EXECUTIVE SUMMARY

Diabetes is a disease that touches nearly every American Indian and Alaska Native (AI/AN) person, either as part of a personal battle for health or in seeing family and friends struggle against the impact of diabetes in their lives. There must be investments in nations building and in equipping Native families and communities to create the conditions to support Native youth health and wellness. A re-introduction of local and traditional foods, coordination of community-based exercise and nutrition efforts, and a systemic approach to addressing food security could dramatically improve community health.

In this Tribal Insights Brief, the NCAI Policy Research Center describes the evolution of diabetes in American Indian and Alaska Native communities in order to emphasize the systemic levers that are essential in combating this disease and to combat the perspective that becoming diabetic is just something that happens to Native peoples. Our goal is to support tribal nations in promoting health for their citizens and in providing hope that being Native means having the best health and full wellness.

Policy recommendations from this synthesis and discussions with tribal leaders include:

1. Congress should permanently reauthorize funding for the Special Diabetes Program for Indians.
2. Congress should reauthorize the Healthy, Hunger-Free Kids Act of 2010 and support the integration of local, traditional foods in food assistance programs.
3. States should promote telehealth delivery options to remote Native reservations and pass policies to support breastfeeding mothers.
4. Tribes should explore options to incentivize healthy foods and curb the consumption of junk foods.
5. Through self-governance compacts, tribes may target diabetes care and prevention in a community-based and culturally-tailored way.
Introduction

Diabetes is a disease that touches nearly every American Indian and Alaska Native (AI/AN) person, either as part of a personal battle for health or in seeing family and friends struggle against the impact of diabetes in their lives. Diabetes is a disease that is characterized by the glucose levels in the blood being very high above the normal levels. The pancreas makes insulin, and insulin helps the glucose get into the cells to be used for energy, without insulin the glucose builds up in our blood and can lead to many life threatening complications to a persons’ health. Health agencies and medical professionals are researching new cures for diabetes every day, but as of yet, the best cures out there are based in early prevention aimed at improving individual health knowledge and behavior, as well as in addressing the systemic factors the contribute to the high rates of diabetes in Native communities. The data and statistics are always difficult to read and to accept, however they offer an important starting point for understanding how urgent investments in diabetes reduction are for our Native peoples:

- Data from the 2009 IHS NPIRS [Indian Health Service National Patient Information Reporting System] indicate that **14.2 percent of American Indians and Alaska Natives aged 20 years or older** who received care from IHS had diagnosed diabetes.

- After adjusting for population age differences, **16.1 percent of the total adult population** served by IHS had diagnosed diabetes, with rates varying by region from 5.5 percent among Alaska Native adults to 33.5 percent among American Indian adults in southern Arizona.  

- There was a **110 percent increase** in diagnosed diabetes from 1990 to 2009 in AI/AN youth aged 15-19 years (3.24 vs. 6.81 per 1000).  

- **Thirty percent** of American Indians and Alaska Natives are estimated to have pre-diabetes.

Epidemic is the only word that seems sufficient to describe the state of health in this context. And yet, there is another battle waging – one in which some Native youth have begun to believe that being Native means you will become diabetic. While Native youth experience higher rates of Type 2 diabetes than any other group of youth in this country, the perspective that being Native is synonymous with having diabetes is dangerous for community health. The emerging fatalism – which locates the root cause of the disease with Native culture rather than the systemic underinvestment in Native health – threatens to undermine the efficacy of diabetes health interventions with Native youth and families

In April 2015, First Lady Michelle Obama invited philanthropic organizations and other key partners to a Convening on Creating Opportunity for Native Youth. She shared some reflections on her and President Obama’s meeting with youth of the Standing Rock Sioux Nation in June 2014 and emphasized the urgency and possibility of the work to be done to support and celebrate Native youth wellness.
We provide an extended excerpt here that frames our current work on diabetes prevention. The First Lady said:

“I want you to remember that supporting these young people isn’t just a nice thing to do, and it isn’t just a smart investment in their future, it is a solemn obligation that we as a nation have incurred. You see, we need to be very clear about where the challenges in this community first started. Folks in Indian Country didn’t just wake up one day with addiction problems. Poverty and violence didn’t just randomly happen to this community. These issues are the result of a long history of systematic discrimination and abuse. So given this history, we shouldn’t be surprised at the challenges that kids in Indian Country are facing today. And we should never forget that we played a role in this. Make no mistake about it – we own this. And we can’t just invest a million here and a million there, or come up with some five year or ten-year plan and think we’re going to make a real impact. This is truly about nation-building, and it will require fresh thinking and a massive infusion of resources over generations. That’s right, not just years, but generations. But remember, we are talking about a small group of young people, so while the investment needs to be deep, this challenge is not overwhelming, especially given everything we have to work with.”

As the First Lady notes in the broader context of creating opportunities for Native youth, “[t]hese issues are the result of a long history of systematic discrimination and abuse.” She notes that while the challenge is real, it is also achievable because of the small population size and “the deep reservoirs of strength and resilience” within Native youth and communities. The investments must be in nations building and in equipping Native families and communities in creating the conditions to support Native youth health and wellness. Community members and advocates working to eliminate diabetes in Native populations often emphasize that diabetes is an introduced disease – that there was a time when diabetes did not threaten our wellness. A re-introduction of local and traditional foods, coordination of community-based exercise and nutrition efforts, and a systemic approach to addressing food security could dramatically improve community health.

In this Tribal Insights Brief, the National Congress of American Indians Policy Research Center (NCAI PRC) describes the evolution of diabetes in American Indian and Alaska Native communities in order to emphasize the systemic levers that are essential in combating this disease and in order to create a counter-narrative to combat the perspective that becoming diabetic is just something that happens to Native peoples. We highlight opportunities to leverage policy, research, and health resources to address the high rate of diabetes in AI/AN people and communities. In addition, we feature innovative initiatives that are promoting Native diabetes health and wellness. Our goal is to support tribal nations in carving a path to health for their citizens and in providing hope to their youth and families that being Native means having the best health and full wellness.
The Evolution of Diabetes & Obesity in Native Populations

To understand what lies at the root of health disparities in Native communities, we must examine the genealogy and history of disease. As Walters et. al (2011) tell us, “bodies don’t just tell stories, they tell histories.” History traces the changes in the land, in communal diets, and in health care provision. Policies that were enacted to eradicate Native people from their lands, from the face of the country, left their scars. They disrupted connections to place, cultural lifeways, and traditional roles. What science calls the “classic social determinants of health”—e.g. socioeconomic status, housing, education, etc.—“do not sufficiently explain high rates of poor health and mental health, particularly with respect to Post Traumatic Stress Disorder (PTSD), anxiety, depression, diabetes, cardiovascular disease, and pain reactions among AI/ANs”. The evolution of diabetes and obesity in Indian Country is equally rooted in historical trauma, in the geopolitics of land, and in the connection between environmental and human health.

