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The Imperative for Research to Promote Health Equity in Indigenous Communities

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Abstract

Health disparities exact a devastating toll upon Indigenous people in the United States. However, there has been scant research investment to develop strategies to address these inequities in Indigenous health. We present a case for increased health promotion, prevention, and treatment research with Indigenous populations, providing context to the recent NIH investment in the Intervention Research to Improve Native American Health (IRINAH) network. We discuss the disproportionate costs and consequences of disparities borne by Indigenous groups, the limited evidence base on effective intervention for this population, how population uniqueness often makes transfer of existing intervention models difficult, and additional challenges in creating interventions for Indigenous settings. Given the history of colonial disruption that has included genocide, forced removal from lands, damaging federal, state and local policies and practices, environmental contamination, and most recently, climate change, we conclude research that moves beyond minor transformations of existing majority population focused interventions, but instead truly respects Indigenous wisdom, knowledge, traditions, and aspirations is needed, and that investment in intervention science to address Indigenous health disparities represent a moral imperative.

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Reduction of persistent health disparities has consistently emerged as a health priority over the past several decades. Yet progress in narrowing these disparities has proved disappointing (Sondik, Huang, Klein, & Satcher, 2010). Nowhere is this failure more evident than for the Indigenous peoples of the U.S., which include American Indian (AI), Alaska Native (AN), and Native Hawaiian (NH) populations¹. Persistent health disparities in these populations are well-documented and substantial, and these disparities have increased in the past decade (Sequist, 2017). These disparities emerge across numerous indicators that include life expectancy, disease morbidity, chronic disease risk factors, and quality of life. Life expectancy is 4.4 years lower than the U.S. general population (Indian Health Services, 2016a), and infant mortality rates are 50% - 60% higher compared to non-Hispanic whites (Mathews, MacDorman, & Thoma, 2015). Indigenous adults have over twice the rate of diabetes as non-Hispanic whites (Blackwell & Lucas, 2015), Indigenous adolescents report the highest levels of substance use compared to other U.S. youth (Center for Behavioral Health Statistics and Quality, 2014), and age 15-24 suicide rate for AIAN youth is four times that of non-Hispanic white youth (Indian Health Services, 2015).

Although Indigenous health disparities are increasing, there is consistent evidence that health promotion, prevention, and treatment interventions can play an important role in reducing disparities (Chin, Walters, Cook, & Huang, 2007). Given limited research resources and the small proportion of the general population represented by Indigenous peoples, intervention science investment in Indigenous groups has historically been overlooked. We make the case here for the imperative of increased health promotion, prevention, and treatment research (hereafter, intervention research) for Indigenous populations. To do so, we describe the disproportionate health-related economic, social, and developmental costs borne by Indigenous communities and the limited intervention science response. We overview challenges to traditional intervention science posed by ethical abuses and mistrust of research, tribal sovereignty, cultural and historical uniqueness, and diversity across Indigenous populations. We conclude with recommendations for a methodological pluralism that respects both scientific and indigenous “ways of knowing”, and for an intervention science that aspires beyond repetition of minor transformations of existing majority-focused intervention methods, and instead, represents true efforts of inclusion and respect for Indigenous wisdom, knowledge, and traditions.

Without minimizing the extent of the challenges facing many Indigenous communities, it would be remiss to not also note that, co-existing with these disparities, is a rich tapestry of

¹The focus of this paper is on the Indigenous populations of the United States. The National Institutes of Health (NIH) Intervention Research to Improve Native American Health (IRINAH) program funds projects with American Indian (AI), Alaska Native (AN), and Native Hawaiian (NH) groups. Much of the research on Indigenous people in the U.S. includes data for only AI and AN people, in part, due to delayed recognition of status for NH people. Because of this, where data combines all three populations, we refer to Indigenous peoples. Where data combines AI and AN peoples, we refer to AIAN, and where data is for one group, we refer to that group.

strengths embedded within deeply-held Indigenous traditions and cultural values that are in many ways distinctive in the U.S. These enduring strengths and resultant community resilience provide building blocks for cultural approaches to intervention that drive important advances in intervention science. This represents an important parallel story to this article that is told through companion pieces of this supplemental issue.

