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# The Cancer Center Academic Difference - What we believe. What we know. How it impacts those we serve

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**The Cancer Center Academic Difference – What we believe. What we know. How it impacts those we serve.**

By George J. Weiner, Christopher Zurawsky, and Stanton L. Gerson on behalf of the Association of American Cancer Institutes' Academic Difference Initiative Advisory Committee* and Marketing and Communications Subcommittee**

May 5, 2018

Abstract

*The Academic Difference Initiative (ADI) of the Association of American Cancer Institutes (AACI) was designed to define the important and unique role academic cancer centers play in enhancing cancer research, clinical care, and education. The ADI began with AACI gathering and organizing documents and evidence from its member cancer centers—including 67 NCI-designated centers--highlighting the value of academic cancer centers. Centers were not asked to generate new data, but to share documents they already had prepared. Additional documents came from the peer reviewed literature. Some of the collected items highlighting the academic difference did so without providing detailed data, while other items were based on robust evidence. Both "what we believe" documents based on subjective interpretation and evidence-based "what we know" documents supported by objective data highlighted the unique role academic cancer centers play in the national effort to reduce the burden of cancer. These documents spoke to the vital and interdependent nature of three core missions of academic cancer centers – clinical care, research and education. We conclude both subjective information and a growing body of objective data indicate academic cancer centers are more valuable than ever and make unique clinical, research and educational contributions to reducing the burden of cancer for those they serve and the nation as a while.*

In the early 1950s the CBS Radio Network broadcast "This I Believe", hosted by iconic journalist Edward R. Murrow. The five-minute oral essays chronicled the core values of both famous and everyday folks (National Public Radio revived the concept in the 2000s). As a guide to better living, "This I Believe" is a useful resource, with acknowledged experts sharing their thoughtful perspectives. On the other hand, scientists and supporters of evidence-based medicine--even those who are experts with strong, heart-felt opinions--recognize the value of being able to go from "this I believe" to "here is the data", and

distinguishing between the two.

The ability to separate what we believe from what we can demonstrate was at the forefront of a recent effort by the Association of American Cancer Institutes (AACI) to define the value of academic cancer centers. We do not want to confuse cancer center advertising, which increased from $54 million in 2005 to $173 million in 2014[1], with hard evidence as we seek to convince patients, payors, policymakers and others that academic cancer centers are worthy of support.

The Academic Difference Initiative (ADI) was designed to highlight the important and unique role academic cancer centers play in enhancing cancer research, clinical care, and education. The initiative also aimed to better explain the centers' value to a broad range of constituents—patients, payors, policymakers, university leadership, community oncology partners, and the general public. It is guided by an advisory committee of the AACI board of directors and a subcommittee of marketing and communications professionals from several cancer centers.

The ADI began with AACI gathering and organizing documents and evidence highlighting the value of academic cancer centers from its cancer center members. Centers were not asked to generate new data, but to share documents they already had prepared. The ADI Communications and Marketing Subcommittee reviewed and organized more than 125 documents submitted by 31 AACI cancer centers (an ADI document library is housed on AACI's website - http://www.aaci-cancer.org/ADI_library.asp). Some of the collected documents were based on analyses of the value of specific projects at individual centers, while others pointed more to the national impact of such centers as a whole. Published research was also gathered and reviewed, and we held discussions and shared information with other organizations with similar interests. The documents vary in type, from annual reports and journal articles, to brochures highlighting patient care and outcomes. Some are carefully designed marketing tools while others are fact-based information sheets. Some of the documents fall into the "What we believe" category, while others are more objective and consistent with "What we know". We hoped to realize the connection between the two, since we anticipated that the summary of attributes disseminated by marketing efforts of these centers would match their collective evidence as support for their advocacy statements.

Below is an overall summary and interpretation of the information gathered as part of the ADI effort, divided broadly into the categories of "What We Believe" (with no references provided) and "What We

Know" (heavily referenced), with the understanding that, in some cases, there is not a clear distinction between them.