**Historical Trauma**

Researchers have broadly defined historical trauma “as an event or set of events perpetrated on a group of people (including their environment) who share a specific group identity (e.g., nationality, tribal affiliation, religion) with genocidal or ethnocalid intent (i.e., annihilation or disruption to traditional lifeways, culture, and identity)”. For American Indian tribes in the continental US, this definition largely describes the experiences endured between the 19th and 20th centuries, during the federal policy eras of Westward expansion and Indian removal (1820-1887); allotment and assimilation (1887-1934); Indian reorganization (1934-1953); and termination and relocation (1953-1968). When Alaska joined the Union in 1959, the Indian civil rights movement was fomenting. With the watershed passage of the Indian Civil Rights Act (1968) and the Indian Self-Determination and Education Assistance Act (1975), a new era of tribal-federal relations began. Nevertheless, support for tribal sovereignty remains tenuous and subject to prevailing assaults. Between these movements and these policies enacted—a great deal of stress and trauma was experienced by entire nations of peoples. Not only were Indian nations viewed as enemies of the state within their own country, the allotment era brought about the reservation system, which diminished traditional homelands and fundamentally disrupted tribal ways of life.

The stress of these experiences still manifests today—across the generations. Evidence of this effect is found in a study by Whitbeck, et al. (2009), which interviewed 459 North American Indigenous adolescents aged 11-13 years from the northern Midwest of the United States and central Canada about the frequency of their thoughts on historical loss: According to the authors, perceived historical loss had independent effects on the depressive symptoms of the youth included in

- More than one in three (38.4 percent) thought about the loss of their Native language on at least a weekly basis;
- One in three (33.5 percent) of the youth respondents reported thinking of the loss of traditional lands on at least a weekly basis (20.5 percent thought about it daily or several times a day);
- More than one in five (22.2 percent) thought about the loss of families from the reservation/reserve to government relocation on at least a weekly basis; and
- One in five (20 percent) thought about the loss of traditional spiritual ways on a daily basis.9
the study—beyond family factors, perceived discrimination, and proximal negative life events. Studies such as this suggest that trauma can be passed on generationally—findings that are being further confirmed by the field of epigenetics.

**Epigenetics**

“Epigenetics is the study of the external or environmental factors that turn genes ‘on’ and ‘off’ and affect how cells ‘read’ genes”—in other words, how the modified expression of genes changes organisms. As Dr. Don Warne (North Dakota State University) describes in the documentary *Unnatural Causes: Is Inequality Making us Sick?*:

In this way, individual health behaviors such as those related to eating high sugar and high fat foods are not the only contributing factors to the high rates of diabetes we see in American Indian and Alaska Native communities. There are systemic and historic factors that must be addressed in order to eliminate disparities. Epigenetic inheritance, or “the observation that offspring may inherit altered traits due to their parents’ past experiences,” helps us identify the external and environmental factors (e.g. diet, stress, famine) that lead to both harmful and healthful gene expressions. Naturally, maternal-child health is a primary context for this research, and a great body of evidence suggests the intergenerational transmission of type 2 diabetes and obesity.

**Maternal-Child Health**

Maternal psychological and nutritional stress during pregnancy (e.g., abnormally high levels of cortisol, overeating after periods of malnourishment) have also been linked to the intergenerational transmission of diabetes. Research is demonstrating that changes in maternal environments can impact the development of the fetus and influence the offspring’s risk for obesity and Type 2 diabetes. Epidemiological data suggest a direct association between maternal pre-pregnancy weight and fetal growth, offspring weight, and obesity later in life. Children who were exposed to maternal diabetes and/or obesity during pregnancy are at increased risk of becoming obese and developing Type 2 diabetes at young ages. As Dabelea and Crume (2010) relate, “heavier mothers give birth to heavier daughters, who are at increased risk to be obese themselves during their reproductive years, thus perpetuating the cycle.” Across generations, this cycle is likely increasing the risk and/or accelerating the onset of obesity and Type 2 diabetes. The figure below illustrates these trends.
Clinical studies suggest that offspring exposed to diabetes in utero have greater birth weight and greater weight for length during childhood.\textsuperscript{16, 17, 18, 19} Studies with animals have demonstrated that the metabolic imprinting caused by the obese and diabetic intrauterine environment can be transmitted across generations.\textsuperscript{20, 21, 22} And yet, just as risks to mothers lead to risks for children, protective factors and activities such as breastfeeding can contribute to future health.

**Breastfeeding as diabetes prevention.** Breastfeeding has been found to protect against the onset of Type 2 diabetes in offspring, it follows that it may also attenuate the increased risk of developing Type 2 diabetes as a result of in utero exposure.\textsuperscript{23} Breastfeeding is more than a free way to feed a newborn infant. Breastfeeding ensures that child has the best start in life by providing that child with immunity support to prevent many diseases; in particular, to a disease that is claiming many Americans of all ages today, diabetes.

Increasingly, research is acknowledging that diabetes prevention involves a focus beyond one individual’s diet and exercise behaviors, including experiences in the womb and during infancy. Researchers have discovered many strong ties linking breast milk to diabetes prevention. Early introduction to infant formula or cow’s milk and a short duration of breastfeeding have been associated with higher risk of Type 1 diabetes, while breastfeeding has been shown to strengthen a child’s immune system.\textsuperscript{24} Duration of exclusive breastfeeding and duration of any breastfeeding decreased the risk of children being overweight.\textsuperscript{25} Women who breastfeed their children can reduce their risk of developing Type 2 diabetes later in life and the benefit of breastfeeding increases the longer the duration of breastfeeding.\textsuperscript{26} Among parous women – or women who have had children – the total duration of breastfeeding and duration of breastfeeding per child was associated with a reduced likelihood of diabetes; the reduction in diabetes per year of breastfeeding was 14 percent.\textsuperscript{27}

The American Academy of Pediatrics recommends exclusive breastfeeding for up to six months and continuing past the first year if mutually desired by both the infant and mother.\textsuperscript{28} But even so, women who breastfeed for greater than three months have been shown to have the lowest postpartum diabetes risk as compared to those who do not breastfeed or breastfeed for less time.\textsuperscript{29} The results of a 3-year study showed that mothers who breastfed between six and 12 months had lower levels of leptin, higher levels of protein peptide YY (PYY), adiponectin, and ghrelin, all of which regulate metabolism or glucose in the body. The results linked associations between longer duration of breastfeeding and reduced risk of diabetes.\textsuperscript{30} Lactation intensity and duration of breastfeeding have been associated with positive effects on maternal metabolism, especially with the first year of exclusive breastfeeding mothers.\textsuperscript{31}
The results of a study done on fat distribution showed that both groups of youth, exposed and unexposed, who had adequate breastfeeding in infancy showed:

- Significantly lower BMI (0.7 kg/m² compared to 1.7 kg/m²);
- Significantly slower BMI growth trajectories;
- Smaller waist circumference (2.7 cm compared to 5.8 cm);
- Less subcutaneous adipose tissue (body fat) in the abdominal cavity (23.4 cm² compared to 44.6 cm²); and
- Less visceral adipose tissue (VAT) (2.1 cm² compared to 6.1 cm²) in the abdominal cavity.³²

Also, gestational diabetic mothers who breastfeed for three months or longer had significantly lower BMI levels than those that breastfed for less than three months or not at all.³³

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**Breastfeeding as the Native Community’s Traditional and Nutritional Practice**

Just like an adult needs proteins, fruits and vegetables, healthy fats, and other healthy, balanced foods consistently over their lifetime to prevent diseases, children need that same nourishment, especially to help them build their immune systems, but at an early age it is hard for them to get those nutrients except through breastfeeding. As a mother of two children, I completely understand the role of being a mother and taking care of my children in the best way possible, and to me that begins with giving them the best of me from the beginning; my breast milk. When children are first brought into the world they are at their most vulnerable and need the best nutrition in order to build their immune systems up to protect themselves from pathogens and future diseases. The best way to jumpstart that process is to infuse antibodies through breastmilk from their mothers. As a Native American, Lakota Hunkpapa and Arikara, woman I fully advocate and support breastfeeding mothers. My second child who is now 23.5 months old is still breastfeeding and going strong. I have also breastfed numerous nieces and nephews and have helped relatives and friends in their breastfeeding journey. Please encourage your mothers, aunts, sisters, and friends to breastfeed their babies, it is the very best of what they can give to their children and also what the creator intended a mother’s body to do, nourish their babies.

—Alayna Eagle Shield, National Native Youth Cabinet representative and member of the Standing Rock Sioux Nation

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**Environmental Health**

Human health is affected by the physical environment, including water and air quality, climate change, waste management infrastructure, and housing. One widely cited case illustrating the links between environmental changes and diabetes incidence comes from the Gila River and Maricopa Indian communities of Southwest Arizona.³⁴ In the 1890s, the Gila River was diverted, “giving white settlers, farmers, ranchers and mining interests the water they needed” and cutting off the water supply of the Pima and Maricopa communities of southern Arizona. With this diversion, these Native communities could no longer grow crops—their entire food system was disrupted.
This community has frequently been cited as having one of the highest rates of diabetes in the nation, but rarely do you hear about the genealogy of the disease and its roots in water diversion and subsequent environmental change. Their story reflects how physical changes to the land directly impacts human health and the onset of chronic conditions such as diabetes and obesity. Similarly, research has revealed that arsenic contamination of groundwater resources can indirectly affect physiological processes associated with the metabolism of fats, insulin resistance, and thus, Type 2 diabetes and obesity.\textsuperscript{35, 36}

**Food Deserts**

Another way that the environment impacts physical health is through food access. Broadly, the concept of “food deserts” has been defined as “areas of relative exclusion where people experience physical and economic barriers to accessing healthy food.”\textsuperscript{37} The U.S. Department of Agriculture (USDA) considers areas where households are more than a mile from a supermarket and without access to a car to be food deserts. In these contexts, families either rely on local convenience stores as primary food sources or on those in their social networks to drive them to a grocery supplier in a town (sometimes more than three hours away, one-way). In 2009, the agency found 2.3 million of these households. Below, compare the map of communities where residents reported food desert experiences with the map of adult diabetes rates—the darker the color, the higher the prevalence rate. Among Indian lands in the Northern and Southern Plains, there is clear overlap in the food desert and diabetes prevalence maps.

**Figure 2**: Percent of households by US county classified as food deserts\textsuperscript{38}
Rurality and geographic isolation contribute to the likelihood of struggling to access healthy foods, and these factors are further compounded by poverty as healthy foods often cost more to access, especially for those in rural and isolated regions. Consistently, rural tracts across the country have the highest representation of persistent poverty counties and experience the greatest degree of socioeconomic disadvantage. For AI/AN households, the median income is $35,062, as compared with $50,046 for the nation as a whole. In 2010, the percentage of Native peoples living in poverty stood at 28.4 percent—nearly twice that of the rest of the nation (15.3 percent). The maps below show reservation lands in the US, as well as counties with poverty rates of at least 20 percent for the past four decades. Between these, we see significant overlaps:
In addition to these challenges of distance and poverty, higher fixed infrastructure and operation costs in rural areas raise food prices and/or reduce the supply of certain foods—most often those that require refrigeration (dairy, fresh or frozen meats, seafood, etc.). Moreover, fresh fruits and vegetables, which are essential to a healthy diet, have limited shelf lives and present a potential profit loss to the rural food supplier when they have to be discarded.

As such, convenience stores and small rural grocery outlets are often stocked with canned and processed foods, which offer limited nutritional value. This is equally the case in low-income neighborhoods in inner cities.

In addition to these many barriers hindering the access to healthy foods, it is also important to consider the function of food choice, as there is often an “interaction among peoples’ preferences, nutrition literacy, and the food environment.” In some Native communities, there is growing concern about the disconnect between “traditional foods” and what are being called “contemporary traditional foods.” One example is the way in which frybread has become a staple food at traditional gatherings and ceremonies. What many fail to recognize is that this food is not the kind of traditional, wholesome food that was harvested, hunted, and baked—rather it reflects an adaptation to the commodity system. Native communities learned to make use of the white flour, processed sugar, lard, and canned goods that the government gave as sustenance along the road of removal and dislocation.

As one person further shared at a gathering of Tribal Epidemiology Centers and Intertribal Health Boards:

“We’ve seen that there is a difference between traditional foods and contemporary traditional foods. One kid asked us, ‘Is cake a traditional food?’ Cake is always present at the funerals, celebrations of life, naming ceremonies…but historically, we didn’t have these sweets. We had honey, maple syrup—our bodies were used to different kinds of sugars…Now, we are trying to teach the difference between traditional foods and their contemporary counterparts. Traditional foods are not just ceremonial foods—they do not have to be reserved for special occasions. These are the foods our DNA is used to. We tell our children: ‘You are sacred beings; this food is our medicine. This will help you to be aware of your surroundings, connected to the land.’"
These are among the complex issues related to food access, availability, and choice in Native communities. But what are some of the local solutions to promote healthy diets when these structural barriers are in place?

