Welcome to the Abramson Cancer Center of the University of Pennsylvania, a world leader in cancer research, patient care and education. The Abramson Cancer Center is designated as a Comprehensive Cancer Center by the National Cancer Institute, one of 41 such centers in the United States. This designation reflects our commitment to excellence in the discovery, development and delivery of cancer prevention, diagnosis and treatment. Our patients can expect the highest standard of care, including access to the latest technologies and innovation such as our groundbreaking work in immunotherapy and personalized medicine.

Our scientists are making unprecedented advances in cancer research with more than 1,000 active research projects and the largest portfolio of cancer clinical trials in the region. Our collaborative, interdisciplinary approach facilitates rapid translation of discoveries between the lab and the clinic, and when appropriate, to the community. We are continually searching for new treatments and ways to transform discoveries into meaningful improvements to patients’ lives. Our world-renowned research in translational immunotherapy is changing the paradigm of cancer treatment.

Our commitment extends beyond our patients to our community. As we consider the continuum of care from prevention to screening to diagnosis to management to survivorship, our research and clinical services are shaped by an intimate knowledge of the cities, towns, neighborhoods and counties that comprise the Greater Delaware Valley. This knowledge guides our work and inspires us to find tomorrow’s cures today.

On behalf of the more than 500 Abramson Cancer Center healthcare professionals, research scientists and staff working every day to heal and bring hope to patients through research, I invite you to learn more about the Abramson Cancer Center and join us in our fight to eradicate cancer.

Chi V. Dang, MD, PhD
Director, Abramson Cancer Center
John H. Glick, MD, Abramson Cancer Center Director’s Professor

REPORT HIGHLIGHTS

This report highlights the cancer burden in the Greater Delaware Valley and the work that is going on at the Abramson Cancer Center to decrease this burden. Controlling cancer involves a series of steps, including:

- ELIMINATING CANCER RISK FACTORS
- DETECTING CANCERS AT AN EARLY STAGE THROUGH SCREENING
- PROPER DIAGNOSIS
- APPROPRIATE MANAGEMENT, INCLUDING TREATMENT
- HELPING CANCER SURVIVORS LEAD FULL LIVES
Despite the amazing strides in reducing cancer suffering and death, cancer remains one of the leading killers in the Greater Delaware Valley. The most recent data available suggest that almost 45,000 members of our community will be diagnosed with cancer this year, and almost 16,000 will die of cancer. These numbers suggest that there is still a great deal of work to be done to reduce exposure to cancer risk factors, increase the use of cancer screenings and ensure that, if diagnosed with cancer, members of our community receive the best treatments available to them.

residents of the Greater Delaware Valley are more likely to survive cancer than ever before. Recent advances in cancer prevention and treatment mean that fewer people are diagnosed with a life-threatening cancer. Treatments are less toxic and more likely to cure because they are better tailored to the individual’s disease. Millions of cancer survivors are able to lead full and active lives because of research.

THANKS TO ADVANCES IN CANCER RESEARCH
Welcome to the Greater Delaware Valley, an area rich in economic, demographic and geographic diversity. The following pages describe our community and offer a glimpse at the leading cancers and cancer burden facing our region. The Abramson Cancer Center maintains a unique window on the 15 counties that comprise our catchment area, a window that looks out on rural landscapes, thriving suburbs, quaint main streets, urban skylines, neighborhoods plagued by poverty, and others defined by affluence. These diverse spaces and the people within them have a unique cancer story to tell.
The story of cancer in the Greater Delaware Valley is a story of people, but it begins with numbers. At the Abramson Cancer Center, we study our community and use that intimate knowledge to guide our outreach so that we can touch the greatest number of lives in the most effective way.

Our Community: Geography and Demographics
Our clinical and community-based outreach efforts target a catchment area we describe as the Greater Delaware Valley (GDV). The Greater Delaware Valley includes the 15 counties in closest geographic proximity to the Abramson Cancer Center's West Philadelphia location. This area is home to 87% of the cancer patients seen at the Abramson Cancer Center (ACC).

The West Philadelphia neighborhood that surrounds the ACC is of particular interest due to its proximity and large African-American, socioeconomically-underserved population. The ACC’s longstanding commitment to West Philadelphia has been the focus of our service and research efforts for the past two decades.

The GDV is rich in ethnic and racial diversity with a lower proportion of whites and Hispanics and a higher proportion of blacks than the U.S. as a whole. Hispanics in our area are younger than non-Hispanics—48% of Hispanics vs. 15% of non-Hispanics were under age 18 in the 2010 census—and therefore have a lower risk of cancer. Given the substantial cancer disparities experienced by the black population in the GDV, especially Philadelphia, serving this group is a priority for the ACC.

The table below presents the racial/ethnic distribution of the region as well as the distribution of cancer cases seen at ACC by race and ethnicity.

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>GDV Population</th>
<th>ACC Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>7,337,021</td>
<td>11,037</td>
</tr>
<tr>
<td>Black</td>
<td>1,379,201</td>
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<tr>
<td>Hispanic</td>
<td>729,761</td>
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<td>Asian/Pacific</td>
<td>362,461</td>
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</tr>
<tr>
<td>Native American</td>
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</tr>
</tbody>
</table>

*Note: Since unknown/unreported race is not presented, percentages may not sum to 100%. Data represent patients who presented at the Hospital of the University of Pennsylvania, Pennsylvania Hospital and Penn Presbyterian Medical Center.
Cancer in Our Community

We describe the impact of cancer on a community as the “cancer burden.” Two statistics define the burden for us—incidence and mortality. Incidence tells us the number of new cases of cancer in a given year. Mortality quantifies the number of deaths due to cancer in a given year. Both numbers are considered in relation to the population. In this report we also consider risk factors associated with cancer, and how elevated risk may add to the cancer burden.

Our research has identified five major cancer-related health burdens in the GDV:

1. Cancer incidence and mortality in Philadelphia County in all races
2. Liver, melanoma, prostate, thyroid, bladder, and uterine cancer incidence
3. Breast, pancreatic, and prostate cancer mortality
4. Environmental hazards
5. Modifiable risk factors, especially obesity and tobacco exposures

More detail on cancer burden and inequities in the GDV is provided throughout this report.

Leading Cancers

The leading cancers diagnosed in the Greater Delaware Valley are prostate, female breast, lung and colorectal cancers and melanoma. Advances in early detection and treatment have resulted in a slightly different ranking of cancer mortality. The most common causes of cancer death are lung, colorectal, female breast, pancreatic and prostate cancers.