**What We Believe**

If the vast majority of the leaders of AACI Cancer Centers had the opportunity to be heard on "This I Believe", they would state the following: American academic cancer centers are admired around the world and in their own communities for the major and unique role they play in coordinating, and creating synergies among their overlapping missions of research, clinical care and education. This role is becoming increasingly important as our understanding of cancer's complexity grows and is applied to customized, personalized patient care for more and more patients as the state-of-the-art changes rapidly. Academic cancer centers bring together the newest research advances, experts in specific cancer types, and an interdisciplinary culture that advances the science, brings it to the patients and in many cases, leads to superior cancer care. Further, they strive to connect research and cancer care initiatives above competition, promoting countrywide and international initiatives to move discovery and treatment forward regardless of economic or other advantage. Academic cancer centers have a positive impact on health and the economy at the local, regional and national levels by serving as major employers, returning successfully treated cancer patients to economic productivity, creating intellectual property that drives America's biotechnology industry, and educating the next generation of cancer researchers and clinicians. Academic cancer centers are also developing a broad range of new models to enhance collaboration with community oncology so, when appropriate, patients can obtain the best of both worlds – advice from multidisciplinary teams of experts familiar with the latest advances, working closely with community-based care providers close to home.

***Research***

Basic research is the foundation of cancer research. Scientists at academic cancer centers working in a broad range of fields make fundamental discoveries that, at the time the discoveries are made, may have no obvious practical application. Nevertheless, academic cancer centers provide the setting for encouraging and promoting collaborating scientists to explore the practical implications of new discoveries. Additional research in the laboratory can then lead to clinical translation and development of new approaches to cancer prevention, early detection, therapy and improvements in quality of life. By supporting basic research, the testing of new concepts in the laboratory and eventually assessing those concepts in early phase clinical trials, academic cancer centers are central to the development of

new approaches to cancer care. Additional clinical research including pragmatic trials and outcomes research at academic cancer centers leads to development of guideline-concordant care. The resulting advances have led to major changes in the cancer treatment paradigm, including a growing list of more effective treatments that are less toxic and sometimes less expensive than established treatments.

The pharmaceutical industry is looking more closely than ever to academic cancer centers as the engines of discovery. The deeply collaborative and interdisciplinary culture of academic cancer centers creates an incubator for ideas that are taken up by the private sector with the resources and structure needed to commercialize the academic discoveries. Many companies are cutting back on basic research operations, and instead licensing intellectual property from academic cancer centers, increasingly waiting until early phase trials designed and supported by academic cancer centers show promise. This may well be good—and cost-effective--for both enterprises. The intellectual power to address basic questions and to apply them early to cancer is best accessed within academic centers. Then, commercial entities can harness their expertise of development and clinical testing with the appreciation that the best discoveries have been made.

Academic cancer centers are creating new approaches to collaboration that accelerate progress by allowing the cancer research community to work together to respond to the changing paradigm in our understanding of how cancer's molecular makeup influences therapy and care. This includes collaborations between academic cancer centers and collaborations between academia and industry. In fact, communication among the academic cancer centers is thriving, advancing discovery, translation, and dissemination more than any individual effort could sustain, and it takes place without the confidentiality that is often a barrier for collaboration in the commercial space.

In summary, academic cancer centers are the engine of cancer research. They support fundamental scientific discoveries, exploration of the translational potential of these discoveries, testing of cutting-edge approaches to cancer prevention, early detection and therapy, assessment of the impact of therapy (or of foregoing therapy) on quality of life, and monitoring the success at reducing the burden of cancer in their communities and beyond.

### *Clinical Cancer Care*

Clinical cancer care at academic cancer centers is structured differently from that provided in most community settings. At academic cancer centers, clinical care is usually organized based on cancer type.

Interdisciplinary teams going by various names such as Disease Oriented Teams or Multidisciplinary Oncology Groups include experts with various backgrounds (Medical Oncology, Surgical Oncology, Radiation Oncology, Pathology, Radiology, Pharmacy, Nursing, etc.) with a common interest and expertise in specific cancer types. These teams strive to provide care in a collaborative, synchronized, patient-centered manner. They coordinate interdisciplinary care when more than one modality is of value, with decisions on the best treatment for each patient being discussed by disease-type focused, interdisciplinary tumor boards attended by the full team.

