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## EDITORIAL

## At the border: A call to action for health equity for children with leukemia

Childhood cancer is highly curable when timely access to treatment is available.<sup>1</sup> All children with cancer should have equal access to state-of-the-art health care irrespective of their race, ethnicity, place of residency, and/or immigration or insurance status. Unfortunately, stark disparities in health care access and survival persist among members of historically minoritized groups, including Black individuals, indigenous persons, and people of color (BIPOC), and those who have adverse social determinants of health.<sup>2-4</sup> Over one-half of youth in the United States belongs to at least one of these minoritized groups.<sup>2</sup>

In the United States, approximately 1.6 million individuals are diagnosed with cancer annually, including >17,000 children.<sup>1</sup> However, a decade after the Institute of Medicine identified inadequate quality of US cancer care, overcoming barriers to equitable treatments for all patients remains challenging. In this issue of *Cancer*, Castellanos et al.<sup>5</sup> analyze population-level data from the Texas Cancer Registry between 1997 and 2017 to examine the impact of residing along the Texas–Mexico border on survival among children with leukemia. They included 6002 children with acute lymphoblastic leukemia (ALL) and 1279 children with acute myeloid leukemia (AML). They report that children with ALL residing along the border had inferior overall survival (OS) and a 30% increase hazard of death compared with children residing in nonborder areas. These findings are attributed to multiple barriers to health care encountered in the US–Mexico border region.<sup>6,7</sup>

The US–Mexico border extends for 2000 miles and includes 48 counties in California, Arizona, New Mexico, and Texas. This relatively rural region spans some of the poorest US counties, with large migrant populations and high rates of unemployment.<sup>7,8</sup> Residing in impoverished rural areas is associated with adverse cancer outcomes in adults<sup>9</sup> and reflects lack of health care infrastructure and other system barriers. Yet the impact of border residency on pediatric cancer survival is understudied. The findings by Castellanos et al.<sup>5</sup> extend the observations of others, which link lower cancer survival in adults to residency in the US–Mexico border region,<sup>9,10</sup> and urge a call to action to improve dismal survival by identifying reversible drivers of outcomes and targets for interventions to mitigate inequities.

The Hispanic pediatric population studied by Castellanos et al.<sup>5</sup> has a significantly higher incidence of several cancers, including leukemias and lymphomas, and poorer 5-year OS than their non-Hispanic White counterparts.<sup>2,3</sup> The pervasive nature of these disparities suggests that the underlying mechanisms driving survival disparities relate to more complex factors than solely tumor biology.

The impact of rurality on cancer care delivery and outcomes is of great public health concern. Prior population-based work has established profound disparities in adult cancer mortality risk between rural and urban areas.<sup>9-12</sup> However, those population-based studies did not address resource-level needs for health care delivery within institutions, including access to key specialists and infrastructure for optimal clinical outcomes. Children with cancer require treatment at tertiary care centers that offer comprehensive, interdisciplinary care. Such highly specialized centers are usually located in large urban areas and serve children from wide and geographically diverse catchment areas. Greater than 20% of the US population reside in rural areas,<sup>9</sup> and many must travel for more than an hour to a National Cancer Institute-designated cancer center.

Castellanos et al.<sup>5</sup> highlight that children with AML residing in rural border areas experienced inferior survival despite receiving care in urban institutions. These findings are in contrast to studies in adults with cancer, in whom institution-level rurality was more influential than patient-level rurality on survival.<sup>10,12</sup> This suggests that poorer outcomes are not inherent to rural residency per se but may be related more to access to institutions where optimal care is routinely delivered. Findings from Castellanos et al.<sup>5</sup> underscore the need to support rural families with additional resources because the burden of cancer may be greater for families from rural communities, including lack of transportation and other adverse social determinants of health.

Cross-border health care could be considered as a strategy to improve clinical outcomes at both sides of the US–Mexico border. Cross-border health care involves an international agreement that allows citizens of partnered countries to receive health care out of country. Provision of cross-border health care includes transferring of patients, mobilization of health care teams, and/or international telehealth visits. The European Union has a long-standing history of partnerships for cross-border health care involving >200,000 patients annually, with an estimated cost of only 0.004% of the European Union's gross domestic product.<sup>13</sup> In contrast, North America has been more isolationist, even during the COVID-19 pandemic.<sup>14</sup> Despite the passage of the North American Free Trade Agreement in 2003, it did not provide a legal basis for binational health care agreements. Therefore, cross-border health care partnerships have been extremely difficult to establish because of very limited resource allocation in border states, cultural differences, and negative perceptions of medical care on either side of the border.<sup>6,7</sup> Despite the lack of formalized agreements, thousands of patients cross the border for care.<sup>7</sup> Studies have shown that many Mexican immigrants

in the United States return to Mexico with their children for medical services because of language-concordant care, cultural familiarity, and lower costs.<sup>7,15</sup> Without formal agreements, patients crossing the border face challenges with communication between the health care systems on either side of the border. Castellanos et al.<sup>5</sup> acknowledged that the frequent migration to and from the United States in border communities may also affect access to care and, importantly, the accurate measurement of survival using passive follow-up, leading to potential overestimations of survival for those residing in border areas.

