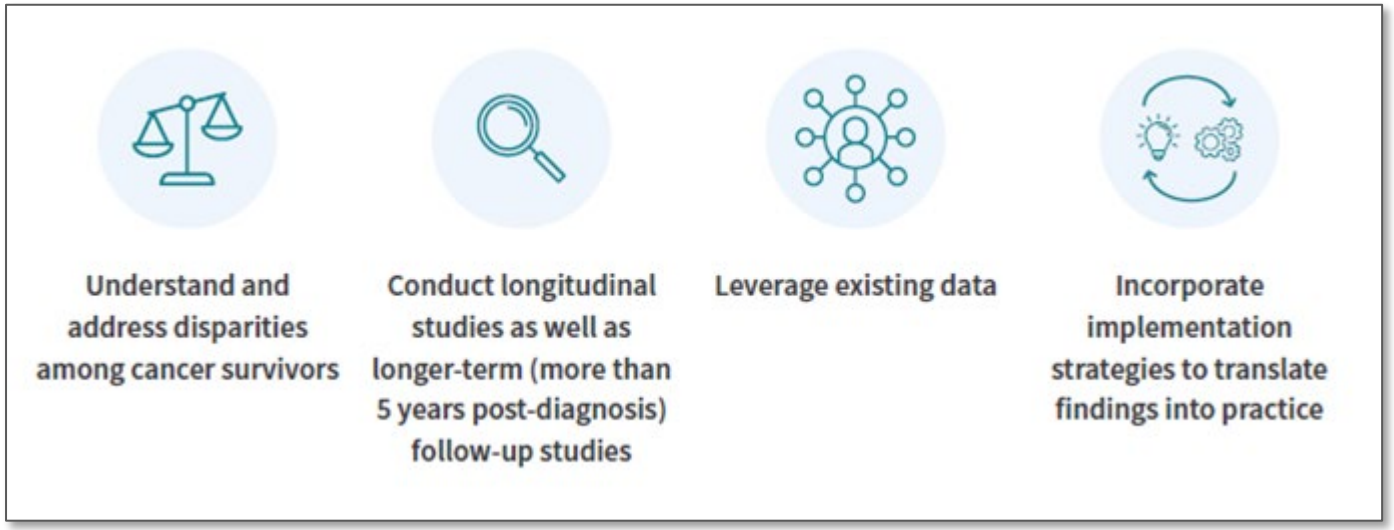
Help people overcome medical, financial, and emotional burdens; provide support to navigate diagnosis, treatment, and survivorship

LEARN FROM ALL PATIENTS

Leverage diverse experiences of patients and families to develop approaches to end cancer as we know it

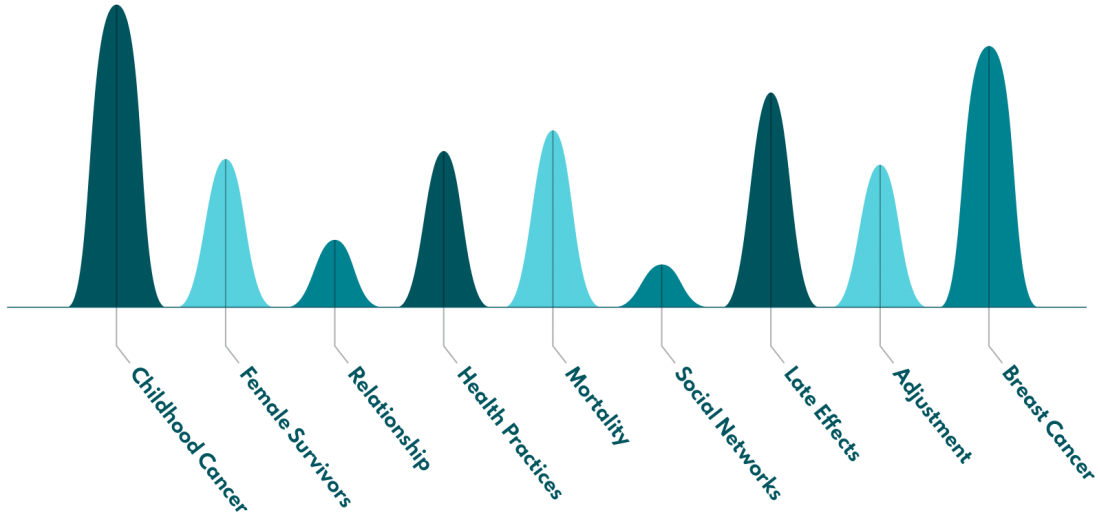
Emily Tonorezos, MD, MPH
Director
Office of Cancer Survivorship



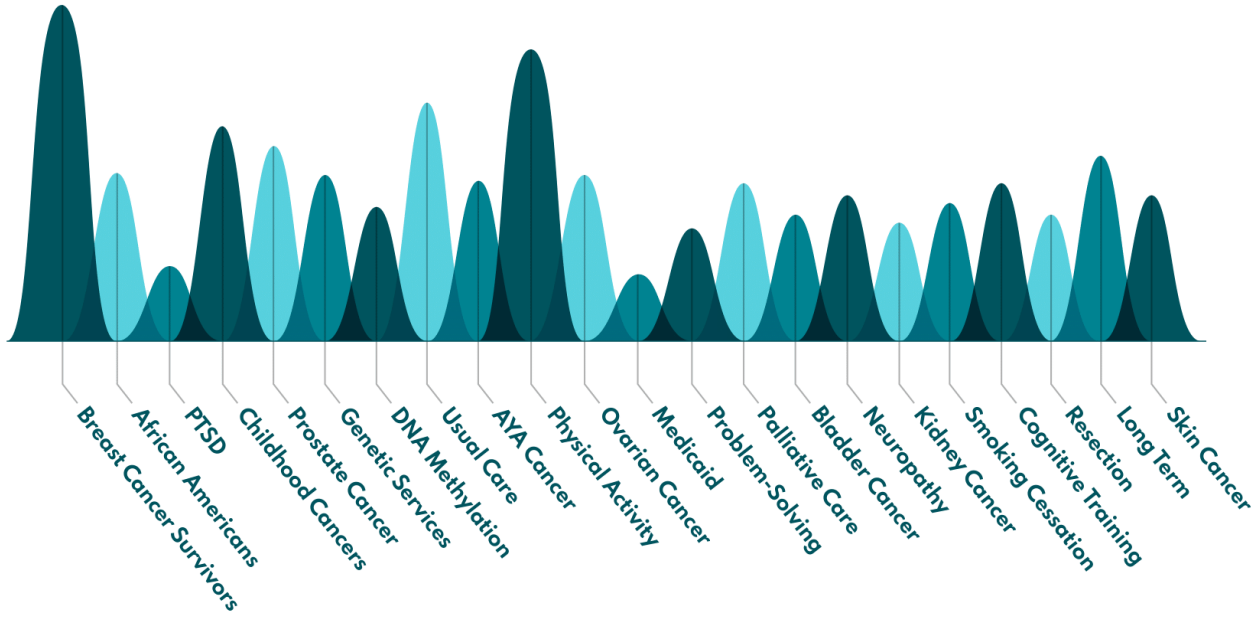


NCI's Focus on Survivorship

1998
13 grants
$3,150,482



2020
165 grants
$111,581,130



Discussion