_Gardening and the Cultivation of Traditional Foods._ One way to implement healthier diets in American Indian and Alaska Native communities is to transition back into more culturally traditional processes of acquiring and growing foods. One example of this process is building community gardens, such as the one most recently implemented at the University of Arkansas in partnership with the Cherokee Nation heirloom seed bank program. The Cherokee heirloom seed bank program allows for enrolled citizens to plant and grow traditional seeds within the community. Community gardens have a number of benefits that go beyond increased availability and accessibility of healthy foods in areas such as food deserts. They are not only cost-effective ways of acquiring healthy foods, but the gardening process is also a beneficial exercise. Teaching traditional words in a gardening and cooking context can also incorporate a language revitalization aspect. Consumption of healthy, traditional, grain-free foods; exercise; and cultural participation and connection are all steps towards reaching optimum levels of health and improving overall well-being.

—Whitney Sawney, National Native Youth Cabinet representative and member of the Cherokee Nation of Oklahoma

**Co-Occurring Conditions**

In addition to understanding the genealogy of a disease in a population over time, eliminating the pervasive disparity requires awareness about how diabetes occurs alongside other conditions. According to the National Health and Nutrition Examination Survey (NHANES) for years 1994-2004, 86 percent of patients with Type 2 diabetes had comorbidities such as obesity, hypertension, chronic kidney disease, cardiovascular disease, and other such health complications.\(^6\) In the section that follows, we would like to provide some basic background infor-
Diabetes and Oral Health

American Indians and Alaska Natives face significant disparities in oral health when compared to the US population—lacking consistent dental treatment and prevention services. Figure 6 paints a clear portrait of untreated dental decay among Native youth—and according to a recent national survey, “more than 20% of 1-year-old AI/AN children already have decayed teeth and the percentage with decay rises significantly with age.”

Poor oral health has been linked to Type 2 diabetes, as well as to a host of other health complications including cardiovascular disease, chronic pain, infections, nutritional deficiencies, childhood growth/weight, and loss of teeth. American Indian and Alaska Native patients with diabetes are 2 to 3 times more likely to have gum disease—owing to poor blood glucose control—which “results in the loss of all teeth in approximately one-third” of this population.

These trends have been compounded by low dentist-to-patient ratios (1 per 2,800 v. 1,500), provider vacancy rates of approximately 26 percent, treatment backlogs, and grossly inadequate expenditure levels for dental health services across Indian Country. In subsequent sections of this brief, we review the Dental Health Aide Therapy (DHAT) program and its inspirational impact on curbing this oral health crisis in Native communities.

Diabetes and Cancer

In a consensus report released by the American Diabetes Association and the American Cancer Society, two important associations between diabetes and cancer incidence were shared:

- Diabetes (primarily Type 2) is associated with increased risk and mortality for cancers of the liver, pancreas, endometrium, colon and rectum, breast, and bladder.
- Possible mechanisms for a direct link between diabetes and cancer include hyperinsulinemia, hyperglycemia, and inflammation.

These conclusions have been broadly supported in the literature. In one Connecticut-based sample of 8,688 cancer patients, “the prevalence of comorbid diabetes was 12.5%, and was lowest for patients with prostate cancer (8.5%) and highest for those with liver-pancreas cancer (25.9%)...Diabetes prevalence was substantial (9.5%) within the non-elderly subgroup aged 20-64 years at cancer diagnoses who comprised 45% of the 8,688 patients.” These findings suggest that a focus on non-elderly patients with diabetes is required—despite 78% of all cancers being diagnosed in people aged 55 and older. In addition, treatment options conducive for both cancer and diabetes patients—and possible limitations or complications—demands further attention in the literature.

Diabetes and Depression

Depression is also a well-established co-occurring condition among people with diabetes; this trend can be traced to many factors, including but not limited to geographic, demographic, and health characteristics.
With respect to the *availability* of mental health care, a national survey of Indian Health Service and tribal facilities found that 82 percent (514 of 630) were providing some type or level of mental health service—primarily outpatient psychotherapy and support groups. Yet the *uptake* of those services was presented with challenges.

- 37 percent (192 of 514) of the facilities cited a lack of resources (e.g. financial, staff, and infrastructure) as limiting their provision of mental health services;
- Only 7 percent of the 514 facilities providing mental health services employ full-time psychiatrists;
- Only 17 percent of IHS and tribal facilities (87 of 514) use telemedicine for mental health services;
- Almost half of the facilities that do not provide mental health services (56 of 116) reported that staff shortages and geographic remoteness was a barrier;
- A little more than half of the facilities (274 of 514) reported that physical barriers, such as travel conditions, were an access issue;
- Approximately one-third of the facilities (147 of 514) reported that economic issues, such as difficulty paying copayments, affect access to services.

Rural and urban Indian health clinics alike struggle to reach patients. Even when mental health services are present, studies reveal low rates of utilization by rural elders. “Less than 20 percent of patients with diabetes and depression complete more than four visits of psychotherapy, yet 80 percent of those who seek treatment show improvement.” While this may relate to income and transportation issues, it may also be linked to stigma surrounding mental health needs and services.

The Strong Heart Study, conducted among Native Americans 45–74 years of age in Oklahoma, Arizona, and North and South Dakota, found prevalence rates of depression of 17.2 percent in men and 20.2 percent in women with diabetes. Nationally, 27.8 percent of American Indian and Alaska Native elders (ages 65 and up) with diabetes were found to have major depressive symptoms.

In a study of AI/AN patients with both diabetes and depression, blood glucose (A1c) levels were found to be 1.2 percentage points higher (9.3 percent vs. 8.1 percent) than other patients with diabetes but not depression.

**Diabetes and Tuberculosis**

“The prevalence of obesity—and associated Type 2 diabetes—is rising faster than anyone would have predicted only 30 years ago, and the interactions between tuberculosis and diabetes are of concern.” According to the latest research, diabetes is estimated to be the cause of 15 percent of tuberculosis cases, owing to the ways in which it impairs immune defenses. This “double disease burden” has produced several problematic outcomes. Patients with concurrent diabetes not only experience worse tuberculosis treatment outcomes, but they also are more likely to relapse and face a higher risk of mortality than patients with tuberculosis alone. To address this problem, the National Diabetes Education Program (NDEP) and experts from the Centers for Disease Control and Prevention’s (CDC) Division of Tuberculosis Elimination have been working to coordinate prevention, increase awareness, and explore successful treatments.
Making the Case for Omega 3 Supplements for Anxiety and Depression Disorders

The average American diet is deficient in essential Omega-3 fatty acids, and instead is full of Omega-6 fatty acids. The average ratio of Omega-6 fatty acids to Omega-3 fatty acids should be approximately 3-to-1. However, the standard American diet contains a 25-to-1 ratio. This is the number one dietary cause of increased inflammation in the body, which perpetuates the disease process. Without sufficient Omega-3 fatty acids, brain tissues lack necessary nutrients, which can lead to hormone imbalance in the neuroendocrine system. Since the neuroendocrine system regulates mood and other emotional responses, any imbalance can cause a shift in anxiety and depression disorders.