The Toll of Health Disparities on Indigenous Populations in the United States

A health disparity is “a particular type of health difference that is closely linked with social, or economic disadvantage,” while health equity “entails special efforts to improve the health of those who have experienced social or economic disadvantage” (U.S. Department of Health and Human Services, 2008, p. 28). The disparities literature abounds with discussion of health disparities among Indigenous populations; nearly every epidemiologic or etiologic article reviews evidence for the disparity under study. However, the significant economic and biopsychosocial consequences associated with these disparities are less often discussed.

Economic Costs of Health Disparities

Health disparities exact tremendous excess economic costs upon U.S. ethnic minority populations. LaVeist, Gaskin, and Richard (2011) estimated that approximately \$230 billion (2008 dollars) in direct medical care expenditures and over \$1 trillion in indirect costs (representing lost productivity and value of life from premature death) could have been prevented during 2003 – 2006 through elimination of African-American, Hispanic/Latino, and Asian health disparities. This study did not estimate excess economic costs for Indigenous populations, but they are also substantial, especially given the increased magnitude of Indigenous disparities for such conditions as diabetes, obesity, and mental health disorders. Indeed, comparison of the LaVeist et al. African-American health outcomes with corresponding Indigenous outcomes (National Center for Health Statistics, 2016) reveals similarities for some outcomes, including general health status, presence of functional limitation, and incidence of at least one chronic health condition, and higher Indigenous rates for others.

Extrapolating the LaVeist expenditure model for per capita African-American annual excess medical costs to 2015 Indigenous population estimates, then adjusting to 2016 dollars using the medical care Consumer Price Index, provides a first approximation in the literature of excess annual medical costs resulting from U.S. Indigenous health disparities. For the population self-identifying as AI, AN, or NH as race or as one of two races, the estimated excess annual medical costs are just over \$6.6 billion. To give perspective, the entire 2016 Indian Health Service (IHS) budget was \$6.4 billion (U.S. Department of Health and Human Services, 2016).

LaVeist et al. (2011) estimated indirect costs for African Americans as more than 5 times and for Hispanic/Latinos as 2.5 – 3 times greater than direct excess medical costs. Applying these ratios to Indigenous excess medical costs gives an estimate of indirect annual costs of health disparities borne by U.S. Indigenous populations of \$16.6 - \$33.2 billion (2016

dollars). Summing estimates of direct and indirect costs yields excess economic costs of \$23.2 - \$39.8 billion due to Indigenous health disparities.

These cost estimates do not include substance use and mental health treatment for conditions that impact Indigenous populations disproportionately (Substance Abuse and Mental Health Services Administration, 2012). For example, cost data from McFarland, Gabriel, Bigelow, and Walker (2006) allows a conservative calculation of annual excess direct costs of treatment for AIAN substance use disparities of approximately \$531 million (2016 dollars), with corresponding indirect costs of \$1.3 billion - \$2.7 billion. The magnitude of these estimates indicates the scale of these disparities, and more importantly, indicates opportunity for significant reductions in economic costs through investment in research on intervention.

Consequences of Adverse Experience, Trauma, and Loss

Indigenous families often experience multiple occurrence and high levels of trauma and loss exposure, due in large part to increased prevalence of physical disease and mental health disorders, including substance use disorder (Beals et al., 2012; Kaholokula, 2007; Sarche & Spicer, 2008; Whitbeck, Walls, Johnson, Morrisseau, & McDougall, 2009). Brave Heart and Chase (2014) note that many Lakota community members feel in a state of constant mourning, and they provide the example of one individual who in a 2-month period suffered five family members killed by a drunk driver, death of a diabetic relative, suicide of a cousin, and death of a relative by heart attack. Chronic stress associated with histories of repeated trauma cause immediate suffering and distress, negative mental and physical health outcomes (Kaholokula et al., 2012; van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005), and epigenetic modification (Ehlert, 2013), including life-long over-activation of the stress/response system (Brockie, Heinzelmann, & Gill, 2013).

