

Developing a collaborative international partnership for cancer control in Mexico

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Abstract

In 2014, a partnership was established between the University of California and Mexico, which subsequently catalyzed formation of collaborations between cancer researchers at University of California, San Francisco and in Mexico. Over the past two decades cancer burden has dramatically increased in Mexicans on both sides of the California - Mexico border. Together, we face a growing burden of cancer in the context of globalized economies, diverse migration patterns, and dynamic immigration policies. Our partnership aims to: 1) understand the life course impact of cancer risk factors and interactions with changing environments; 2) address cancer disparities within Mexico, in Mexican migrants to the United States, and in naturalized Mexican-Americans; and 3) identify effective cancer screening strategies and cancer control policies that are tailored to existing healthcare systems and social and cultural factors. Herein, we describe the principles of partnership and early successes and challenges of this collaboration.

Keywords: Mexico; Latin America; California; cancer; research

Resumen

En 2014, se estableció un convenio de colaboración colaboración entre la Universidad de California y México, que posteriormente catalizó colaboraciones específicas entre investigadores en cáncer en la Universidad de California, San Francisco y en México. En las últimas dos décadas, la carga del cáncer ha aumentado drásticamente en mexicanos de ambos lados de la frontera entre California y México. Juntos, enfrentamos una carga creciente de cáncer en un contexto de economías globalizadas y diversos patrones y políticas de migración dinámicas. Nuestra colaboración tiene como objetivo: 1) entender el impacto a lo largo de la vida de factores de riesgo de cáncer y sus interacciones en un entorno cambiante; 2) abordar disparidades del cáncer dentro de México, en os migrantes mexicanos a los Estados Unidos y en los mexicoamericanos naturalizados; y 3) identificar estrategias efectivas de detección del cáncer y políticas de control del cáncer que se adapten a sistemas de salud existentes y a factores sociales y culturales. Aquí describimos los principios de esta colaboración y los primeros éxitos y retos de la misma.

Palabras clave: México; Latinoamérica; California; cáncer; investigación

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In 2014, the President of the University of California (UC), Janet Napolitano, launched the UC-Mexico Initiative to create a formal partnership between UC and Mexico. The initiative aims to pursue a sustained, strategic, and equal partnership between UC and institutions in Mexico to advance solutions to address arts and culture, education, energy, environment, and health issues affecting lives on both sides of the California-Mexico border.¹ Over the past several years, the UC-Mexico Initiative has expanded its collaborative activities and sparked new partnerships between UC and Mexican counterparts.

In 2017, the Institute for Global Health Sciences and Helen Diller Family Comprehensive Cancer Center of the University of California, San Francisco (UCSF), dedicated unrestricted pilot funds to advance this mission by catalyzing a partnership between the Global Cancer Program at UCSF and leading cancer researchers in Mexico. With increasing awareness that many non-communicable diseases affecting Mexico are also highly relevant to the Latinx population in California, this institutional investment reflects UCSF's prioritization of research to address the growing cancer burden in Mexico and an opportunity for bidirectional exchange of knowledge on the cancer burden affecting both populations in Mexico and Mexican-Americans.

Cancer in Mexico and in Mexican-Americans

Mexico is currently going through an epidemiologic transition, facing an increasing burden from cancer and other non-communicable diseases.^{2,3} Over the past two decades cancer burden has dramatically increased in Mexicans on both sides of the United States - Mexico border.^{4,6} In 2016, the government of Mexico developed a national cancer prevention and control plan that articulates specific actions to reduce disparities and increase access to preventive services, early detection, and high-quality treatment.⁷

In the United States, there is increasing awareness of disparities in cancer risk, access to medical care, and cancer outcomes affecting Latinx populations, with active efforts to develop policies to protect vulnerable minority populations.^{8,9} In California, 39% of the population is Hispanic or Latinx, of whom an estimated 86% are of Mexican descent.^{10,11} Thus, there is demand for robust information to guide cancer prevention and control policies that take into account the unique social, cultural and genetic characteristics of Mexicans living both in Mexico and in the United States.