Of the 16 most common cancers, six are more common in the GDV, as compared with the nation as a whole: liver, melanoma, prostate, thyroid, urinary bladder, and uterine. More people die of female breast, pancreatic, and prostate cancers in the GDV compared with the U.S. Scientific advances contribute in part to the relatively low rate of deaths due to some cancers, despite how commonly they are diagnosed.
The fear of being diagnosed with cancer looms large for many of us. Known risks like the link between tobacco and lung cancer offer certainty but still a tremendous challenge for lifelong smokers. The connection between obesity and physical inactivity and a growing number of cancers remains largely unknown by the general public. Environmental hazards are less tangible and often hard to accept—no parent envisions learning that a favorite playground has been sitting alongside hazardous waste. Genetic risk presents a new puzzle, one which can be complicated to understand and overwhelming in its solutions. The Abramson Cancer Center’s risk-related research focuses on identifying the risk factors of most significance to the Greater Delaware Valley. We strive to understand them in greater depth and provide solutions that decrease the cancer burden on our community.
Will I get cancer? Can I prevent cancer?

Many of us have asked ourselves these very questions. While the causes of cancer are largely unknown, we know that certain behavioral, genetic and environmental risk factors may make people more likely to develop specific cancers. Some of these connections are strong and widely known, like the link between smoking and lung cancer. The growing evidence for others, like the connection between obesity and prostate cancer, has come to light more recently. The Abramson Cancer Center works to identify the greatest risks facing residents of the Greater Delaware Valley (GDV) and develop programs to address them.

Within the GDV, three behavioral risks stand out—the high rates of smoking, obesity and physical inactivity. When we compare our numbers to national goals, we see that local men are 40-120% more likely, depending on their race, to smoke and women are 90% more likely to be current smokers than recommended by Healthy People 2020, a national health promotion effort. These high rates of smoking may explain in part our community’s elevated rates of bladder, pancreatic and liver cancers, all of which have been associated with smoking.

Adult obesity is also a significant problem in our area, with women exceeding the Healthy People 2020 targets by 50-90% and men by 60-140%. The GDV also has higher rates of certain cancers associated with obesity, such as thyroid, uterine, pancreas, and postmenopausal breast cancers. Exercise can prevent obesity, yet a quarter to a third of men and women in the GDV report no leisure time physical activity.

Risks also come from the world around us. Superfund sites—abandoned or uncontrolled spaces where hazardous waste is found—can contribute to poor community health. The GDV is home to at least 48 Superfund sites, including some with known links to increased cancer risk. For example, Ambler, PA in suburban Montgomery County houses one of the largest asbestos waste sites in the nation and has been linked to a cluster of mesothelioma.
A DIFFERENT KIND OF LIGHT: NEW PROGRAMS OFFER HOPE TO HARD-TO-REACH SMOKERS

Tobacco causes cancer. Both nationally and in the Greater Delaware Valley (GDV), the numbers are alarming. In the U.S., tobacco use accounts for at least 30% of all cancer deaths, and a large majority of lung cancer cases and deaths are caused by tobacco use. Within the GDV, lung cancer is the second most common cancer, second only to prostate cancer in men and breast cancer in women. Tobacco use is also linked to other cancers that affect our community such as head and neck, esophageal, pancreatic, bladder, kidney, colorectal, cervical and gastric cancers, and leukemia.

The most determined smokers often try and fail to quit multiple times before achieving success. Through the Abramson Cancer Center’s Tobacco and Environmental Carcinogenesis (TEC) Program, we offer new strategies and enhanced support to some of the hardest-to-reach smokers in our area. Our National Institutes of Health-funded portfolio of clinical trials of tobacco treatments is helping pave a path to healthier living for many who had lost hope.

TEC’s treatment trials assess for both safety and efficacy, and focus on underserved and understudied populations of smokers, including:

» Ethnic minority groups
» Economically-disadvantaged community members
» Individuals with HIV/AIDS
» Pregnant women
» Cancer patients and survivors
» Individuals who suffer from serious mental illness

I couldn’t sleep. I felt like I was choking. They told me to stop (smoking). They gave me a day. It worked almost right away. I’m feeling good.

Calvin, Participant TEC Program
Some of these groups show extraordinarily high rates of tobacco use, such as those with HIV/AIDS or serious mental illness, whose smoking rates can be two to three times greater than the general population. Others—such as pregnant women, and cancer patients and survivors—struggle to find reliable methods to quit smoking.

Most TEC studies combine established medications for treating nicotine dependence, such as varenicline or bupropion, with evidence-based behavioral support. At any given time, approximately 200 people are enrolled in our studies. Nearly 1,000 smokers have sought help from TEC since its inception. Many of the participants are African American or low-income. In two recent large clinical trials, African Americans comprised more than one-third of participants, and more than half of participants reported a total household income of less than $35,000/year.

Psychologist Robert Schnoll, PhD, who co-leads the TEC research program, describes these clinical trials as well-matched to the Philadelphia area. “These programs fill a critical gap in our urban, economically and racially diverse community where we have many obstetric and oncologic clinics and high rates of serious mental illness and HIV/AIDS.”

Despite the high need for these programs, finding participants for specialized trials is not always easy. Letters are sent to patients identified as smokers through electronic medical records. As needed, TEC staff reach out to community mental health centers and HIV clinics to find interested candidates.

Dr. Schnoll continues, “Our programs address one of the leading causes of cancer morbidity and mortality in the Greater Delaware Valley. Overall, the rate of decline in U.S. smoking rates has plateaued or stalled altogether. Some contend that this is because the large majority of the remaining smokers are from subgroups that are underserved due to low socioeconomic status or have a co-occurring condition, such as mental illness or HIV that makes quitting more difficult. We need targeted interventions for these groups to reignite the decline in smoking witnessed over the past 50 years.”

Current trials that are open for recruitment focus on HIV, cancer patients, depression and pregnancy. To find out more about the Abramson Cancer Center’s smoking cessation programs, call the study coordinator at: 215.898.9941.