There are a few published experiences about cross-border health care between the United States and Mexico.<sup>16-19</sup> Responding to the need for high-quality pediatric cancer care in the US-Mexico border region, Rady Children's Hospital San Diego, in partnership with St. Jude Children's Research Hospital, launched a collaborative twinning program at Hospital General-Tijuana, Mexico, in 2008.<sup>17,18</sup> This culturally sensitive collaboration led to significant improvements in infrastructure and clinical outcomes for Mexican children with cancer. Recently, this collaboration was expanded to provide access to neurosurgical services at Rady Children's Hospital for children with brain tumors from Hospital General-Tijuana through the Cross-Border Neuro-oncology Program.<sup>19</sup>

This example of cross-border health care dramatically improved OS for brain tumors from 0% to 52% at Hospital General-Tijuana. Benefits included US stakeholders learning culturally and linguistically appropriate strategies to encourage treatment adherence, and becoming cognizant of resource conservation, because medications and personnel are often perceived as *unlimited* in the United States, and these resources are scarce in Mexico. Similarly, a US-Mexico binational radiation therapy tumor board was formed in 2015.<sup>16</sup> The success is partially attributed to reciprocal health care insurance between the United States and Mexico for patients who wish to access care in Mexico<sup>7</sup> and long-standing collaborative initiatives between US and Mexican border health organizations, independent from national governments, with the goal of addressing transnational public health issues, such as communicable diseases.<sup>7</sup> Although, these concerted efforts have been challenging because of the vast socioeconomic inequities that exist between the two countries, these models offer a framework for future and more formalized agreements. Based on European cross-border health care initiatives, cooperative programs are likely feasible in North America and could lead to mutually beneficial long-term effects. Challenges faced in Europe could be proactively addressed by North American countries before the implementation of any agreements.

As indicated by Castellanos et al.,<sup>5</sup> yet to be disentangled is the causality of poor outcomes among children with cancer along the US-Mexico border related to rural residency, immigration background, individual-level, provider-level, institutional-level, and/or community-level factors. In 2017, an estimated 325,000 migrants arrived at the US-Mexico border.<sup>6-8</sup> Migration and legal status are increasingly recognized as social determinants of health.<sup>20</sup> Violence, poverty, deconstruction of family and social networks, acculturation

stress, discrimination, and limited access to health care negatively affect health outcomes among immigrants and their families before, during, and after the migration process.<sup>7,8</sup> Hispanics are the largest and fastest growing group in the United States, with Mexican-born immigrants representing the largest foreign-born group at 25%.<sup>27</sup>

Eliminating cancer disparities in minoritized populations is imperative. Future studies should address social-behavioral patterns and the impact of poverty, legal status, birth country, limited English proficiency, and other potential barriers to high-quality health care delivery in the US-Mexico border region. Interventions aimed at providing support and resources to children with cancer residing in rural areas are urgently needed because patients from these areas are more likely to lack access to well equipped health care infrastructure, transportation, and social supports, which may negatively affect survival. Concerted efforts to address cancer disparities require the consideration of the greater burden of barriers to health care prevalent among minoritized populations in the US-Mexico border region, and the need to tailor interventions to the individual's culture, language, health literacy, and social networks.

We join Castellanos et al.<sup>5</sup> in inviting public health policy makers and health care systems to be cognizant of the importance of where persons reside and consider focusing efforts to improve cancer outcomes in rural areas with concentrated poverty, particularly for communities and immigrant populations of Black individuals, indigenous persons, and people of color. We urgently call for the attention of public health leaders and health care providers in both the United States and Mexico to mitigate the health disparities suffered by immigrants, a population that plays a vital role in the economies and social fabric of these two countries. Therefore, cross-border health care in North America warrants serious consideration.

## KEYWORDS

cross-border health care, immigrant children, pediatric cancer disparities, social determinants of health, US-Mexico border

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