



THE IHS PRIMARY CARE PROVIDER

A journal for health professionals working with American Indians and Alaska Natives



March 2016

Volume 41 Number 3

Native American Maternal and Child Health Crisis: American Indian and Alaskan Native Health Disparities in Ohio

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Introduction

American Indian (AI) and Alaskan Native (AN) populations experience exceptionally poor health outcomes when compared to the general population (Indian Health Service, 2014d). According to the US Census Bureau, in 2012, Native American Indians made up only 0.3% of the population in Ohio and made up 1.2% of the total population in the United States (US Department of Commerce, 2014). Native Americans continue to suffer from many well-documented health-related disparities and inequities that have been endured by previous and current generations (Alexander, Wingate, & Boulet, 2008). Quality of life issues related to economic adversity and poor social conditions experienced by the AI/AN population, including lower life expectancy, poorer education, greater level of poverty, discrimination in health care delivery, and cultural differences, illustrate and are related to lower health status and health disparities when compared to other Americans (Indian Health Service, 2014d). The AI/AN people experience lower life expectancy (4.2 years less than US all races), higher rates of many chronic diseases, and mortality rates higher than seen with other Americans from a wide variety of diseases.

Infant mortality has long been considered an indicator of the health and well being of a country (Singh & van Dyck, 2010; United Nations, 2011; and United Nations, 2013). Health disparities regarding maternal and child health

continue to be of serious concern for the nation, including the AI/AN people (Singh & Kogan, 2007). In 2006, the infant mortality rate for AI/ANs was the 2nd highest in the US, at 8.3 per 1,000 live births, after non-Hispanic blacks (Singh & van Dyck, 2010). The postneonatal mortality rate of 4.2 per 1,000 live births for AI/AN infants born between 2003-2004 was poorer than for the general population, at 1.9 times the rate for US all races (2.2 per 1,000 live births) and 2.3 times the rate for US white (1.8 per 1,000 live births) (Indian Health Service, 2014h). In 2007, infant mortality rates in the US ranged from a high of 13.1 per 1,000 live births in District of Columbia to a low of 4.8 per 1,000 live births in the state of Washington (Singh & van Dyck, 2010). According to the same statistics, the rate of infant mortality in Ohio has decreased since 1970, where infant mortality rates were in the 17.60-19.39 per 1,000 live births category. However, in 2007, Ohio infant mortality rates were in the range of 7.46 to 7.93 per 1,000 live births, placing Ohio in the 2nd highest out of five categories for infant mortality. During the period from 2005-2007, the AI/AN maternal mortality rate of 16.9 per 100,000 live births was the second

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highest rate in the US and fell far short of the Healthy People 2010 target of 4.3 deaths per 100,000 live births (Amnesty International, 2011). AI/AN population statistics indicate that Ohio’s maternal-child health (MCH) outcomes for Native Americans are worse than national Native American MCH outcomes, which are worse than those of the general Ohio and US MCH population.

Literature Review

Native Americans are guaranteed free healthcare by the federal government through the United States Constitution as well as numerous treaties (Indian Health Service, 2014a). The United States government has explicitly guaranteed, through treaties, the “promise of all proper care and protection” to the American Indian. The Snyder Act of 1921 and the permanent reauthorization of the Indian Health Care Improvement Act, enacted in 2010, provide Congress with legislative authority to appropriate funds specifically designated for the health care of American Indians (Indian Public Affairs, 2013; Indian Health Service, 2014g).

The Indian Health Service (IHS), a part of the Department of Health and Human Services, is the primary health care provider and health advocate for AI/AN people. It is responsible for providing federal health care and medical services to all AI/AN individuals belonging to the 566 federally recognized Tribes in the US (Indian Health Service, 2014b). The provision of services is based on a government-to-government relationship between the AI/AN and the US government, dating back to 1787. These constitutionally guaranteed rights include provision of reservations, healthcare, and education for the AI/AN in exchange for vast land and resources. Although health care is guaranteed, it is estimated that approximately 2 million of the 3.4 million AI/ANs utilize the Indian Health Service delivery system (Indian Health Service, 2014i). Services are provided through IHS federal hospitals and clinics, located on or near reservations. These services may not be available to eligible AI/ANs who do not live in close proximity to an IHS facility.