In a randomized clinical trial, Dr. Schnoll’s group confirmed that the nicotine patch can be used safely for 24 weeks to treat tobacco dependence, supporting the Food and Drug Administration’s recent label change from eight to 24 weeks. Use beyond 24 weeks did not show any additional benefits. These findings were published in *JAMA Internal Medicine.*

**NEARLY 1,000 SMOKERS HAVE SOUGHT HELP FROM TEC**

**Personalized Medicine and Tobacco Treatment**

Why do treatments for tobacco addiction work better for some people than for others? How do we know which one to try? Recent work by Caryn Lerman, PhD, Deputy Director of the Cancer Center, is helping answer these questions.

Findings from a multi-center, pharmacogenetic randomized trial highlight a role for personalized medicine in treating tobacco addiction. Dr. Lerman, who directs the ACC’s Center for Interdisciplinary Research in Nicotine Addiction, found that a genetic biomarker indicating how quickly people absorb nicotine can help determine how well they will respond to different treatments for nicotine dependence. The biomarker identified participants as normal or slow metabolizers of nicotine, based on how long nicotine stays in their body after quitting. Normal metabolizers of nicotine are likely to have more trouble quitting, possibly because a faster drop in levels may make them more vulnerable to cravings and relapse.

Participants from both groups were randomly assigned the nicotine patch (plus placebo pill), varenicline (plus placebo patch), or a placebo pill and patch to help them quit smoking. The results, which were published in *Lancet Respiratory Medicine,* found that normal metabolizers were more likely to succeed in quitting with the help of varenicline. Slower metabolizers experienced more side effects with the drug, and would benefit from the nicotine patch. This finding is the first of its kind and could offer new guidance for clinicians who treat tobacco addiction.

“This is a much-needed, genetically-informed biomarker that could be translated into clinical practice,” said Dr. Lerman. “Matching a treatment choice based on the rate at which smokers metabolize nicotine could be a viable strategy to help guide choices for smokers and ultimately improve quit rates.”

This study was conducted in collaboration with the Centre for Addiction and Health at the University of Toronto, the State University of New York at Buffalo, and MD Anderson Cancer Center.

**MATCHING A TREATMENT CHOICE BASED ON THE RATE AT WHICH SMOKERS METABOLIZE NICOTINE COULD BE A VIAL STRATEGY TO HELP GUIDE CHOICES FOR SMOKERS AND ULTIMATELY IMPROVE QUIT RATES.**

Caryn Lerman, PhD
Mary W. Calkins Professor
Deputy Director, Abramson Cancer Center

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**Caryn Lerman, PhD, associate professor of Psychiatry**

Dr. Lerman is a co-author of a study published in *Science.* She and her team have been working to develop more effective methods to help smokers quit.

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**Robert Schnoll, PhD, associate professor of Psychiatry**

Dr. Schnoll is the director of the Translational Education and Counseling (TEC) program at the Abramson Cancer Center. His research focuses on finding effective ways to help people quit smoking.

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**Penn’s Abramson Cancer Center // Science Meets Community**
Asbestos, popular for its flame-resistant insulation properties, was used in many industries. It is a known carcinogen that causes lung cancer, and is the primary cause of mesothelioma, a cancer of the lining of either the lung or, less frequently, abdominal cavity.

Three times higher in men & five times higher in women.

Located approximately 20 miles outside of Philadelphia, Ambler, PA is a suburb with clean streets and plenty of greenery. Driving through Montgomery County, one would not suspect that West and South Ambler are home to one of the largest asbestos waste sites in the country. Beginning in the late 19th century, the town’s economy developed around asbestos manufacturing companies, including the long gone Keasbey & Mattison Company (K&M). K&M was purchased then later succeeded by two other asbestos manufacturing companies. In all, asbestos production continued in Ambler through the late 1970s.

Asbestos exposure in Ambler

Community drives research: Mesothelioma and Asbestos Exposure in Ambler

Our outreach efforts help us identify the most pressing problems in the Greater Delaware Valley but sometimes the problems find us. Six years ago, members of the Ambler community approached Penn physician Edward Emmett, MD, MS, Professor of Occupational Medicine, with questions about asbestos waste in their community. They had heard that the “snow piles” where they played as children were in fact hazardous waste, and had concerns about their health. Put simply, they wanted to know if they would get sick. These conversations laid the groundwork for an unprecedented, large-scale, community-driven asbestos research initiative.

As of 2008, Ambler’s risk of mesothelioma was three times higher in men & five times higher in women.

Mesothelioma cases in Ambler 1992–2008

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>E X P E C T E D</td>
<td>9.09</td>
</tr>
</tbody>
</table>

Asbestos, popular for its flame-resistant insulation properties, was used in many industries. It is a known carcinogen that causes lung cancer, and is the primary cause of mesothelioma, a cancer of the lining of either the lung or, less frequently, abdominal cavity.
Next Steps

News of the environmental toxicant had led to the formation of the Bo-Rit Community Advisory Group focused on cleaning up toxic waste in Ambler. The Advisory Group invited Dr. Emmett to become a member and, with his support, worked with the Pennsylvania Department of Health and the Agency for Toxic Substances Disease Registry to identify a mesothelioma cluster—an area where we find more cases of a disease than expected—in Ambler. In the Ambler cluster, the relative risk of mesothelioma was three times higher in men and five times higher in women than state-wide. Men have a higher overall incidence of mesothelioma.

While environmental epidemiologists were assessing risk, Cancer Center anthropologist Dr. Frances Barg, Associate Professor of Family Medicine and Community Health, and her team were interviewing residents who had worked in the plant or were related to plant workers to understand in greater depth community members’ concerns about asbestos exposure. Residents’ worries ranged from concern for their own health and the health of their families and friends, to the negative economic effects that might result from living in close proximity to environmental hazards, such as decreased housing values. Residents questioned whether they could believe information regarding the site and the possible health risks associated with exposure. This community study was started with pilot funding from the Center for Excellence in Environmental Toxicology. A follow-up study to provide education and information about asbestos to the community is now funded by a five-year grant from the National Institutes of Health (NIH).
Community Questions Drive Research

Findings from these efforts led to the 2014 award of a $10 million grant to develop the Penn Superfund Research and Training Program Center directed by Abramson Cancer Center environmental toxicologists Ian Blair, Ph.D., A.N. Richards Professor of Pharmacology, and Trevor Penning, Ph.D., Molinoff Professor of Pharmacology. The Center, which is funded by the National Institute of Environmental Health Sciences, is studying the site and its impact on health. Each of the projects addresses one of the community’s concerns, as follows:

