

Puerto Rico Cancer Burden Task Force: Assessing Cancer Research Priorities

Hispanics are the 2nd largest ethnic group in the US. Puerto Rico (PR) is the only predominantly Hispanic US territory; Puerto Rican Hispanics (PRH) account for approximately 10% of all US Hispanics (USH) (1). Hispanics are the result of generations of admixture of Amerindian, European, and African races. The fact that PR is an isolated island, makes PRH unique in terms of genetic admixture and gene-environmental interactions, which may account for the differences in incidence trends compared to USH. For this reason, in February 20, 2013, we held the first **Puerto Rico Cancer Burden Task Force: Assessing Cancer Research Priorities** (PRCBTF) meeting at the University of Puerto Rico Comprehensive Cancer Center (UPRCCC). Stake holders in the continuum of cancer care in PR included physicians and investigators from academia, private hospitals, professional societies, community-based organizations, and pharmaceutical industry. Investigator's name and organization (including abbreviations) are stated in Table 1. The PRCBTF allowed for the exchange of ideas and provided the opportunity for attendees to work together toward a common goal of establishing cancer research priorities in PR.

Table 1. Participating stake holder speakers in the Puerto Rico Cancer Burden Task Force: Assessing Cancer Research Priorities meeting.

Speakers	Organization
Dr. Reynold Lopez	University of Puerto Rico Comprehensive Cancer Center (UPRCCC), UPR Medical Sciences Campus (UPR MSc)
Dr. Marcia Cruz-Correa	University of Puerto Rico Comprehensive Cancer Center (UPRCCC), UPR Medical Sciences Campus (UPR MSc)
Dr. Jorge Gómez	National Cancer Institute, United States-Latin America Cancer Research Network (US-LACRN)
Dr. William Cáceres	VA Caribbean Healthcare System (VACHS)
Dra. Edna Mora	University of Puerto Rico Comprehensive Cancer Center (UPRCCC), I. Gonzalez-Martinez Oncologic Hospital (IGMOH)
Dr. Juan Javier	I. Gonzalez-Martinez Oncologic Hospital (IGMOH)
Dr. Luis Almodóvar	HIMA- San Pablo (HIMA)
Dr. Fernando Cabanillas	Auxilio Mutuo Cancer Center (AMCC)
Dr. Jaime Matta	Ponce School of Medicine & Health Sciences (PSM)
Dr. Robert Hunter Mellado	Community Oncologists Group, Universidad Central del Caribe (UCC)
Dr. Guillermo Tortolero	Puerto Rico Central Cancer Registry (PCCR)
Dra. Lourdes Feliciano	Puerto Rico Hematology and Oncology Association
Dr. Luis Baez	Clinical Community Cancer Program of San Juan
Dr. Roberto Santiago	Puerto Rico Radiotherapists Association
Dra. Lillian Santos	American Cancer Society (ACS)

Scientific Highlights

Dr. Cruz-Correa moderated the meeting where 14 attendees presented their cancer research priorities. Dr. López, started the discussion by presenting cancer epidemiology data generated by the PR Central Cancer Registry (PRCCR, Table 2). Cancer is the 2nd leading cause of death in PR; mortality rates have decreased, but incidence rates have been increasing in both sexes. He emphasized the increase in thyroid cancer incidence in women, which is higher than in USH. He presented the mission, vision and goals of the UPRCCC which include building a cancer hospital.

Table 2. Cancer burden in Puerto Rico. Rates are per 100,000 and age-adjusted to the Puerto Rican population (2). Incidence data excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs and in situ cancers except urinary bladder. Cases with an unknown age were also excluded.

Year of Diagnosis	Incidence for all cancer sites					
	Both sexes		Male		Female	
	Rate	Count	Rate	Count	Rate	Count
2006-2010	296.9	65,940	360.9	36,228	248.6	29,712
2006	293.6	12,637	370.7	7,163	234.8	5,474
2007	294.3	12,855	361.7	7,110	243.0	5,745
2008	293.2	13,006	353.4	7,075	248.1	5,931
2009	297.7	13,438	359.4	7,362	251.3	6,076
2010	306.1	14,004	360.4	7,518	265.7	6,486

Year of Death	Mortality for all cancer sites					
	Overall		Male		Female	
	Rate	Count	Rate	Count	Rate	Count
2006-2010	110.5	25,058	144.0	14,171	86.0	10,887
2006	110.4	4,805	144.0	2,717	85.8	2,088
2007	111.7	4,965	145.6	2,812	86.8	2,153
2008	110.6	5,007	144.4	2,839	86.0	2,168
2009	109.9	5,084	143.2	2,876	85.5	2,208
2010	109.7	5,197	142.5	2,927	86.0	2,270

Dr. Gómez was invited to present the US-LACRN as a network for international research focused on promoting collaborative cancer research efforts. Network countries participate in pilot projects to increase their capacity to collaborate in cancer research and improve delivery of state-of-the-art cancer care to patients. The US, Argentina, Brazil, Chile, Mexico, Uruguay, and more recently Colombia, PR, and Peru joined the network. The 1st collaborative research project is focused on addressing the high breast cancer incidence in Latin America by integrating research efforts in six countries. Dr. Gomez stated, "Reducing the cancer burden in the US depends on our ability to understand and control cancer at the cultural, behavioral, and molecular level".