Disease-focused teams include clinical investigators who are knowledgeable about the latest therapies and ongoing trials. They update their care plans based on the newest data, presentations at national meetings, and studies taking place at their own or other academic cancer centers. In a phrase, they are providing the most-advanced decision-making available. This provides patients with access to the most innovative treatments including those being evaluated in early phase clinical trials sometimes authored by the treating clinician. By partnering closely with community oncologists and providing community oncologists with access to multidisciplinary teams of experts in specific cancer types as well as clinical trials, academic cancer centers help to ensure that patients receive quality care both at the academic cancer centers and in the communities. The ability to tap into the knowledge base of the academic experts is increasingly important to community oncologists as our growing knowledge of cancer's complexity leads to greater individualization of therapy. Academic cancer centers also provide clinical care to underserved populations, and many offer free training to patient navigators who serve patients in a culturally sensitive manner.

***Education and Career Development***

Essentially all U.S.-trained oncologists have obtained a major portion of their cancer training at academic cancer centers. The same applies to cancer researchers who work in both the public and private sectors and have been central to innovation in the biotechnology industry, a driver of the national economy. Clinical and research training programs abound at academic cancer centers, yet not all are alike. Many fill unique niches. They provide training in specific research fields, new technologies, specific cancer types, underrepresented populations, outcomes research and health care delivery. Beyond physicians and researchers, academic centers train nurses, pharmacists, physician assistants, and other cancer care team members. Cancer centers based at comprehensive research universities

include experts who did not train to be cancer investigators, but who possess novel skill sets and knowledge that contributes to cancer research efforts in fields as diverse as particle physics, informatics, evolution, psychosocial health, sociology and statistics.

Academic cancer centers educate the public through extensive outreach programs. This includes education programs to reduce cancer disparities, communication about healthy lifestyles and unique approaches like classes that focus on cancer patient nutrition, and interactions--and in some cases leadership roles--in statewide cancer control efforts. Increasingly, patient advocates are being included in a broad range of cancer center activities. Patient advocates provide a perspective on cancer center activities and initiatives that is independent of the complex organizational and financial pressures experienced by cancer center leadership. Patient advocates learn from the cancer professionals and, perhaps more importantly, cancer professionals learn from the patient advocates.

Financing the educational mission is increasingly a challenge for academic cancer centers. Academic cancer centers rely on revenue streams from their parent institutions, clinical care and research to support both clinical and research education. The need to support the education mission is a significant factor that distinguishes academic cancer centers from community cancer centers and the pharmaceutical industry, yet community cancer centers and the pharmaceutical industry are dependent on the high-quality oncology work force that is generated by the education programs of academic cancer centers.

***Economic Impact***

The three overlapping missions of academic cancer centers — research, clinical care and education — have a positive economic impact locally, regionally and nationally. Academic centers create intellectual property, generate jobs, invest locally, act as economic drivers by launching start-up companies and bring resources to the community through "medical tourism". Academic cancer centers can provide cost-efficient cancer care based on their success in following guidelines and limiting ineffective, expensive end-of-life treatments. The economic impact of cancer survivors who return to the workforce is enormous.

Broadly speaking, there is little to question about some of the “this we believe” items outlined above (e.g., the contributions academic cancer centers make to the education of clinical oncologists). Other

claims will justifiably be met with some skepticism until we are able to say, “Here is the data”. With that goal in mind, here are select items based on data, including peer-reviewed articles, collected as part of the ADI.

**What We Know**

***Research***

The major advances in cancer research that are having the greatest impact on our knowledge of cancer and its prevention, early detection and therapy essentially all came from academic cancer centers. These include, but are not limited to, the growth in our understanding of cancer genetics, signaling pathways and cancer immunotherapy. There are numerous examples of scientific advances first made at academic cancer centers that, on further collaboration with the private sector, led to new cancer therapies. These include identification of inherited genes that contribute to cancer predisposition such as the BRCA genes[2], checkpoint blockade therapy[3] and CAR T-cells[4]. Hundreds of other examples underline the central role that academic cancer centers in the United States play in driving fundamental cancer research.