**PROJECT 1**
Testing whether fungal infection of plants grown on the waste can break down asbestos to a less toxic form

**PROJECT 2**
Investigating the fate and transport of asbestos through soil and water to determine if this process can be prevented

**PROJECT 3**
Includes a retrospective cohort study tracking the health outcomes of Ambler residents from the 1930s and a case-control study looking at the exposure history of people who were diagnosed with mesothelioma in the Ambler region

**PROJECT 4**
In collaboration with the Fox Chase Cancer Center, has established a mouse model for mesothelioma which, for the first time, permits investigators to study the onset and progression of the disease, determine whether there are changes in the blood associated with disease stage, and determine whether the remediated asbestos is less or more toxic

**PROJECT 5**
Investigating whether an antioxidant in flaxseed can prevent mesothelioma in the mouse model, with the knowledge that asbestos may cause cancer due to the production of free radicals and inflammation

**PROJECT 6**
Developing a blood test to distinguish between asbestos-exposed individuals who have mesothelioma and those who are disease-free by measuring changes in blood lipids

The results of this research will be disseminated back to residents in the Ambler community and shared with policymakers and health care professionals. The research findings will also be immediately applicable to the other 16 Superfund asbestos waste sites around the country. For more information, please visit: www.med.upenn.edu/asbestos.
A conversation about cancer risk would be incomplete without acknowledging that risk also comes from within, from our genes. The Abramson Cancer Center’s renowned research on cancer genetics and leading clinical risk evaluation program have opened the door to once unheard-of options for individuals with a higher risk of breast or ovarian cancer due to a mutation in the BRCA1 or BRCA2 gene.

Why learn about genetic risk? Knowledge of risk can influence the decisions we make both to protect our own health and to help our family members make life-sustaining choices. The Abramson Cancer Center has been a leader in identifying cancer prevention strategies for men and women with BRCA mutations. Research conducted here helped establish the benefits of risk-reducing surgeries to prevent breast and ovarian cancer, changing the way doctors advise patients with known hereditary risk.

Yet many women and men who suspect a hereditary link to breast or ovarian cancer in their family may be unsure of what to do next—where to go to learn more and what they can do if genetic risk is confirmed. Helping navigate the world of genetic risk is pivotal to the mission of Penn’s Basser Center for BRCA.

Led by Executive Director Susan Domcheck, MD, the Basser Center for BRCA helps spread the word about the usefulness and availability of genetic counseling through its outreach efforts. Established in 2012, this center is the first of its kind wholly devoted to advancing research on BRCA so that carriers of these genetic mutations can live longer, healthier lives. The Center hosts conferences, provides research funds, awards an annual global research prize, and shares information about genetic risk within the Greater Delaware Valley and beyond. For more information about the Basser Center for BRCA, contact 215.662.2748.
THE ACC’S OFFICE OF DIVERSITY AND BASSEr PARTNERSHIP WAS ESTABLISHED BECAUSE OF SHAREDAIMS TO INCREASE CANCEROUCHT IN THE LOCAL COMMUNITY, ACCESS TOGENETIC SERVICES IN THEAFRICAN-AMERICAN POPULATION, AND EDUCATE THE COMMUNITY ABOUT THE ROLE OF GENETICS IN DETERMINING CANCER RISK, APPROPRIATE SCREENING AND CANCER THERAPY.

Basser Center for BRCA
Community Outreach Activities

» PRESENTATIONS AT SYNAGOGUES, CHURCHES, AND HEALTH-RELATED EVENTS AND CONFERENCES. Basser Center counselors and outreach staff have brought their message to synagogues in Philadelphia, Montgomery and Camden counties, as well as nationally. A partnership with the Abramson Cancer Center’s Office of Diversity (described on page 46) has shepherded a connection to the African-American community, resulting in presentations at church-affiliated and community events.

» WEBINARS. The Basser Center participates in internet-based educational programs presented by partner groups, such as FORCE (Facing Our Risk of Cancer Empowered).

» DISTRIBUTION OF LITERATURE. Materials have been translated into Spanish, and fact sheets are customized to address the concerns of specific communities such as the Jewish community, the African-American community, and the LGBT communities. A national poster campaign resulted in the distribution of approximately 15,000 posters focused on the increased risk among Jews of East European heritage, who have a higher prevalence of BRCA1/2 genetic mutations, to 1,500 synagogues across the country.
More people than ever before survive cancer, in large part thanks to scientific advances in screening and diagnosis. Messages reminding us of the importance of critical cancer screenings such as mammograms and colonoscopy appear on our television screen, line subway cars and public restrooms, and are told to us in the privacy of a trusted doctor’s office. Despite the pervasiveness of this information, many residents of the Greater Delaware Valley do not obtain preventive screenings. The following pages describe gaps in screening and detection in the Greater Delaware Valley, and the Abramson Cancer Center’s efforts to improve access for those who most need it.
A CALL FOR CANCER SCREENINGS

Colon cancer and breast cancer are two of the most common cancers in the Greater Delaware Valley. Effective screenings are available for both of these cancers yet national and local data suggest that we still have work to do in order to ensure that many Greater Delaware Valley (GDV) residents obtain recommended screenings.

Priority Population

Within the GDV, low screening rates among African Americans in West Philadelphia are especially concerning. African Americans bear a disproportionately high burden from cancer when compared to other racial and ethnic groups. As an example, they are 20% more likely than whites to develop colon cancer, and 45% more likely to die of it. African Americans are also more likely to be diagnosed at a later stage of cancer than whites, less likely to survive five years post-cancer diagnosis, and have the highest death rate and shortest survival of any other racial and ethnic group in the U.S. for most cancers.

Colorectal Cancer Screening

Colorectal cancer kills a disproportionate number of African Americans each year. Colonoscopy is an effective tool for diagnosing and preventing colorectal cancer. During a colonoscopy, precancerous polyps can be found and removed before they develop into cancer. Early diagnosis also leads to better prognosis. Despite this, only 40% of colorectal cancers are diagnosed in the early stages, suggesting that many people are not getting screened when needed. Screening rates lag even among patients with consistent access to health care who may be unaware of the benefits of screening, have negative attitudes about screening or are unable to afford transportation or preparatory materials.

This gap in care is apparent within the University of Pennsylvania Health System where only 51% of patients over the age of 50 years who reside in the five West Philadelphia zip codes have completed a colorectal cancer screening within the recommended period of time, a rate that is lower than the national average. Education and support are needed to increase awareness of the potential lifesaving benefits of timely colorectal screenings and help patients overcome barriers to screening.