Nowhere are the negative impacts of health disparities more evident than with Indigenous children who directly experience and are bystanders to high rates of trauma and loss, often associated with suicide, accidents, violence, and substance abuse (Brockie, Heinzelmann, & Gill, 2013; Sarche & Spicer, 2008). The effects of trauma are often compounded through the interconnectedness of tribal communities. A growing body of evidence has established adverse childhood experiences (ACE), including childhood abuse, neglect, and household dysfunction, result in greater likelihood of lifetime psychiatric and addictive disorders (Anda et al., 2006; Dube, Anda, Felitti, Edwards, & Croft, 2002; Koss et al., 2003; Libby et al., 2005), chronic disease (Felitti et al., 1998), and legal, vocational, and family problems (Cook et al., 2005) and “leave a lasting signature on the genetic predispositions that affect emerging brain architecture and long-term health” (Shonkoff et al., 2012, p. e232). When caregivers of youth also experience high rates of trauma, loss, and physical and mental health issues, there is less chance for affected youth to have a healthy response and resolution to their own experiences.

Studies have also found an association between ethnic discrimination, as a chronic social stressor, and a variety of self-reported physical health indicators and chronic diseases, such as diabetes and heart disease (Kaholokula, 2016; Paradies, et al., 2013). Chronic activation of the physiological stress response system can lead to abnormalities of the immune, neuroendocrine, and cardiovascular systems, increasing risk for disease or adverse medical

outcomes. Paradies et al. (2013) suggest that the adverse health effects of ethnic discrimination are mediated through psychological distress and coping mechanisms.

The cycle of trauma, stress, and ACE among many Indigenous populations makes intervention to address significant health disparities more challenging. This renders intervention research in these populations even more critical, as their baseline psychological and physical statuses are likely to be significantly different from those in the general population where existing evidence-based interventions have been evaluated. Further underscoring each of these factors is the mistrust of research and researchers by many Indigenous peoples, rooted in past ethical abuses (Pacheco et al., 2013).

The Limited Evidence Base of Intervention Science with Indigenous Groups

The extent of health disparities in Indigenous populations and their associated human and economic costs clearly warrant increased efforts to develop, implement, test, and document the effectiveness of interventions to address health inequity. Yet to date, the evidence on which to base effective intervention is limited. Three areas of intervention science that provide examples of this are mental health, environmental health, and multilevel intervention.

Mental Health Intervention

Gone and Trimble (2012) note over 100 psychosocial treatments have been designated as evidence-based practices (EBPs) for mental health disorders, yet ethnic minorities are underrepresented in the supporting efficacy studies. In a review serving as a basis for developing treatment guidelines for four major mental health disorders (Miranda et al., 2005), the pool of 9,266 research participants across multiple outcome studies included just 671 patients of color, none of whom were Indigenous participants. A review of depression interventions specifically developed for ethnic minority older adults identified seven intervention studies, none of which included Indigenous participants (Fuentes & Aranda, 2012). Clifford, Doran, and Tsey's (2013) systematic review of suicide prevention interventions for Indigenous peoples in New Zealand, Australia, Canada, and the U.S. found only nine evaluations of suicide intervention effectiveness. They concluded that there is urgent need for increased rigorous evaluation of suicide prevention interventions, and in particular, of interventions that are culture-specific or that tailor EBPs to Indigenous communities. Gone and Alcantara (2007) conducted a similar review of the AIAN mental health intervention outcome literature. Finding only nine studies that evaluated outcomes, they concluded that additional investment in both efficacy and effectiveness studies of Native-specific clinical interventions are needed, in addition to clear recognition that mental health treatment and EBPs may look very different in Native communities.

Environmental Health

Indigenous communities collectively experience elevated exposure to multifaceted environmental risk factors that constitute a significant social determinant of health disparities (Bienkowski, 2012; Burger & Gochfeld, 2011; McOliver et al., 2015). These environmental exposures include indoor air pollution related to wood stove use or urban

relocation; air and water pollution associated with hydraulic fracturing and oil/gas exploration; groundwater heavy metal pollution in areas near historical mines; and, for coastal Indigenous communities, emergent issues associated with industrial development and climate change that carry biological and chemical risk (Moore-Nall, 2015; Wildcat, 2013). Yet limited health intervention research to reduce these exposures has been conducted among Indigenous populations, and often basic data on environmental exposures and associated health outcomes is lacking (Burger & Gochfeld, 2011). Such data is needed to test the efficacy of interventions aimed at directly improving environmental health for Indigenous communities. Furthermore, little research has engaged Indigenous communities in the discourse surrounding these health risks and the development of potential interventions (Hoover et al., 2012; McOliver et al., 2015).