Re-establishing the proper balance by supplementing with Omega-3 fatty acids and reducing the intake of Omega-6 in your food diet over a period of 4-6 months can naturally help improve depressive feelings. This is true even more so if you include simple to moderate exercise, positive self-reinforcement and counseling in some circumstances.

An example of an effective process that helps reduce the intake of Omega-6 fatty acids is to decrease the amount of grain, dairy and processed food intake, similar to that of the Paleolithic diet, currently recommended by prominent natural healthcare providers. One reason to eliminate grains is because grains contain large numbers of Omega-6 fatty acids that cause inflammation, leading to mood disorders. Dairy is also something to avoid because it is a highly allergenic food and the protein casein is not easily digestible for humans. Examples of beneficial foods that contain healthy Omega-3 fatty acids are walnuts, fresh-caught fish similar to wild salmon, and grass-fed beef and venison. It is important to acknowledge the significant difference between fresh-caught fish and farm-raised fish. Farm-raised fish have a higher chance of being fed cheap feed that contains grains and a high amount of Omega-6 fatty acids, which can change their genetic make-up, leading to higher production of Omega-6 instead of Omega-3 fatty acids and make them less beneficial as a food source for humans. It is the same concept for grass-fed beef and venison.

Personally, I understand the challenges of being a student while trying to balance a healthy lifestyle. I am also aware of the extra level of difficulty added when struggling with depression and anxiety. Through my personal experience, I was able to manage my depression and anxiety with chiropractic and nutritional counseling. My doctor increased my intake of Omega-3 supplements and Vitamin D. Although I still face the challenge of incorporating healthy foods into my diet, the increase of Omega-3 fatty acids helped improve my mood and energy levels, which lead better management of my relationships, school work, and most importantly how I treated myself. Building a foundation of self-care and cultural connection through counseling and preventative healthcare helped guide me through my journey, for which I am grateful to now have the knowledge to share with others.

—Whitney Sawney, National Native Youth Cabinet representative and member of the Cherokee Nation of Oklahoma
Promising Programs & Resources

Special Diabetes Program for Indians

Congress established the Special Diabetes Program for Indians (SDPI) in 1997 as part of the Balanced Budget Act to address the growing epidemic of diabetes in American Indian and Alaska Native (AI/AN) communities. The Special Diabetes Program for Type 1 Diabetes (SDP) was established at the same time to address the opportunities in type 1 diabetes research. Together, these programs have become the nation’s most strategic, comprehensive and effective effort to combat diabetes and its complications. SDPI currently provides grants for 404 programs in 35 states. SDPI has achieved marked improvements in average blood sugar levels, reductions in the incidence of cardiovascular disease, prevention and weight management programs for our youth, and a significant increase in the promotion of healthy lifestyle behaviors. This success is due to the nature of this grant program to allow communities to design and implement diabetes interventions that address locally identified community priorities.

Dental Health Aide Therapy Initiative

First initiated in New Zealand, this effort designed to train rural health providers to provide dental care where largely unavailable has taken root in Alaska and other states with rural health needs are considering adopting legislation to approve rural training. To date, 40,000 people have been treated, many of them children, at 30 percent of the cost due to a focus on prevention. As suggested above in the section on Co-Occurring Conditions, improved dental care can impact diabetes.

Store Outside Your Door

The Alaska Native Tribal Health Consortium created the Store Outside Your Door (SOYD) program focuses on promoting traditional and local foods for Alaska Native families and communities. SOYD works to restore and strengthen agricultural traditions found within Alaska Native communities by highlighting the concepts of hunting, fishing, gathering, and growing through workshops, written materials, social media, and webisodes. Much of rural Alaska is considered “food deserts” because of the lack of foods available in local stores. The goal is to educate Alaska Native families to use the foods that exist “outside the door.” There is an abundance of Native foods found in the Alaskan region such as whale skin and blubber, salmon, fiddlehead fern, caribou, seal, and crowberry. The SOYD program produces webisodes for families to learn customary and traditional ways to live off the land.

Using Creative Arts in Diabetes and Obesity Prevention

Native scholars engaged in public health interventions to manage and prevent diabetes have begun to engage the creative arts. For example, Dr. Derek Jennings (University of Minnesota) has utilized Photovoice methods in his research, which allows participants to conceptualize of culture and health through the art of photography. This innovative approach to health education has effected behavioral change on a deeper level; by giving participants a voice, they become empowered to transform their health. With respect to the management of diabetes among those diagnosed, Dr. Ronny Bell and his colleagues have been exploring the use of creative arts and traditional crafts. Partnering with a Southeastern tribe, these scholars have sought to make diabetes self-management more culturally-relevant through the incorporation of art therapy curriculum.
Eagle Books — Native Diabetes Wellness Program

The Eagle Books were created by the Centers for Disease Control and Prevention Division of Diabetes Translation’s Native Diabetes Wellness Program, the Tribal Leaders Diabetes Committee, and Indian Health Service. The four part series was written and illustrated by American Indian authors and artists to inspire young American Indians to partake in physical activity, healthy eating habits, and exploration of traditional healthy living ways taught by elders. Using animation and culturally-tailored storytelling, the books reveal health disparities common in AI communities and highlight tactics that educate children to prevent habits that lead to Type 2 diabetes.

TRAIL Program

Together Raising Awareness for Indian Life (T.R.A.I.L.) is a curriculum designed to prevent the onset of diabetes in American Indian youth within tribal communities. In 2003, T.R.I.A.L was developed through a partnership between National Congress of American Indians, FirstPic, Inc., Indian Health Service, and Boys & Girls Club of America. The program has been implemented in 54 Boys & Girls Club sites in Indian Country and has served 12,000 Native youth ages 8-10 years in 86 tribal communities. The curriculum is divided into four themes consisting of 12 chapters that provide youth with a comprehensive understanding of healthy lifestyle changes to prevent diabetes. The four themes are About Me, My Health, & Being Part of a Team; Healthy Eating; Making Smart Food Choices; and My Healthy Community (National Services, 2015). The curriculum also provides youth with information about self-esteem, prevention activities, and teamwork to increase leadership skills (National Services, 2015).

Culturally-Driven Exercise & Health Initiatives

This section is designed to highlight the many exciting ways in which tribes are engaging their culture to enhance the health and wellness of their communities.