Breast Cancer Screening

Pennsylvania has one of the highest breast cancer mortality rates in the U.S. (24.5 per 100,000 deaths). No single explanation exists for this finding, but evidence suggests that both lack of education and lack of access to care are contributing factors. In particular, low socioeconomic status, limited or no medical coverage, little or no routine physician care, and insufficient recommendations/resources to undergo mammography screening have been consistently cited.

According to recent census data, approximately 12% of nonelderly women in Pennsylvania lack access to adequate health coverage. Women who do not have health insurance are less likely to undergo routine screenings. In Southeastern Pennsylvania alone, uninsured women are significantly more likely not to have had a mammogram (64.6%) when compared with insured women (32.9%). Coupled with Pennsylvania’s high mortality rate, this lack of participation in preventative screenings for breast cancer signifies the need for greater access within this medically underserved population.
WHEN LIFE PUTS YOU IN TOUGH SITUATIONS, DON’T SAY “WHY ME?”, SAY “TRY ME.” I AM VERY GRATEFUL TO DR. BROOKS AND THE HEALTHYWOMAN PROGRAM. THANKS TO THEM, MY CANCER WAS DIAGNOSED AND TREATED RIGHT AWAY.

Maria, Participant HealthyWomen Program

500+ PATIENTS SCREENED WITH NAVIGATOR ASSISTANCE OVER 3½ YEARS

Navigating Barriers to Better Health

Preventive screenings can save lives, yet many people put off or avoid screenings altogether. I feel healthy. I am too busy. The procedure sounds scary, or is against my religious or cultural beliefs. I can’t take off time from work. I don’t have anyone to watch my children or older relative. I have no way of getting there.

These very real challenges create hurdles that are difficult for even the most compassionate doctors to overcome. It takes strategic, focused efforts like those developed by the Abramson Cancer Center’s Office of Diversity to eliminate barriers and ensure that our community takes advantage of science’s best tools for cancer prevention and early diagnosis.

Since its formation in 2013, the Office of Diversity, initiated by Abramson Cancer Center Director Dr. Chi V. Dang and led by Dr. Carmen Guerra, has connected with more than 5,000 community members—talking to them about prevention, early detection and offering access to proven screenings such as colonoscopy and mammography. Patient education is only the first step. Medical information can be complicated, and even when understood, can be hard to translate into action for patients. One-on-one, individualized support is needed to help people take that final step. At the Abramson Cancer Center, this support is provided by a talented team of patient navigators.

Our established Colorectal Cancer Screening Navigation Program and newer HealthyWoman Program–Penn Breast Health Initiative are two examples of how patient navigators help us bridge science and community.
Colorectal Cancer Screening Navigation Program

Colon Cancer is the fourth most common cancer in the Greater Delaware Valley (GDV), and the second leading cause of death. Colonoscopy enables us to identify cancers in their earliest stages and eliminate precancerous polyps before cancer develops. Colonoscopy offers a powerful defense against colon cancer yet many people avoid or postpone this screening.

Our Colorectal Cancer Screening Navigation Program helps patients overcome impediments to colonoscopy. Our patient navigators are trained in culturally competent communication. They talk with patients in a way that is respectful, sensitive and constructive. The navigator understands the procedure, why it is indicated or not, and is able to discern why a patient may be avoiding the screening.

Outreach begins when navigators call patients who have been told by their doctors to undergo a screening colonoscopy. They verify eligibility and assess the patient’s knowledge and attitudes related to colonoscopy, including any potential barriers. The navigator shares educational materials, and helps with all steps in the process, including completion of paperwork, appointment scheduling, transportation, and assistance obtaining and financing preparatory materials. When a colonoscopy is not feasible, navigators work with patients to obtain a Fecal Immunochemical Test, a less invasive test also covered by health insurance.

More than 1,500 patients have been contacted through this program. Approximately one-third of those contacted agreed to participate in the program and more than 300 have completed colonoscopy. Of those, one-third had at least one adenomatous polyp that needed to be removed. One percent were diagnosed with cancer.

“Colorectal cancer screening has been proven to be an effective means for colorectal cancer (CRC) control and prevention, yet CRC screening rates remain poor. Despite being preventable, CRC continues to kill a disproportionate number of African Americans each year,” said Carmen Guerra, MD, MSCE, Associate Professor of Medicine and Director of the Office of Diversity, who partners with Michael Kochman, MD, Wilmott Family Professor of Medicine and Professor of Surgery, in directing this program. “When we have the means to prevent just about every case of colorectal cancer through screening colonoscopy, these deaths are senseless and the racial disparity is a social injustice. Each one of those cases is a painful case of cancer for someone’s husband, wife, mother, father, son, or daughter.”

For information on cancer screening, visit the American Cancer Society website at: cancer.org.
The HealthyWoman Program
Mammograms lead to early diagnosis and better prognosis. Pink ribbons permeate products and events, reminding us of the benefits of screening and early detection. Yet we know that many women who are at risk for breast cancer due to age or risk factors do not get mammograms. Conflicting information about the recommended starting age and spacing between mammograms has done little to alleviate this problem.

Since 2014, the Abramson Cancer Center’s HealthyWoman Program has offered free breast and cervical cancer screenings and diagnostic evaluations to un- and under-insured women ages 40 to 65 who reside in Philadelphia. Funding is provided by the Centers for Disease Control and Prevention’s National Breast and Cervical Cancer Prevention Program and a Commonwealth of Pennsylvania contract administered through Access Matters, with navigation supported by the American Cancer Society and the ACC’s Rena Rowan Breast Center Fund. If cancer is diagnosed, the Pennsylvania Breast and Cervical Cancer Prevention and Treatment Program will cover treatment.

The program offers culturally-tailored educational outreach to medically underserved women in Philadelphia county, granting them access to breast cancer screening, diagnostic, and treatment services. Patient navigators provide individualized education and support needed to obtain screenings. The ACC program distinguishes itself from other HealthyWoman programs because we recognize that breast cancer has no age limits and extend eligibility for diagnostic and clinical evaluation to women under age 40 or over 65 with breast abnormalities who meet geographic and insurance criteria, regardless of immigration status.