Multilevel Intervention

Health disparities arise through a complex interaction of factors at different socio-environmental levels that include the individual, family, community, and society. Multilevel interventions that target outcomes and intervene at these different levels can be particularly crucial in reducing health disparities. Indigenous communities share structural factors common to many disparity groups such as limited access to services and healthy food, poverty, and lower education, as well as unique social determinants, such as family disruption associated with forced boarding school placements and exemption from national and state health policies, such as smoking bans. Yet, efforts to develop multilevel interventions specific to Indigenous populations are limited (Gittelson et al., 2014; Jernigan, D'Amico, Hearod, Buchwald, & Duran, 2017), and existing research on the impact of multiple levels of intervention in reducing racial and ethnic disparities in health-care access, treatment quality, and outcomes is largely limited to African-American and Hispanic populations (Gorin, Badr, Krebs, & Prabhu Das, 2012).

Unique Factors in Conducting Intervention Research with AIAN/NH Populations

One approach to addressing disparities among Indigenous populations has been to utilize existing EBPs and transfer them to Native populations. However, intervention validity is contingent upon the characteristics of the sample in which it was tested, and most intervention study participants are non-Hispanic Whites, often of higher socioeconomic status and differing baseline psychological and physical statuses, making generalizability to other populations unclear (Chin et al., 2007; Konkel, 2015; Fuentes & Aranda, 2012). This may be particularly the case for Indigenous populations given their unique status on a number of dimensions. In this section, we briefly present selected salient examples; other papers in this issue will further discuss these characteristics and their implications for health intervention research.

Cultural Uniqueness

Anthropologic investigation highlights the diverse ways cultural groups understand illness, healing and beliefs, and integrate perceptions of illness into their societies (Langdon & Wiik, 2010). Culturally-situated concepts of illness, risk, and health impact health behavior in

significant ways that can make direct transfer of interventions across cultures problematic. Many Indigenous peoples believe that ill health results from not living in harmony or being out of balance with spiritual, emotional, biological and social domains (Yukovich and Lattergrass, 2008). They desire elements of traditional healing in addition to, or as alternative to, Western biomedical treatments (Koepke, 2012), and spiritual treatments are often an integral part of Indigenous health promotion and healing (Koithan and Farrell, 2010). For these and other reasons, Indigenous peoples can be reluctant to accept interventions developed in other populations that do not reflect their cultural contexts and experiences.

An additional cultural issue can arise when what is considered a legitimate way of knowing by research communities is in conflict with an Indigenous way of knowing. Indigenous knowledge systems have been historically marginalized by health researchers (Cochran et al., 2008). Only recently has traditional Indigenous knowledge been recognized as providing valuable information in understanding critical culturally-situated concepts of health and illness.

The cultural uniqueness of Indigenous peoples surfaces in the lack of validated measures, and in particular, those that incorporate important cultural beliefs and practices. As one basic example, outcomes for interventions to promote healthy eating and physical activity may not measure consumption of traditional foods, such as elk, bison, salmon, taro, and berries, nor the physical activity performed to obtain these foods, which may have additional spiritual, medicinal, and social value important to health-related quality of life. Western measures of social, emotional, and psychological constructs may be limited in their ability to fully capture the quality, essence, and range of these constructs as understood and experienced by non-Western cultures (Novins, King, & Stone, 2004). Furthermore, the very measures used to document the level of Indigenous health disparities may be of questionable validity (Moy, Smith, Johansson, & Andrews, 2006).

Historical Uniqueness

Intervention research with Indigenous populations shares challenges with research in other populations that have experienced a history of poverty, oppression, disempowerment, and limited financial, physical, and social capital (Rosenthal & Khalil, 2010). However, there is an Indigenous history of colonization, genocide, forced removal from lands, and attempts to deny and abolish cultural traditions, including language and healing practices, that is distinctive. This history is both an important contributor to a host of Indigenous health inequities and to distrust of outside research and researchers (McOliver et al., 2015). Trust is an essential component of effective health intervention, yet Indigenous populations report lower levels of trust in the medical care system as compared to ethnic majority populations (Guadagnolo et al., 2009; Kaholokula, Saito, Mau, Latimer, & Seto, 2008). One study reported older AIs having trust in their individual provider, yet less trust in their healthcare institution, with higher levels of cultural identification associated with higher level of distrust (Simonds, Goins, Krantz, & Garroutte, 2014). While this distrust may date back to a long history of mistreatment of Indigenous people, there are ongoing perceptions of discrimination persisting within the healthcare system (Gonzales, Lambert, Rongwei, Jacob,

& Harding, 2014) and inadequate cultural competence among systems and providers (Kropp, Lilleskov, Richards, Somoza, 2014) that present important challenges in implementation of interventions and intervention research.