First, there is a need to understand the life course impact of cancer risk factors in this population and their interaction with changing environments. Second,

addressing cancer disparities within Mexico, in Mexican migrants to the United States, and in naturalized Mexican-Americans requires an understanding of contextually relevant social determinants of health. Finally, there is a need to identify effective cancer screening strategies and cancer control policies that are tailored to existing healthcare systems and social and cultural factors affecting Mexicans on both sides of the California-Mexico border.

Priority setting

The UCSF-Mexico Cancer Initiative was formally launched with a stakeholder meeting in January 2018 in San Francisco, attended by representatives from Mexico's National Cancer Institute (*Instituto Nacional de Cancerología*, InCAN), *Instituto Nacional de Salud Pública* (INSP), and UCSF. The exchange of ideas over the course of a three-day meeting was bidirectional. Stakeholders from Mexico were charged with identifying local priorities for focus. UCSF investigators were charged with sharing ongoing research collaborations which could be leveraged. We sought to match expertise from UCSF faculty with priorities identified by stakeholders from Mexico. We considered it imperative that the research projects selected for pilot funding would be bolstered by strong leaders at both UCSF and in Mexico, with mutual enthusiasm for collaboration. As an immediate outcome of this initial meeting, pilot funds were allocated to two research initiatives which stakeholders from Mexico identified as key priorities.

The first collaborative project is addressing the growing burden of colorectal cancer (CRC) in Mexico. Currently in Mexico, CRC incidence and mortality are on the rise, possibly due to the combined impact of changing lifestyles and the improvement of healthcare infrastructure to facilitate diagnosis.^{9,12} Unfortunately, CRC screening was not covered by Mexico's public health insurance program, and a large proportion of CRC cases are still diagnosed at advanced stages.^{10,13} CRC is now the leading cause of cancer-related death in Mexico City.^{11,14} The collaboration team has undertaken a multi-pronged approach to evaluate the feasibility and acceptability of CRC screening in this context.¹⁵⁻¹⁷ Ultimately, the partnership aims to develop and implement a feasible and cost-effective screening program that addresses the context-specific barriers through a multi-level approach.

The second project has fostered a partnership between scientists from the UCSF Molecular Oncology Initiative and the National Institute of Genomic Medicine (*Instituto Nacional de Medicina Genómica*, Inmegen) to address significant disparities in outcomes for children

with pediatric cancers in Mexico. While pediatric cancers are commonly diagnosed using tissue-based pathology techniques in Mexico, these methods can be subject to ambiguity and are dependent upon the expertise of the laboratory. An alternative, and only recently available, method utilizes DNA sequencing to identify key cancer-associated alterations in a tumor sample, allowing for an unambiguous molecular diagnosis. This initiative leverages sequencing technology from UCSF and existing state-of-the-art infrastructure at Inmegen and aims to develop a low-cost DNA-based molecular diagnostic test as a means of improving diagnostics for pediatric cancers in Mexico and other resource-constrained settings.

While these two topics certainly do not address the full breadth of needs along the cancer control continuum in Mexico, we emphasized the need for focus and adequate investment of resources in these pilot and key projects from the outset to ensure early successes within the collaboration. However, we also agreed to revisit stakeholder priorities periodically during our annual meetings.

Establishing principles of the partnership

The field of global health has been historically characterized by paternalistic models of partnership that are often counterproductive. From the outset, we sought a more balanced and authentic partnership, emphasizing the mutual benefits of pooling the experience and knowledge of all partners, emphasizing bidirectional flow of information and shared decision-making.¹⁸ UCSF set forth its goal to provide *accompaniment* to researchers in Mexico, *e.g.*, providing partnership, support, and empowerment for the self-realization of goals and desired outcomes.