The newer Penn Breast Health Initiative, funded by the Susan G. Komen Foundation, will enable us to build upon the HealthyWoman Program. The effort is co-led by Carmen Guerra, MD and Ari Brooks, MD, Director of the Integrated Breast Center and Endocrine and Oncologic Surgery at Pennsylvania Hospital. In the coming year, the program aims to establish new community partnerships, increase its educational outreach programs, and deliver a total of 600 screening mammograms and 100 diagnostic services to medically underserved women who reside in and around Philadelphia County. A community-based navigation service, designed to complement the clinically-based patient navigation services, will be offered in partnership with the Health Promotion Council.

The HealthyWoman Program is a breast and cervical cancer screening program of the Pennsylvania Department of Health that provides free mammograms and pap screenings to women ages 40 to 64 with no insurance or limited insurance, who have low to moderate income living in the state of Pennsylvania. HealthyWoman Hotline Number: 1.800.215.7494. Website: www.pahealthywoman.org.

In the first quarter of 2015, the Penn Breast Health Initiative provided an interpreter for 44 medical appointments.

![Penn Breast Health Initiative](image)

**PENN BREAST HEALTH INITIATIVE**

**RACE**
- Hispanic/Latino: 23%
- Asian: 19%
- African American/Black: 1%
- Caucasian/White: 55%
- Other: 1%

**AGE**
- 13 women are 20-29 years old
- 47 women are 30-39 years old
- 11 women are 40-49 years old
- 2 women are 50-59 years old

**SERVICES PROVIDED**
- 132 Screening Mammograms
- 31 Diagnostic Mammograms
- 24 Office Visits
- 7 Biopsies
- 2 Cancers Confirmed, Stage I

**BREAST IMAGING REPORTING AND DATA SYSTEM RESULTS**
- Category 1: Negative
- Category 2: BI-RADS findings
- Category 3: Probably benign
- Category 4: Suspicious abnormality
- Category 5: Highly suggestive of malignancy
- Category 6: Known biopsy-proven malignancy

**DIAGNOSTIC RESULTS**
- 59 Negative
- 66 BI-RADS findings
- 9 Probably benign
- 3 Suspicious abnormality
- 0 Highly suggestive of malignancy
- 1 Known biopsy-proven malignancy

**PARTNERS:**
- American Cancer Society
- Bebashi
- Cancer Support Community of Greater Philadelphia
- Congreso de Latinos Unidos
- Health Annex
- Health Promotion Council
- Mazoni Center
- Penn Asian Senior Services
- Philadelphia Corporation for Aging
- SEAMAAC
- Women and Children’s Health Services

In addition to these organizations, the Penn Breast Health Initiative is listed as a provider with La Comunidad Hispana, Esperanza Health Center and Maria de los Santos Health Center.
Astounding innovations in cancer diagnosis and treatment are changing the paradigm of cancer care. Immunotherapy, personalized medicine and new technology have opened the door to a world of previously unimagined medicine. Yet the benefits of this progress do not reach everyone. Within the Greater Delaware Valley, there is tremendous work to be done to ensure that all people have access to the diagnostic and treatment approaches that are most effective for them. The following pages illustrate the need for progress in this area and highlight ways in which the Abramson Cancer Center has made understanding and tackling “unequal burden” a priority.
The Unequal Burden of Cancer

With progress comes promise. Enormous progress has been made in the diagnosis and treatment of cancer in the past 20 years. But what happens when the benefits of progress do not reach everyone? Our research and clinical programs seek to reduce health disparities and ensure that all residents of the Greater Delaware Valley have access to and benefit from science’s greatest discoveries.

The Greater Delaware Valley is socioeconomically and demographically diverse, and, as such, fertile ground for some of cancer’s most troubling disparities. As described previously, the GDV has a lower proportion of whites and Hispanics and a higher proportion of blacks than the U.S. as a whole. The substantial cancer disparities experienced by the black population in the GDV, especially Philadelphia, bears particular attention and is a priority of our work. The data also reveal the following:

- Cancer incidence in the GDV is higher than the U.S. national average for all groups except Asian women.
- Cancer mortality is higher in the GDV for white men and women, but generally lower than the national average for Hispanics and Asians. Black men and women had rates that were both higher and lower than the national average, depending on the cancer.
- There is an excess cancer burden for all leading cancers in white and black women in the GDV.
- Among men, we see the highest cancer mortality rates among men of all races in Philadelphia.
- For women of all races, the highest cancer mortality rates were in various locations in New Jersey; no pattern of elevated mortality in one location was apparent. White and black women in Philadelphia had the second highest rates of cancer mortality.

Comparisons to Healthy People 2020’s national goals provide further evidence of work to be done. The Greater Delaware Valley lags behind the nation in meeting goals for cancer incidence and mortality. Black men were the least likely to meet national targets. White men also did not reach goals for most cancers, although promise was seen in prostate cancer. Similarly, white and black women did not meet target goals, although progress was seen in some cancers such as lung cancer for women of both races and breast cancer for white women. In Hispanic and Asian/Pacific Islander men and women, few counties have sufficient numbers of deaths to allow computation of rates; however, Hispanic and Asian/Pacific Islander individuals of both sexes generally meet the target goals for all cancers combined.

While the disparity in death rate by race has narrowed in recent years, African Americans continue to experience poorer survival than whites. A notable exception is the state of Delaware, where black and white cancer death rates have become approximately equal. This triumph is one of few such examples in the country. New Jersey and Pennsylvania, while having made some progress, still show significant black-white disparities.
Prostate cancer is the most common non-skin cancer and the second leading cause of cancer death among men. Prostate cancer predominantly (56%) strikes men over the age of 65 but younger men can be affected too. This cancer concerns us not only because of its high prevalence, but also because major disparities in outcomes, including death, exist among men of different races. Notably, African-American men are more than twice as likely to die of prostate cancer than white men.

The gap was highlighted when Healthy People 2010 challenged the U.S. medical community to reduce the rate of deaths from prostate cancer to 28.8 per 100,000 cases. This goal was met and surpassed for white men who now have a rate of 25.6 per 100,000. African-American men, however, still have a mortality rate of 62.3 per 100,000. This difference represents the largest disparity between blacks and whites in any major cancer.

This situation is even more troubling in the Greater Delaware Valley. In 1990, prostate cancer mortality among African-American men was similar to that of white men. Since that time, we have seen a drastic widening of the gap. Advances in treatment and diagnosis, which have resulted in longer, healthier lives for white men, have failed to reach African-American men in our area. This trend may be caused in part by weaknesses in diagnostic tests, but also because tests are applied inequitably by race or ethnicity, including the use of screenings developed in white populations to African-American populations. Similar patterns have been observed in other parts of the country, but the difference, while still present, has leveled off or decreased in the U.S. as a whole since 2005.