Four clinical cancer centers in PR participated. These institutions provide state-of-the art, integrative clinical cancer care for the oncologic patients in PR. Dr. Cáceres described the infrastructure and services, available for veterans on the island at the VACHS. Based on the Veteran's Administration cancer registry, the most diagnosed cancers in 2011 were prostate, colorectal, lung, and liver. He presented two system redesign studies focused on reducing the time from detection to treatment for lung and hepatocellular carcinomas. Drs. Mora and Javier reported the three most diagnosed cancers at the IGMOH in 2009 were breast, corpus uteri and colorectal in women whereas in males these were prostate, colorectal, and larynx. In their opinion, breast, cervical, and uterine cancer should be priorities. Dr. Almodóvar presented the infrastructure available at HIMA. In 2011, 1,346 cancer cases were reported to their cancer registry (1,184 were newly diagnosed). The top four cancers diagnosed at HIMA were prostate, breast, colorectal and brain/central nervous system. Dr. Cabanillas stated the priorities in cancer research for the AMCC are breast cancer and lymphomas. He discussed investigator initiated clinical trials focused on neoadjuvant chemotherapy for breast as a surrogate marker for adjuvant chemotherapy assessed per breast cancer type.

Among the investigators who participated in the discussion, Dr. Matta stated that the two research priorities in PSM are breast and lung cancer. Molecular epidemiology investigations in this institution identified rare mutations in the breast cancer susceptibility gene (BRCA) in Puerto Rican women. PSM has a partnership with H. Lee Moffitt Comprehensive Cancer Center to build bridges between scientists at both institutions and have established a biobank. PSM also created an outreach core to develop community-oriented activities for cancer prevention, early detection, and control awareness. Dr. Hunter presented his research and HIV patient registry at the UCC. In his studies, cervical cancers were misreported as vaginal; antiretroviral treatment reduced the incidence of cervical cancer although it is twice as high as in the US. Head and neck and liver cancers are very common in his cohort. In another study, he found that patient adherence to colorectal cancer screening was directly related to recommendations made by their physician. This supports one of the main points raised, the need to educate both medical personnel and the community on the importance of adherence to cancer screening guidelines.

Dr. Tortolero presented the vision of developing multidisciplinary program on cancer control and population sciences. An MOU between the PR Department of Health and the UPRCCC designated this institution to oversee three main programs: the PRCCR, the Comprehensive Cancer Control Program, and the Early Detection of Breast and Cervical Cancer Program under the umbrella of the Cancer Prevention and Control coordinating center. Their goal is to visualize the cancer continuum (from prevention to survival) and identify

areas where they can intervene. Dr. Feliciano discussed several points to improve cancer prevention strategies: Poor compliance with screening tests by primary physicians, poor access to authorizations for screening tests by medical insurance companies, and no access to cytogenetic studies (i.e. BRCA). She suggests that cancer epidemiology in PR should be re-evaluated and focused on why the incidence of certain tumors is increasing (i.e. thyroid cancer) and why younger patients are being diagnosed. Evaluation of this data is needed to re-define screening guidelines and identify possible risk factors in the most affected regions in PR. She stated "PRH are ethnically different than USH. Therefore, screening guidelines in the US or other Hispanic countries may not be optimal for PRH." Community-based educational programs need to emphasize the importance of: adopting healthier lifestyles, adhering to cancer screening, identifying risk factors, indicating where to receive proper cancer care, adhering to evidence-based cancer therapies and increasing minority participation in clinical trials. Dr. Baez supports that efforts should be made to include PRH in clinical trials.

Dr. Santiago expressed that clinical outcomes data collection and analysis are necessary in order to improve the standard of care. He argues that efforts should be made to increase the number of radiation oncologists by exposing more medical students to the field and re-establishing local training programs. Implementation of policies to standardize radiotherapy are needed. The two main cancers he believes that could benefit radiotherapy research are head and neck and cervical cancer. Dr. Santos presented the mission of the ACS as a community-based, voluntary health organization dedicated to eliminating cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering, through research, education, advocacy, and service. Their priorities are: lung cancer/tobacco control, nutrition/physical activity, colorectal cancer, breast cancer, survivorship/quality of life, and access to care.

Conclusions

The PRCBF meeting served as a forum where attendees discussed research priorities, identified areas that need improvement, and gave recommendations on how to advance cancer research and patient care in PR. The strengths and weaknesses in cancer research in PR were discussed. Main strengths include: 1) investigators with experience and success in patient recruitment, 2) availability of advanced clinical infrastructure and technology necessary to support research, 3) availability of island-wide incidence and mortality data from the PRCCR and, 4) support of numerous community-based and professional organizations.

Cancer research and educational programs are emerging on the island, however further development of formal training and/or recruitment of cancer researchers is essential. The PRCBTF established that the following should be addressed: 1) education

of health care providers and the community in various topics including screening, 2) the use of evidence-based testing and management, 3) standardization of treatment across clinical cancer centers in PR, 4) availability of outcomes data and, 5) limited collaboration among researchers in PR. The following recommendations were made:

- Implementation of integrated cancer education programs across the cancer continuum for health care providers and the community using evidence-based strategies.
- Collection and evaluation of cancer related outcomes data from oncology patients in PR to be used establish research priorities and guidelines for standards of cancer care in PR.
- Prioritize research addressing Hispanic-specific molecular profiling, cultural and/or gene-environmental factors that contribute cancer risk in PR.

An integrative, inter-institutional, multidisciplinary research network among oncology stakeholders in PR should be established. The cancer types for research priorities established were: breast, prostate, colon, head and neck, liver, and lung cancer. The three main areas we need to focus research on are: methods of education, outcomes research, and molecular profiling of tumors. Dr. Gómez recommends that MOUs between institutions be established to give the research network formality and foster collaboration. An inter-institutional plan of action should be created to address the research priorities discussed. “Research addressing country-specific molecular profiling, culture or gene-environmental factors that contribute to cancer risk can only be resolved by researchers working

together.” During this meeting, it was made clear that all attendees are willing to foster these collaborations, continue to expand the research network and reduce fragmentation among institutions to work towards the common goal of eradicating cancer in PR.

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