Tribal Governance and Sovereignty

Indigenous populations of the U.S. are unique by virtue of tribal sovereignty and government to government relationships. Currently, 567 tribal nations, bands, pueblos, communities, and Native villages are recognized as sovereign governments (National Congress of American Indians, 2017). Of these, 229 tribes are located in Alaska, with the remainder located in 34 other states. There are additionally over 50 tribes recognized by individual states (National Center for Health Statistics, 2016) along with several additional Indigenous groups, such as Native Hawaiians, seeking recognition. Health research can be hampered when researchers or health intervention planners are unfamiliar with local tribal policies and processes and with strategies to successfully engage tribal leaders and health planners. Failure to recognize sovereignty and self-governance risks damaging trust. This becomes particularly important in multilevel interventions that seek to address socio-environmental and policy factors. An additional challenge is the instability of tribal leadership due, in large part, to government structure, changes in funding, and social problems associated with the aforementioned health disparities and poverty experienced by Indigenous communities. Researchers must remain in frequent contact with tribal partners, including tribal leadership and tribal organizations, such as health clinics and tribal colleges, and they must work consistently to develop collaborations that are aimed at maintaining stability in funding and equitable partnerships.

Diversity among Indigenous Populations

Indigenous people are not a homogenous group. There exists sizable tribal variation in patterns of physical and emotional health; cultural practices, beliefs, and behavior; disparities; and risk and protective factors (Volkow, 2012). These wide variations underscore the importance of attending closely to unique needs of specific tribal groups (Tippeconnic & Fox, 2012), along with seeking commonalities that can lay the foundation for generalizability of core aspects of interventions. Both across- and within-group considerations are vital to guiding intervention development and adaptation. For example, Kaholokula, Nacapoy, Grandinetti, and Chang (2008) found within-group differences for diabetes risk among NHs based on their identification with their NH ethnocultural group, in relation to their identification and preferred interactions with U.S. society. NHs with an ethnic-exclusive identity (versus those with a bi-cultural identity) had higher diabetes prevalence. Subsequent studies showed NHs with a stronger ethnocultural identity experience greater ethnic discrimination, as well as adverse effects of this ethnic discrimination on their physical health outcomes (Kaholokula et al., 2012).

Establishing an Intervention Science for Indigenous Settings

Preliminary etiologic evidence exists on which to base development of new and adapted interventions for Indigenous populations. In general, this work has identified commonalities with other cultural groups as well as unique patterns of risk and protection. For example, one

of the seminal findings in research on substance use identifies how family, school, and peer social influence have similar effects in AI youth as in the general population (Beauvais & Oetting, 2002). Adaptation of evidence-based interventions (EBIs) that focus on these influences may yield positive outcomes, if adaptation successfully blends unique Indigenous strengths, such as extended kinship networks, with key components of the EBI. However, limited research exists on how culture-specific factors operate in preventing unhealthy or risky behaviors and how they may be introduced and blended within existing EBIs. In this issue, Mousseau et al. (2017) provide two contrasting examples of adapting one EBI, where each adaptation specifically focused on meeting the needs of a distinct Indigenous population. Study of such adaptation and implementation presents a promising line of inquiry.

At the same time, EBIs may be neither appropriate nor available for addressing the health challenges and often urgent needs faced by Indigenous populations. Moreover, in contexts where factors such as culture, history, governance, resources, and research acceptance vary dramatically from highly-controlled EBI testing conditions, an EBI's use, even with cultural adaptation, may yield small, null, or even iatrogenic effects (Wallerstein and Duran, 2010). An alternative approach is to build an intervention from the “ground up”, based on the knowledge, experience, and perspectives of Indigenous communities (Hall, Yip, & Zárate, 2016; Walters et al., 2017). This model emphasizes the importance of unique perspectives of Indigenous communities, independent of their relationship to other groups, as critical to understanding key elements of intervention effectiveness in Indigenous settings. It is based in cultural knowledge and values, and is often evidenced in grassroots efforts within Indigenous communities that are rarely reported in the intervention science literature (Whitbeck, Walls, & Welch, 2012). In this issue, Walters et al. (2017) describe five examples of how Indigenous communities and scholars have successfully collaborated to design and implement culturally-based prevention efforts from the “ground-up.”