Health disparities between Native Americans and the general American population are well documented (Office of Minority Health and Bureau of Primary Health Care, 2014; Centers for Disease Control, 2014; and Jones, 2008). The vast disparities in AI/AN health can be illustrated by the comparison of per capita spending on health, which, for the general US population, is \$3,600 and, for Indian people, is less than half that amount, at \$1,650 (Indian Health Service, 2014e). The IHS reports severe understaffing of their facilities, including 79% fewer nurses, 60% fewer dentists, and 45% fewer physicians when compared to the general US population. With regard to maternal and child health, the IHS reports a 1.1 greater odds ratio of infant death and 1.5 greater odds ratio for maternal death in American Indian

populations as compared to all races in the US (Table 1). (Indian Public Affairs, 2013).

American Indians experience a higher rate of adverse maternal risk factors when compared to whites and Hispanics (Alexander, Wingate, & Boulet, 2008). Specifically, Native Americans have higher risks of low birth weight and preterm birth and have elevated risks of post-neonatal and infant mortality (Table 2). Regional analysis indicates that AIs are not a homogenous group in terms of birth outcomes. The mid-west region has the highest risk of infant mortality among LBW infant gestational age-specific mortality rates, as well as mortality from SIDS, as compared with other geographic regions.

The infant mortality rate for AI/ANs, at 7.2 per 1,000 live births, was 24% higher than the U.S. rate for all races in 1997 (Alexander, Wingate, & Boulet, 2008). American Indian mothers were more likely to be unmarried, less than 18 years of age, and live in a non-metropolitan area (Table 3). There are also significantly higher levels of hypertension, diabetes, smoking, and alcohol use among Native Americans when compared with other ethnic groups. American Indians were found to be least likely to begin prenatal care within the first trimester of pregnancy and were more likely to have intermediate, inadequate, or no prenatal care. Breastfeeding rates in the US by race and ethnicity indicate that, in 2008, AI/ANs had the 2nd highest rate of breastfeeding at 64.3%, following Hispanics at 73.8% (Polhamus, Dalenius, Mackintosh, Smith, and Grummer-Strawn, 2009). White, non-Hispanics breastfed at a rate of 58.1%, Black, non-Hispanics at a rate of 50.2%, and Asians at a rate of 63.4%, with an overall US rate of 62.0%.

Table 1
Mortality Disparity Rates AI/AN in the IHS Service Area
2005-2007 and US All Races 2006 (Age Adjusted Mortality Rates per 100,000 Population)

	AI/AN rate 2005-2007	US All Races rate 2006	Ratio: AI/AN to US All Races
Infant Deaths Per 1,000 births	7.3	6.7	1.1
Maternal Deaths	20.2	13.3	1.5

One prominent chronic health issue, type 2 diabetes, is a major Native American public health concern (Lindberg, Adams, & Prince 2012). A study of Northern Plains American Indian children found that more than 40% of the children at 5 years of age were overweight and almost one-quarter were obese. These statistics reveal an increase from seven years prior; the prevalence of children who were overweight and obese had increased 4.5% and 4.3%, respectively. In 2005, a representative sample of US children demonstrated an obesity prevalence of 18.4%. In that same study, the highest obesity prevalence among different racial and ethnic groups—31.2%—was among American Indian and Alaska Native children. From 1990 to 2004, the Indian Health Service reported a 68% increase in diagnosed type 2 diabetes among Native Americans who were between 15 and 19 years of age (Moore, 2010). These increases translate to more years of disease burden and higher probabilities of developing serious type 2 diabetes and other comorbidities later in life. A vicious cycle ensues, consisting of early onset diabetes, followed by gestational diabetes for childbearing mothers, followed by early onset of diabetes in the next generation.