500 Mile Sacred Hoop Run around the Black Hills

Unlike most running events, the 500 Mile Sacred Hoop Run is unique in its purpose, setting, and meaning. The event has been known to serve over 150 Lakota youth each year for over thirty years. Over the course of five days, youth from the Pine Ridge community the 500 mile course loop around the Black Hills and other sacred sites in South Dakota, Nebraska, Wyoming, and Montana. Youth participate in morning prayers and lessons from elders to support their focus during their journey. These morning preparations remind youth run fulfill not only personal growth, but reflect the family systems from which they are rooted. The 500 Mile Sacred Hoop Run is not competitive; instead is a relay where all participants share the experience of carrying a sacred family staff toward the final destination. The significance of the Lakota Creation story of the Black Hills is embedded in the run. In addition to running for a healthy community, the run is time of prayer to decrease suicide, teen pregnancy, violence, and health related illnesses.

Crow Days: Ultimate Warrior Challenge

The Ultimate Warrior challenge is an athletic event held during the annual Crow Native Days where individuals can participate in a foot, canoe, and relay horse races. At the end of the Ultimate Warrior endurance competition, participants complete the three part race with a total of 18.56 miles. There are two divisions of the race, men and women. Typically, men compete individually and women compete in a team of three. The Ultimate Warrior has been held annually as a way to promote a strong healthy lifestyle on the Crow reservation. Like most American Indian communities, the Crow struggle
**Healthy Active Natives**

Healthy Active Natives is a Facebook group page created by Waylon Pahona (Gila River Pima and Hopi) encouraging all American Indians to become more active in their daily lives. The Facebook page serves to motivate and inspire others in their healthy living goals through shared stories and photo posting. Social media has been used in a variety of ways to send a message to people. As the creator of the page, Pahona developed the page to help American Indians gain more positive thinking and decrease the rates of alcoholism and drug addiction that infect most communities in Indian Country. The page now consists of personal stories from hundreds of healthy active natives. Each story highlights the challenges the person overcame or is overcoming to become a healthier version of themselves.

**Tulalip Bay CrossFit**

The Tulalip Bay Crossfit gym is the first ever gym to be located on an American Indian reservation. Operated by certified trainers, the Tulalip Bay Crossfit gym is dedicated to improving the health and fitness outcomes of the Tulalip Bay community. Crossfit is a strength and conditioning program that uses a variety of workout plans to improve the fitness levels of individuals. Individuals attending the gym are able to attend small group classes and receive a number of workout regimens that change everyday.

**Fort Robinson Outbreak Spiritual Run**

The Fort Robinson Outbreak Spiritual Run is an annual event recognizing the strength and resilience of the Northern Cheyenne who managed to break free of Fort Robinson’s imprisonment in January 1879. Since 1996, the educational event has gathered nearly 100 Northern Cheyenne runners each year for the 400 mile journey spanning seven days. During the run, two young Northern Cheyenne carry an eagle feathered staff and the Northern Cheyenne tribal flag. The run celebrates the culture and the resilience of the Northern Cheyenne people. The run offers a moment for youth to embody the perseverance of the Northern Cheyenne who were captured and imprisoned against their will at Fort Robinson. The Fort Robinson Run has “grown to be much more: It is about healing, wellness, and empowerment.”

**World Eskimo-Indian Olympics**

The first World Eskimo Olympics was held in Fairbanks in 1961 drawing contestants and dance teams from Barrow, Unalakleet, Tanana, Fort Yukon, Noorvik and Nome. For time immemorial, Native peoples of the circumpolar areas of the world have gathered in small villages to participate in games of strength, endurance, balance, and agility. Along with these athletic games, dancing, storytelling, and other audience participation games took place. This provided an opportunity for friendly competition, entertainment and laughter. The hosts provided food and lodging, and visitors brought news from surrounding villages and expanded opportunities for challenge building and renewing old and new friendships.

**Remember the Removal Bike Ride**

Remember the Removal is an annual bicycle ride commemorating the forced removal of the Cherokee Nation from its homelands during the winter of 1838-39. This tour allows Cherokee people the opportunity to travel along the Trail of Tears where their ancestors traveled. The Cherokee Nation sponsors a team of young Cherokee citizens to meet up with a team representing the Eastern Band of Cherokee Indians near New Echota, Georgia. The groups will ride the Northern Removal Trail.
Along the way, the group will explore and participate in activities that link the riders to the experiences their Cherokee ancestors had at the time of the removal. The tour will culminate with an exciting homecoming event as the team arrives in Tahlequah, Oklahoma, the capital of the Cherokee Nation, after approximately 950 miles of riding spread over a three-week period.

**Run to the Rogue**

Each year, the Siletz Tribal people and friends participate in Run to the Rogue, an annual relay run/walk to the Rogue River in southwestern Oregon, the second week of September. The 234-mile, three-day run commemorates the Siletz Tribal ancestors who were forcibly removed from their homeland in the Rogue River Country and marched North to Siletz in the winter of 1856.

**Running Strong**

Running Strong for American Indian Youth was created by Billy Mills (Oglala Lakota), an Olympic 10K Champion and Gold Medalist. Mr. Mills grew up in Pine Ridge, South Dakota. Running became a hobby and sport to momentarily escape and manage the stressful environment of poverty that surrounded him. After his success in the Olympics, Mr. Mills wanted to fulfill his passion of giving back to his community. With the mission of supporting American Indian people by meeting their immediate survival needs, Running Strong aims to create opportunities of self-sufficiency and self-esteem for American Indian youth through programmatic implementation. As a non-profit organization that was initially organized to support the Pine Ridge and Cheyenne River tribal communities in South Dakota, it has grown immensely to provide programs such as Food Distribution and Nutrition, Youth, Culture and Language, Housing, Women’s Health, Basic Needs, and Seasonal Assistance. The organization offers many successful programs for several American Indian communities including community based gardening. The organization values traditional foods and is committed to providing their partner programs with materials to increase wholesome and nutritious foods.

**N7 Fund**

Since 2000, the N7 Fund has encouraged and supported communities to provide opportunities to improve physical health and self-confidence. It started out as an idea by Sam McCracken to sell Nike products directly to Native American tribes to support health promotion and disease prevention programs. Today, the N7 Fund utilizes funds gained from the N7 Collection and the Nike Air Native N7 to sustain existing sports programs through financial support and effective programmatic assistance. The N7 Fund understood that participation in sports activities is widely seen throughout Indian Country from basketball to cross country to lacrosse. The N7 Fund believes youth participation in sports activities combats diseases while developing strong individuals that can be forces of change in tribal communities. Between 2009 and 2011, the N7 Fund offered financial assistance to more than 30 disease prevention programs in various communities across the United States and Canada.