“Along my prostate cancer recovery journey, I gained many great friends at the Abramson Cancer Center. They have connected with me and Enon Tabernacle Baptist Church to educate the community about disparities associated with cancers. Together, Abramson and Enon are passionately on a mission to save lives and heal families.”

Reverend Blane J. Newberry
Prostate Cancer Survivor
Possible Explanations for the Growing Trend in Prostate Cancer Disparities:

» ADVANCES IN SCREENING AND EARLY DETECTION: The introduction of prostate specific antigen (PSA) screening has led to lower mortality rates for all men, but it is possible that African-American men have not experienced the same benefits from screening and early detection as white men.

» ACCESS TO THE LATEST TREATMENTS: New surgical, chemotherapeutic, and radiological treatments may not have been equally available to African-American and white men.

» CHANGES IN RISK: Prostate cancer risk may have changed over this period. For example, the prevalence of obesity, which is known to influence prostate cancer outcomes, has increased, perhaps more among African-American than white men.

» KNOWLEDGE OF GENETICS AND BIOMARKERS: Until recently, screening and treatments have been applied to all men without regard to their personalized risk profile. Increased emphasis on personalized diagnosis is critical for prostate cancer, where we know that risk and outcomes are strongly influenced by genes and other biomarkers.
Acc office of Diversity mission

The office of Diversity supports the Abramson Cancer Center’s vision, mission, and values by promoting diversity and inclusion as an integral part of the Center’s goals to understand, prevent, treat and ultimately cure cancer. Through community education, outreach and engagement, we aim to:

- Establish and sustain programs that decrease incidence and mortality of cancers posing the greatest public health burden in our region, reduce cancer disparities and meet the community’s unmet needs; and
- Increase diversity of patients participating in ACC clinical trials research.

One of our goals is to engage communities that traditionally have not participated in research by helping them better understand the value of clinical research and its direct link to improvements in cancer care.

Carmen Guerra, MD, MSCE, FACP
Associate Professor of Medicine
Director, ACC Office of Diversity

One of our goals is to engage communities that traditionally have not participated in research by helping them better understand the value of clinical research and its direct link to improvements in cancer care.

EXPANDING ACCESS TO CLINICAL TRIALS

The latest innovations in cancer care—the most promising treatments and keenest diagnostic tools—are often available only through clinical trials. History, culture and language all contribute to low minority participation in clinical trials in the U.S. Low participation means that minorities are less likely to benefit from the latest scientific discoveries and best hope for cure. The ACC is committed to increasing minority participation in clinical trials to improve health outcomes for all residents of the Greater Delaware Valley.

The Office of Diversity partners with investigators, clinical research staff and the community in a variety of ways to remove barriers and increase minority participation in clinical research. The activities listed below are pursued within a larger context that views clinical trial participation as part of high quality patient care and recognizes that meaningful minority participation in research is an outgrowth of sustained community involvement. Our current and future priorities are to:

- Facilitate access to community healthcare sites that serve minority populations for study recruitment
- Work with clinical research teams to design protocols that eliminate barriers to minority participation
- Review new protocols, analyze existing protocols and help study teams make adjustments to broaden access
- Assist in the creation of community advisory boards, focus groups and patient engagement panels that reflect the diversity of the GDV
- Use technology, such as electronic medical records and social media, to identify and communicate with people who may benefit from research
- Help investigators disseminate research findings to the community

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- Establish and sustain programs that decrease incidence and mortality of cancers posing the greatest public health burden in our region, reduce cancer disparities and meet the community’s unmet needs; and
- Increase diversity of patients participating in ACC clinical trials research.
Medical research has paved the way for a new and growing segment of our population who did not exist 50 years ago—cancer survivors. Cancer is part of their past but, in many cases, the residual symptoms and risk of recurrence and related health conditions left by an often vicious course of treatment remain a part of everyday life. The Abramson Cancer Center is a national leader in clinical care and research on cancer survivorship. We strive to understand, support and enable this population to lead full and healthy lives.
I have often been told that one needs an advocate and I could not have found a better one than Linda Jacobs. So now I can say I am a three-time cancer survivor and can’t imagine getting through these life-altering events without the consistent aid of Linda and the Cancer Survivorship Program. Words cannot express how truly grateful I am.

Anne, Cancer Survivor

WE ARE NOT OUR CANCER: GROWING NEED FOR SURVIVORSHIP CARE

More people than ever before survive cancer. A half-century wave of discovery has resulted in approximately 13.7 million cancer survivors in the U.S., a number that continues to grow due to advances in treatment and diagnosis and an aging population. Not only are survivors at risk for recurrence of their primary cancer, but complex treatments place them at risk for long-term and late effects such as secondary malignancies, cardiovascular disease, endocrine disorders, and general symptom distress. As a result, cancer survivors require long-term, tailored survivorship care.

Abramson Cancer Center Survivorship Program

The first adult cancer survivorship program in the country was developed at the Abramson Cancer Center (ACC) in 2001. Over the last decade, it has evolved into the premiere survivorship program in the country. This model program offers specialized care, addressing the wide array of physical and mental health issues experienced by cancer survivors and their families. The ACC Survivorship Program also serves as a resource for hospitals and cancer centers across the country, offering educational programs for providers and consultation for developing survivorship programs.

The ACC’s clinical programs are an unparalleled resource for survivors of breast, testicular, lymphoma, prostate, colorectal, and gynecologic cancers. Our unique young adult program draws adults ages 18-39 from all over the region to the ACC for follow-up care and support. Many have been patients of the Children’s Hospital of Philadelphia or Nemours DuPont Children’s Hospital in Delaware, and are referred by physicians. Others find our program on their own. All receive a comprehensive evaluation of their health needs, clinical care, and appropriate referrals and coordinated care with other specialty groups.

There are approximately 13.7 million cancer survivors in the U.S.
Survivorship Research
A growing portfolio of research complements our clinical care activities and ensures that the ACC is prepared to meet the current and future needs of cancer survivors. Examples are provided below. Many of these are multi-site projects supported by the LIVESTRONG Foundation in which the ACC leads a team of researchers from seven NCI-designated cancer centers. Findings from this research have been published in the *Journal of Cancer Survivorship*, the *Journal of Oncology Practice*, the *Journal of Community and Supportive Oncology*, and the *Journal of Medical Internet Research*.