We openly confronted the challenges of forging equitable research partnerships between institutions and with community partners, acknowledging dramatically different resources to support cancer care and research in our respective countries. We established shared priorities to perform high-quality, innovative research that addresses the goals to understand cancer burden and improve cancer outcomes in Mexico and among Mexican-Americans. We emphasized the need for research to be driven by local priorities, and we agreed to integrate education and mentorship for early career investigators on both sides of the collaboration.

Challenges of the international partnership

Together, we face a growing burden of cancer in the context of globalized economies, diverse migration pat-

terns, and dynamic anti-immigration policies.¹⁹ Despite the clear benefits of binational collaboration, we have encountered dynamic political climates in both the U.S. and Mexico that have not always been aligned with the ideals of collaboration across the border. Additional challenges were identified by stakeholders from both UCSF and Mexico during our annual scientific symposium in January 2020 and are summarized in table I.

Table I
CHALLENGES OF THE FIRST THREE YEARS
UCSF-MEXICO CANCER COLLABORATION

Theme	Challenge
Political challenges	Dynamic diplomatic relations between the U.S. and Mexico
	Changes in political leadership and unpredictable changes in healthcare and research priorities
Health system challenges	Fragmented health system in Mexico hinders scale-up efforts
	Lack of modern equipment in some settings
	Lack of experience or history of engagement with clinical research in many settings
Research infrastructure challenges	Limited experience and resources to support clinical innovation or collaboration between primary care and specialty care or across institutions
	Institutions in Mexico do not always encourage or reward time dedicated to research
Implementation challenges	Difficulties harmonizing institutional review board protocols, data sharing protocols, regulatory protocols, and other laboratory resources
	Disruptions caused by the Covid-19 pandemic
	Various complicated legal and regulatory processes delay implementation
Funding challenges	Need for formative evaluations and information gathering before starting projects
	Managing expectations among multiple stakeholders
Funding challenges	Coordination of large institutions across borders and across diverse clinical and research settings in Mexico
	Funding opportunities often do not match our mutually agreed-upon research priorities.

UCSF: University of California, San Francisco

Accomplishments and future directions

Now, at the culmination of our third year, we are able to reflect on our early successes. We have benefited from the early investment of pilot funds, which catalyzed the generation of preliminary data to allow members of the collaboration to be competitive for additional funding. Additionally, we have presented our work at international meetings, coauthored manuscripts, and expanded our collaboration to additional disease priorities. We continue to meet quarterly for project-specific updates and annually for an in-person scientific symposium (to be hosted virtually in 2021) to share progress reports and to facilitate cross-communication among different investigator teams within the partnership.

We have not deviated from our ideals of accompaniment and equal partnership, which are emphasized through all projects within the partnership. In addition, we have fostered a strong foundation of mentorship for early career investigators from both UCSF and Mexico, who have been recognized and received support from the Fulbright Student Program, National Council of Science and Technology (*Consejo Nacional de Ciencia y Tecnología*, Conacyt), and the John A. Watson Faculty Scholar Program at UCSF. Relationships have flourished within a framework of mutual trust and transparent communication, fostering additional opportunities for collaboration.

As our collaboration enters its next phase, we face the challenges of forging a path to sustainability. In order to ensure that we are prepared to weather changes in institutional and national leadership, we aim to achieve recognized benchmarks for academic and research success. To accomplish this, we will actively invest in educational opportunities for early career investigators on both sides of the collaboration. Through this investment, we hope to strengthen longitudinal mentor-mentee relationships which will ensure continued motivation and support for collaborative research and translation of knowledge into policy and practice.

As our research portfolios generate context-specific evidence to inform local cancer control policies and practices in Mexico and California, increased engagement of local stakeholders will be necessary in order to ensure that our research findings are positioned for rapid implementation in health policy and practice. We will expand outreach to local stakeholders and policy makers and encourage active engagement and integration within our collaboration. Finally, we will aim to expand our collaborative activities to address additional disease priorities that are aligned with Mexico's national cancer prevention and control plan, including breast cancer, tobacco control, cancers related to HIV and human papillomavirus co-infection, and palliative care.

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Declaration of conflict of interests. The authors declare that they have no conflict of interests.

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