**Notah Begay III Foundation**

The NB3 Foundation (NB3F) was founded by Notah Begay III (Navajo/San Felipe, Isleta Pueblo), a professional Native American golfer and four time PGA tour winner. Since 2005, the NB3F has served over 24,000 American Indian children and families in fourteen states by investing in evidence based, community driven, and culturally relevant programs that prevent childhood obesity and Type 2 diabetes. Currently, NB3F operates two programs—Native Strong: Healthy Kids, Healthy Futures and Native Fit. NB3F offers grant opportunities to Native-led organizations as well as focuses on research and evaluation, provides direct programming, and advocates for policies to promote healthy lifestyles for American Indian children and the communities they live in. NB3F has tribal, foundational, and corporate support from organizations such as Oneida Indian Nation, W.K. Kellogg Foundation, the PGA of America, among others.
1. Congress should permanently reauthorize funding for the Special Diabetes Program for Indians.

2. Congress should reauthorize the Healthy, Hunger-Free Kids Act of 2010 and support the integration of local, traditional foods in food assistance programs.

3. States should promote telehealth delivery options to remote Native reservations and pass policies to support breastfeeding mothers.

4. Tribes should explore options to incentivize healthy foods and curb the consumption of junk foods.

5. Through self-governance compacts, tribes may target diabetes care and prevention in a community-based and culturally-tailored way.

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**Reintroducing Culture to Health Activities**

“I am from an overlooked society, a place that time forgot, to have respect and acknowledgement is something everyone ought. I am not from a poor nation, but a nation rich in heritage, a nation rich in values, a nation rich in culture... I am from a rock.” - Alayna Eagle Shield

I currently work as a Lakota kindergarten teacher at the Lakhótiyapi Wahóhpi (Lakota language nest) located within the Sitting Bull College on the Standing Rock reservation, where we completely immerse our students, ages 4-6 years of age, into our Lakota language. Every day I witness these children gain a stronger grasp of who they are—even more than most adults in our community. The children sing, read, speak, play and pray completely in their native tongue and they are proud. They will carry this huge advantage—of cultural identity—for the rest of their lives. A man named Robert N. St. Clair, in his talk on “The Invisible Doors Between Cultures” at the 1997 symposium, made a correlation between mothers giving their children immunities from childhood diseases through their breastmilk and also giving their children immunities, through teaching their language while nursing their children, from modern diseases of life that lead children into addiction, gangs, and wondering aimlessly in society.83

I recently completed my very first year of teaching my Lakota language and I was very fortunate to have the luxury of flexibility in my teaching methods. I taught the children to read, write, add, subtract, about science, mother earth, our ceremonial ways of life, and many other topics, completely in our Lakota language. With this freedom to teach the language how I see fit for our kindergarten classroom, I began making videos in Lakota for my friends and family online to help others learn. I made an online resource site on social media using my name, Alayna Eagle Shield, where I’ve shared videos from changing a diaper in Lakota to working out in Lakota and currently have over one thousand followers. Many of whom message me often and ask for help with phrases or just share and learn from my videos.

A long time ago our ancestors were active and ate foods from mother earth or from wild game that they hunted themselves, such as: buffalo, deer, fish, etc. In this current day and age many indigenous peoples are plagued with diseases and riddled with the absence of identity. My hope, and the reason I teach my Lakota language, is to restore cultural identity and healthy active living, through workouts in Lakota and teachings of my Lakota language. I make videos of workouts completely in my Lakota language and encourage people to eat healthy natural foods.
Policy Opportunities

Recommendations:

**FEDERAL: Permanent Reauthorization of the Special Diabetes Program for Indians**

In the Balanced Budget Act of 1997, Congress passed legislation to create the SDPI to treat and prevent diabetes in American Indians and Alaska Natives (AI/AN). Funding for the SDPI was reauthorized in March as a part of the HR 2: The Medicare Access and CHIP Reauthorization Act of 2015—the $150 million per year allocation is now set to expire on September 30, 2017. The NCAI passed a resolution supporting the permanent reauthorization of the SDPI at its 2014 Annual Convention in the interest of building upon program gains and upholding the federal government’s trust responsibility to provide health care for American Indians and Alaska Natives.

And the SDPI has gained significant ground in Type 2 diabetes prevention. Over the first six years of the program, blood sugar control substantially improved among participants—with adjusted mean Hemoglobin A1c (HbA1c) levels decreasing from 8.9 percent to 7.9 percent. This 1 percentage point reduction in HbA1c “has been shown to reduce any diabetes-related end point (microvascular disease, amputation, heart attack, stroke) or death by 21 percent.” Beyond this reduction in diabetes incidence at the population level, “significant improvements in weight, blood pressure, and lipid levels were observed immediately after the intervention and annually thereafter for 3 years.” Participants lost an average of 9.6 lbs each (4.4 percent weight loss) and reported an average of 181 minutes of physical activity per week (vs. 99 minutes at baseline). Prior to the SDPI, only 20 percent of the 318 Indian Health Service tribal and urban clinic grantees had community walking and running programs and 16 percent offered exercise classes. After the implementation of the SDPI, 92 percent and 80 percent of the clinics offer these activities, respectively. The total estimated cost of diagnosed diabetes in 2012 is $245 billion, including $176 billion in direct medical costs and $69 billion in reduced productivity.

People with diagnosed diabetes incur average medical expenditures of about $13,700 per year, of which about $7,900 is attributed to diabetes. People with diagnosed diabetes, on average, have medical expenditures approximately 2.3 times higher than what expenditures would be in the absence of diabetes. Indirect costs include increased absenteeism ($5 billion) and reduced productivity while at work ($20.8 billion) for the employed population, reduced productivity for those not in the labor force ($2.7 billion), inability to work as a result of disease-related disability ($21.6 billion), and lost productive capacity due to early mortality ($18.5 billion). Given these statistics, the annual investment of $150 million in the SDPI well outweighs the costs of its absence and it should be made permanent.

**FEDERAL: Reauthorize Healthy, Hunger-Free Kids Act and Support the Integration of Local, Traditional Foods in Food Assistance Programs**

With 24 percent of American Indian and Alaska Native households receiving Supplemental Nutrition Assistance Program (SNAP) benefits, 276 tribes administering the Food Distribution Program on Indian Reservations (FDPIR), 68 percent of American Indian and Alaska Native children qualifying for free and reduced price lunches, and American Indians and Alaska Natives making up more than 12 percent of the participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) the importance of food assistance in Indian Country cannot be overstated.
A study that pooled data from the 2001 to 2004 Current Population Survey found that among households with children, nearly twice as many AI/AN households were food insecure than non-AI/AN households (28 versus 16 percent).  