» A study looking at young adult survivors’ confidence to manage their own health care found that nearly half of survivors ages 18-39 had not received a treatment summary at the end of therapy, and 59% did not have a survivorship care plan. Ethnic minorities and survivors without a care plan were less confident in their ability to manage their own care. Even though they were on average nine years post-diagnosis, 69% still received most of their health care from their oncologist, suggesting a need for better transitions to primary care.

» A LIVESTRONG collaborative study led by ACC investigators found that treatment summaries and survivorship care plans are often incomplete. Plans provided to breast cancer survivors included fewer than half of the treatment summary items and two-thirds of the survivorship care items recommended by the Institute of Medicine. More than half of breast cancer survivors relied on these plans to make decisions about exercise, diet and medical testing but only 21% of survivors shared their care plans with their primary care provider.

» Linda Jacobs, PhD, RN, Director of Development of Cancer Survivorship Clinical Programs, Research and Educational Initiatives, leads a project within the Abramson Cancer Center’s 2-Prevent Translational Center of Excellence focused on improving care by helping breast cancer survivors communicate their unmet needs to health care providers. An initial pilot study found that survivors have an average of ten to eleven symptoms. The most common symptoms include fatigue, insomnia, hot flashes, aching joints, and memory difficulties. Participants most wanted help with weight issues, joint pain, numbness, muscle aches and urinary problems. The number of symptoms reported was associated with a perceived lower quality of life, suggesting an opportunity to improve the survivorship experience for our survivors.

» In an interdisciplinary project funded by the LIVESTRONG Foundation, Drs. James Metz, Professor of Radiation Oncology; Christine Hill-Kaiser, Assistant Professor of Radiation Oncology; Linda Jacobs, and Steven Palmer, Behavioral Researcher, are developing a means of allowing treatment summary and survivorship care plan documents to be auto-populated directly through the electronic medical record. This is of great importance, as manual completion of these materials is a labor-intensive process—taking up to three hours—and the main impediment to delivering this information to survivors.

For more information about the survivorship program, call the clinical coordinator at: 215.615.3329.
Cancer treatment can be long, involved and painful. When successful, cancer is eliminated, but the symptoms it leaves behind, while not life-threatening, can feel as uncomfortable and distressing as the disease itself. Lymphedema—swelling in the lymph nodes—is one of the most feared and persistent outcomes of breast cancer treatment.

Breast cancer-related lymphedema occurs in approximately 20–30% of survivors and involves swelling of the arm, torso, or breast. Lymphedema has been linked to poor quality of life, low physical function, and elevated psychosocial distress. The medical costs for survivors with lymphedema are estimated to be twice as high as for survivors without lymphedema.

Few effective treatments exist to reduce the risk of, or improve symptoms associated with, breast cancer-related lymphedema. Abramson Cancer Center Epidemiologist Kathryn Schmitz, PhD, MPH, is changing that. Exciting findings from her research are offering survivors in the Greater Delaware Valley and beyond new strategies to improve their comfort and quality of life.
Physical Activity and Lymphedema

Dr. Schmitz has found that a progressive program of exercise can reduce or eliminate lymphedema symptoms. Nearly 300 breast cancer survivors participated in “Physical Activity and Lymphedema” (PAL), a randomized controlled trial funded by the National Cancer Institute (NCI). Approximately half of the women had lymphedema at the start of the study, and the other half were at risk. Women were assigned to a weight training intervention or a wait list control group. The exercise group took part in a year-long slowly progressive weight training program.

The findings were dramatic. Participation in the program reduced the likelihood of lymphedema onset by 70% among survivors with five or more nodes removed, and reduced the need for therapist-delivered treatment by 50% among survivors with lymphedema at study entry.

These results, which were published in the Journal of the American Medical Association and the New England Journal of Medicine, have changed clinical practice. Women are now advised that they can and should do upper body exercise after breast cancer. The National Lymphedema Network, NCI, American Cancer Society, and the Susan G. Komen Foundation have all changed their recommendations as well.

A subsequent study has shown that a six-session physical therapy program that teaches women how to do the exercises at home is as effective as the original 13-session supervised gym-based program. The new program is called Strength After Breast Cancer or Strength ABCs. Results of this latest study were published in the Journal of the National Cancer Institute Monographs. The physical therapy program is covered by insurance, and has been completed by hundreds of women in Pennsylvania and South Jersey through physical therapists associated with Good Shepherd Penn Partners and the Virtua Health System. The new program has been disseminated around the country via trainings provided by Dr. Schmitz to physical therapists in Maryland, Virginia, Vermont, and California. In addition, an online video training for physical therapists and fitness professionals will be released in 2015.

Dr. Schmitz has taken her message to the community, developing cancer rehabilitation training programs at a number of local YMCAs including: Central Bucks County YMCA, the Burlington County Family YMCA, the Community YMCA of Delaware County, and the Hamilton, NJ YMCA. This work builds on her experience as a key member of the training program team for LIVESTRONG at the YMCA.
The Abramson Cancer Center Director’s Leadership Council is a group of dedicated, generous donors and advocates who help raise vital funds and awareness of cancer research, patient care, and education happening at Penn Medicine’s Abramson Cancer Center. The list below reflects membership as of January 1, 2015.

CHAIR
Richard Vague

HONORARY CHAIR
Madlyn K. Abramson

MEMBERS


EMERITUS MEMBERS

Over the next five years, we will continue to build upon our strengths in community-based research to bring advances made by our scientists and clinicians to the patients who need them the most.

Katherine Nathanson, MD  Associate Professor of Medicine  Associate Director for Population Science, Abramson Cancer Center

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REFERENCES

7. U.S. Centers for Disease Control and Prevention Statistics 2011.

WAYS TO GIVE

If you are interested in helping any of these programs that need continued support in their mission to improve the health of the community, consider making a donation.

ONLINE
PennMedicine.org/Abramson/Donate

EMAIL
Abramson-gifts@upenn.edu

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Abramson Cancer Center Development
3535 Market Street, Suite 750
Philadelphia, PA 19104

Make a check payable to Trustees of the University of Pennsylvania.
Cancer in the Greater Delaware Valley
A Report from Penn’s Abramson Cancer Center