Underlying either approach is establishing partnerships and relationships, based in a methodological pluralism that honors equally both scientific and Native ways of knowing (Trotter, Laurila, Alberts, & Huenneke, 2015). Researchers who establish strong partnerships with tribal governments and organizations are better able to jointly develop and complete interventions that are of high priority, sustainable, and a better fit with cultural values, traditions, infrastructure, and tribal governance. Increasing resources to train more Indigenous researchers can lead to enhanced partnerships, as Indigenous researchers provide a bridge between the research organization and the community and bring a deeper understanding of Indigenous populations and ways of knowing and doing.

Conduct of a more inclusive intervention science in more culturally informed ways opens new possibilities for innovative collaborative work and ultimately, more effective and sustainable interventions and a greater understanding of the complex relationships between behavior and the unique aspects of this population. At the same time, it provides increased community capacity, local ownership, and important safeguards on the potential cultural expropriation of Indigenous knowledge and traditional healing techniques in intervention. Several of the IRINAH projects profiled in this issue provides examples of this more inclusive intervention science in application.

Perhaps most importantly, research from this perspective recognizes the resilience of Indigenous populations, a resilience that has allowed them to survive and even thrive in the midst of a previously described colonial history and ongoing discrimination. This resilience is a result of a rich tapestry of cultural strengths arising from connection to the human, natural, and spiritual worlds (Goodluck & Willetto, 2009), routinely unrecognized and not included in policy or intervention. Through true partnering with Indigenous communities, these strengths and ways of knowing are recognized and leveraged to address health disparities and improve wellness.

This perspective will require an enlarged commitment to community-based participatory research as an overarching approach. Involving community members and building relationships within Indigenous communities is a time-consuming process. The longer timelines and enhanced investigator workload present challenges to NIH funding mechanisms and university advancement. Yet this is the only foundation upon which effective intervention development and implementation can be built (Delafield et al., in press). Building the IRINAH portfolio has required intervention research to be both culturally and scientifically rigorous. It has also required efforts to sustain elements of true collaboration among its participants, along with the development of culturally-resonant strategies for intervention and measurement of outcomes. As evidenced in the reports throughout this supplemental issue, standard parameters of NIH funding including project time periods and budget restrictions, and of academic institutional advancement, require re-examination.

A Call to Action

Health disparities within U.S. Indigenous populations represent a public health crisis. Consistent with a public health approach, an important avenue to address these disparities is to improve health outcomes through creation of a portfolio of effective health promotion, prevention, and treatment strategies developed and tested within these populations. Although this research may build upon a foundation of methods and evidence gathered from other populations, we have described both reasons why, and ways in which, this research process and the interventions developed must differ in response to the unique characteristics of Indigenous groups. Advancing the creation of effective health intervention for Indigenous groups requires critical elements of approaches outlined in this supplemental issue. Further, while the topic of this article is the imperative for research to guide this important work, it is critical to note research alone will change nothing. This work must be conducted as just one part of a broader framework of policy, sustained effort, and societal investment directed to Indigenous health equity.

Given damaging policies and practices complicit in the magnitude of Indigenous health disparities, there exists a strong legal and moral imperative for greater research efforts as one part of a broad investment in a comprehensive public health directive to rectify past wrongs, and to fulfill treaty and trust obligations. Against a back drop that includes disease introduction, forced removal from lands, assaults on Native culture, and sequestration to reservation lands, acknowledgement of history, along with efforts to repair damage has been insufficient. This history of loss, broken trusts, and violated treaties is, in large part,

responsible for the current Indigenous health inequity. New lines of inquiry must result in innovative, culturally resonant health intervention that is healing and reparative by fostering of local self-determination. The community of researchers and funders are both scientifically and morally called to respond to this need in full collaboration with members of Indigenous communities to develop health promotion, prevention, and treatment efforts that are scientifically sound, culture-honoring, and ultimately, effective in fostering health equity.

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