The four major programs that represent the core of the food safety net for AI/AN families with children are the Food Distribution Program on Indian Reservations (FDPIR), Supplemental Nutrition Assistance Program (SNAP), Women Infants and Children (WIC), and the National School Lunch Program (NSLP). According to the latest data from FDPIR, the program serves 87,000 individuals per month nationally and as of 2013, 20 percent of all AI/AN families were receiving SNAP food assistance nationally.  

The Healthy, Hunger-Free Kids Act of 2010 failed to receive reauthorization by the deadline of September 30, 2015, however, this date may be extended to October 31. If Congress garnered bipartisan support and approves funding for this Act, then school breakfast, lunch and summer meal programs, as well as WIC and the Child and Adult Care Food Program (CACFP) will be reauthorized for an additional 5 years.  

With the 2014 passage of H.R. 2642, the Federal Agriculture Reform and Risk Management Act of 2013, FDPIR will be able to undertake a Traditional Foods Demonstration Project, which will distribute traditional and locally-grown foods from Native farmers, ranchers, and producers to food assistance recipients in the program. However, this exciting Indian Country-specific provision was counterbalanced by an $8.6 billion cut to SNAP.  

**STATE: Implement Effective Policy to Address Native Oral Health Disparities**  
Given its connection to Type 2 diabetes, oral health is a need and priority for many Native communities. At state (e.g. Alaska) and national levels (e.g. Canada, New Zealand, Australia), policies have been implemented to expand the role of mid-level oral health providers (like dental health aide therapists) to increase the community access to care. Trained in their home communities under the remote supervision of dentists, dental hygienists can perform a variety of dental care practices, such as routine exams, simple extractions, restorative procedures, as well as health promotion and disease prevention.  

In the 1990s, the Indian Health Service, the Alaska Native Tribal Health Consortium, and other Alaska tribal health organizations adopted the Dental Health Aide Therapist model (DHAT) to provide care to Natives in villages across Alaska. To date, 11 DHATs have been trained and certified to work in their communities. Despite the demonstrated success of the Alaska DHAT model, the American Dental Association and the Alaska Dental Society pursued legal challenges to the program, claiming it violated the Alaska Dentistry Act. While their litigation efforts were unsuccessful, there is much that states can do to implement policies that are supportive of the DHAT program.  

In the past year, both New Mexico and Washington state legislatures introduced bills that would pave the way for DHAT implementation. In addition, other states are working to address the health needs of Native communities by expanding Medicaid coverage under the Affordable Care Act.  

**STATE: Support Maternal-Child Health with Breastfeeding Laws**  
In December 2014, all 13 obstetric facilities operated by the IHS obtained Baby-Friendly® designations. This initiative, which promotes breastfeeding as the exclusive feeding choice for infants in their first six months of life, is designed to give the child a healthy start and prevent childhood obesity. Increasingly, states are expanding the ways in which they protect a mother’s right to breastfeed her children.
According to the National Conference of State Legislatures:\textsuperscript{116}:

- Forty-nine states, the District of Columbia and the Virgin Islands have laws that specifically allow women to breastfeed in any public or private location;
- Twenty-nine states, the District of Columbia and the Virgin Islands exempt breastfeeding from public indecency laws;
- Twenty-seven states, the District of Columbia and Puerto Rico have laws related to breastfeeding in the workplace;
- Seventeen states and Puerto Rico exempt breastfeeding mothers from jury duty or allow jury service to be postponed; and
- Five states and Puerto Rico have implemented or encouraged the development of a breastfeeding awareness education campaign.

It is clear, nonetheless, that much work remains to be done with respect to expanding the rights of breastfeeding mothers. With the aforementioned benefits that breastfeeding provides for diabetes and obesity prevention, public health policies at both state and tribal levels are critical for maternal-child health.

**TRIBAL: Tax Unhealthy Foods and Subsidize Healthy Foods**

According to the Healthy Diné Nation Act, which passed in November 2014, there were 25,000 Navajos with diabetes and another 75,000 who are pre-diabetic.\textsuperscript{117} To reverse these trends, the Navajo Nation Council adopted a two percent tax on foods deemed to have no or minimal nutritional value; the law went into effect in January 2015. “The tax will generate an estimated $1 million a year in 110 tribal chapters for wellness projects—greenhouses, food processing and storage facilities, traditional foods cooking classes, community gardens, farmers’ markets, and more.”\textsuperscript{118} These deterrent measures were preceded by an incentive—in keeping with other fat and sugar tax initiatives internationally. In October 2014, the Navajo Nation eliminated a five percent sales tax on fresh fruits and vegetables, water, nuts, seeds, and nut butters purchased on the reservation.\textsuperscript{119} “We’ve seen that these types of taxes significantly improve public health and there is further potential to benefit the nation’s health whether it’s fiscally, physically or socially,” says Denisa Livingston, a community health advocate with the DCAA, which developed the Healthy Diné Nation Act.\textsuperscript{120} To garner success, these health policy interventions must simultaneously shift unhealthy food consumption and secure greater access to nutritious alternatives.

**TRIBAL: Build Self-Determined, Comprehensive Diabetes Prevention and Care**

In keeping with the ability of tribes to take control of the delivery of their health care services through self-governance compacts (Public Law 93-638), the Chickasaw Nation provides us with a powerful case study of what sovereign diabetes care can achieve. Recognizing the impact of diabetes on their citizens and other Natives, the Chickasaw Nation created a comprehensive center to provide patients resources from diet and nutrition, dental care, wound care, gestational diabetes care, endocrinology, mental health and depression treatment, retinography, foot care, among several other services. Prevention programs are designed for both individuals and families and by addressing the co-occurring conditions of diabetes, the Center has been lauded by Congressman Tom Cole (R-OK) as the “premier diabetes prevention, treatment, and research center in Indian Country.”\textsuperscript{121}
Conclusion

When Representative Tom Cole (R-OK) visited his home nation of Chickasaw’s Diabetes Care Center, he noted the one in three health care dollars going to treat diabetes and its related conditions nationally and emphasized the importance of governments working to address prevention. Tribal governments and communities are essential partners in ensuring the best diabetes science is used to inform community implementation and advance health. Increased investment and intervention has the potential to create a pathway to wellness for all of our relatives, and especially for our Native youth. It is our hope that the science, programs, and community initiatives featured in this brief might inform policy development and inspire Native communities to hold their governments accountable for ending the diabetes epidemic that affects us all.
Endnotes


3 See note 1.


5 See note 4.


7 See note 4.


10 See note 9.


15 See note 14.


18 See note 14.


27 See note 26.


35 See note 29.

36 See note 12.


42 See note 12.


47 See note 46.


52 See note 46.


55 See note xlv.


107 See note 104.
108 See note 104.
113 See note 45.
120 See note 116.
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