Academic cancer centers are also developing novel approaches to collaboration, recognizing that research progress requires working together. Examples include the Oncology Research Information Exchange Network (ORIEN) (http://oriencancer.org/) and the Big Ten Cancer Research Consortium (https://www.bigtencrc.org/). And such efforts extend beyond academia to collaborations with biotechnology and pharmaceutical companies, with outreach to community oncology as well.

***Clinical Care***

A growing list of publications and reports provide data indicating patients who receive at least a portion of their care at academic cancer centers have superior outcomes compared to those who do not. In work published in the journal *Cancer*, Dr. Julie Wolfson and colleagues reviewed the impact of care delivered by comprehensive cancer centers.[5,6]

This group evaluated outcomes of nearly 70,000 patients with newly diagnosed adult-onset (aged 22-65 years) cancers reported to the Los Angeles County cancer registry between 1998 and 2008. Among individuals with newly diagnosed adult-onset cancer, those who were treated at NCI-designated

comprehensive cancer centers experienced superior survival compared with those treated at non-NCI-designated comprehensive cancer center facilities. The authors found that a portion of this difference could have been due to barriers to receiving care, including access to the centers, insurance, race, ethnicity and socioeconomic status. Nevertheless, there were differences in outcomes even after controlling for these variables.

The Alliance of Dedicated Cancer Centers (ADCC), an organization composed of 11 nationally recognized dedicated academic cancer centers that are all members of AACI, commissioned a report from Milliman, a global consulting company, to assess outcomes of patients receiving chemotherapy at ADCC institutions and to compare these outcomes to other types of hospitals. Their report, entitled "Survival of Medicare Fee-for-Service Chemotherapy Patients by Site of Care"[7], compared the 36-month survival rates by treatment facility type for Medicare fee-for-service patients who received intravenous chemotherapy for treatment of breast, colon, lung, ovarian, pancreatic, or prostate cancer. Patients treated with intravenous chemotherapy at the ADCC institutions had a lower risk of death. Risk of death was also reduced at all NCI-designated comprehensive cancer centers and other teaching hospitals compared to other hospitals.

Additional more focused publications speak to improved outcomes at academic cancer centers. These include studies of patients with cancer of the colon[8], liver[9], pancreas[10] and prostate[11]. Some of these articles also highlight the benefits that specialist collaboration delivers for patient care. Interdisciplinary teams are a hallmark of academic cancer centers, and the ability to tap into the knowledge base of academic experts is increasingly important to community oncologists as our growing knowledge of cancer's complexity leads to greater individualization of therapy.

There are important caveats to consider when reviewing these studies. Confounding factors, such as referral bias, could help explain some of the results. However, the variety of studies indicating differences in outcome use a range of data sources and methods to control for such confounding factors. Overall, the data clearly indicate that, for many patients, inclusion of academic cancer centers in the care team results in improved outcomes.

These studies demonstrate that academic centers have a unique and valuable role to play in delivery of the highest quality, complex cancer care. It is vital to point out that the studies should not be interpreted as implying that clinical cancer care should be delivered solely at academic centers. Indeed,

this is neither feasible nor indicated. Moving forward, new models are needed to help leverage the unique expertise and clinical capabilities of academic cancer centers with the desire of patients to receive most of their care close to home. With that goal in mind, AACI's current Network Care Initiative is exploring the optimal way to design cancer care networks. The benefits of extending the clinical care impact of academic centers are transformational for the American public.

***Education***

Every academic cancer center is involved in cancer education at multiple levels (sometimes referred to as "teens to tenure"). Academic cancer centers provide clinical cancer training across the full educational spectrum and host the leading clinical oncology training programs. In addition, a description of strong career enhancement opportunities for cancer researchers is now a component of recognition as an NCI-designated cancer center. NCI-designated cancer centers are expected to coordinate cancer research education and training activities and provide support for travel to scientific meetings, scientific seminars, workshops, and related activities (https://grants.nih.gov/grants/guide/pa-files/PAR-17-095.html). The private sector is well aware of the vital educational contributions made by academic cancer centers. In the past, cancer investigators had two career choices – either to remain in academia after completing training, or move through the one-way door to industry, never to return. This is no longer the case. The cross-talk between academic cancer centers and industry, and increased mobility between these two sectors, has been beneficial to both (http://www.sciencemag.org/features/2013/03/blurring-lines-between-academic-and-industrial-cancer-research). Likewise, providing life-long career enhancement for professionals in cancer care and research is now a priority for academic centers.

Academic cancer centers contribute to patient and public education as well. One example is establishment of core competencies for oncology patient navigators[12]. Another is culinary classes with a focus on nutrition for patients with cancer[13]. Statewide cancer control efforts, some linked to private foundations, benefit from close collaborations with academic cancer centers, and leverage the expertise of those cancer centers to both assess the burden of cancer in the community, and to recommend evidence-based approaches to cancer control (e.g., the Iowa Cancer Consortium - www.canceriowa.org).

***Economic Impact***

Academic cancer centers are dependent on payment for the clinical services they provide, sufficient, reliable federal and state funding for cancer research and support from various sources for their educational mission. Philanthropy is also key to all three missions (see The National Association of Cancer Center Development Officers - http://naccdo.org/). To justify the value of this investment, many academic cancer centers produce fact sheets and other materials outlining how investment, including federal support for cancer research, pays dividends in the local economy. Some of these "return on investment" documents are available in the ADI library, along with a useful conceptual framework for assessing the value of cancer treatment options, produced by the American Society of Clinical Oncology.[14]

Beyond the decades of cancer clinical success and extended survival rates, legislators and constituents recognize--and the evidence shows--that biomedical research is good for the American economy. Research funded by the NIH supports almost 380,000 jobs and $65 billion in economic activity across the United States, making cancer research an engine for both medical and economic progress.[15] Remarkably, these direct research dollars provide the single largest annual source of outside-of-the-region funds to support the academic medical center as a whole and to add to the economic vitality of the region.

**Academic Cancer Centers – A Success Story**

As outlined above, a growing body of evidence points to the importance of academic cancer centers. There is a high degree of pride in communities that are home to such centers. This extends to the entire nation, where public investment in cancer research is one of the few areas of national endeavor that enjoys wide support in both political circles and among Americans at large.

Congress doubled the budget for the National Institutes of Health (NIH) from 1998 to 2003 and increased funding for cancer research through the 21st Century Cures Act, a biomedical research bill approved in 2016 with broad bipartisan support. The recently passed Fiscal Year 2017 omnibus appropriations bill provided an additional $2 billion for the NIH over the Fiscal Year 2016 enacted level,

bringing the Fiscal Year 2017 budget to $34.1 billion.

Among the electorate, a nationwide survey coinciding with Vice President Joe Biden's push for a 'Cancer Moonshot' found half of respondents supporting a tax increase for cancer research.[16] A January 2016 survey conducted by Zogby Analytics on behalf of Research!America among 1001 adults ages 18 and older found that 64 percent of Democrats, 50 percent of Republicans, and 48 percent of Independents believe investing in research is very important to job creation, technological breakthroughs, and economic growth.[17]

**Conclusion and next steps**

A growing body of objective data indicate academic cancer centers are more valuable than ever, by making unique clinical, research and educational contributions to reducing the burden of cancer for those we serve and by providing a remarkable national resource that benefits the nation's health and welfare and its health industry. These cancer centers need to remain vibrant, and their unique role recognized and supported, if they are to continue to play a central role in accelerating progress against cancer in the years ahead. The AACI will continue to monitor, update and organize the library of information on the value academic cancer centers bring to their communities and to the whole country, so we can solidify support for the academic cancer centers by not only speaking about "what we believe" but also providing data on "what we know".

END

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