Table 2

Birth Outcomes of Native American, Hispanic, and White Mothers, 1995-2001 Single Live Births to US Resident Mothers

Birth Outcome	American Indian	Hispanic	White (non-Hispanic)
% LBW	5.8%	5.3%	4.9%
% Preterm Birth	11.0%	9.9%	8.3%
% Neonatal Mortality Rate Deaths <28days/1,000 births	3.9	3.4	3.1
% Postneonatal Mortality Rate Deaths @28-365 days/1,000 live births	4.4	1.8	1.9
% Infant Mortality Rate <1 year/1,000 births	8.3	5.3	5.0
% SIDS	1.34	0.32	0.56

Table 3

Maternal and Prenatal Care Characteristics by Race/Ethnicity of Mothers, 1995-2001 Single Live Births to US Resident Mothers

Characteristics	American Indian	Hispanics	Whites (non-Hispanic)
% Unmarried	58.8%	40.6%	22.2%
% Age <18	8.0%	6.7%	3.0%
% Non-metropolitan residence	71.3%	20.7%	50.6%
% Hypertension	5.5%	3.0%	4.5%
% Diabetes	4.8%	2.7%	2.6%
% Smoking	21.0%	4.4%	16.4%
% Drinking	3.5%	0.7%	1.2%
% 1 st trimester prenatal care	68.6%	74.3%	87.8%
% Intermediate prenatal care	41.6%	40.7%	38.8%
% Inadequate prenatal care	17.9%	11.8%	5.5%
% No prenatal care	1.9%	1.7%	0.6%

Prenatal and early childhood influences can have an exponential impact on the future health outcomes and life course of an individual (Kalk, Guthmann, Krause, Relle, Godes, Gossing, Halle, Wauer & Hoher, 2009). This study demonstrates a multi-generational cycle, which begins before a child is born and perpetuates during the life course of the child into adulthood. Increased maternal BMI is associated with increased health risks for the child. These risks include hypertensive complications, gestational diabetes, postpartum hemorrhage, peripheral edema, caesarean section, fetal macrosomia, and admission to the neonatal intensive care unit. Additional risks correlated with

obese mothers include stillbirth and neonatal death, increased by at least two fold (Kristensen, Vestergaard, Wisborg, Kesmodel, & Secher 2005). Maternal obesity, excess gestational weight gain, gestational diabetes, and maternal smoking during pregnancy have all been linked to increased risk of childhood obesity. Formula feeding, or lack of breastfeeding, has been shown to be a risk factor for childhood obesity and type 2 diabetes (Centers for Disease Control and Prevention, 2007). Breastfeeding for less than four months can lead to a 60% increase in the odds of having an overweight or obese child (Lindberg, Adams, & Prince 2012). Mothers who participate in the Women Infants and Children (WIC) program are almost 12% more likely to initiate breastfeeding than the general population, and less likely to continue for a year. Low breastfeeding rates are correlated with several factors, including non-Hispanic ethnicity, obesity, depression, younger age, or an incomplete high school education (Hedberg, 2013). Additionally, a child's BMI category at one year of age is a predictor for the emergence of cardiovascular risk markers in early childhood, highlighting the importance of early education and intervention.

Fetal alcohol spectrum disorders (FASD) are the most preventable cause for mental retardation. The prevalence rates of FASD for Native Americans range from 1.0 to 8.9 per 1,000 births, although rates for the general population were not reported (Beckett, 2011). Many of these mothers lack adequate knowledge and awareness regarding the risks of alcohol use and abuse during pregnancy. Additionally, many of these mothers lack the resources for education and substance abuse treatment.

Healthy People 2020 acknowledges the disparities that exist in national health outcomes for Native American families (Office of Disease Prevention and Health Promotion, 2011). The improvement of maternal, child, and infant health is considered to be an important public health goal. Many of the goals established by Healthy People 2020 focus on the reduction of mortality, negative health outcomes, and specific behaviors known to be detrimental to maternal and child health. Specifically, interventions exist that target prevention of excessive alcohol and tobacco consumption.

According to Healthy People 2020, in 2011, only 65.8% of American Indians had health insurance and only 80.7% of American Indians/Alaska Natives have a primary healthcare provider (Office of Disease Prevention and Health Promotion, 2011). Additionally, the quality of this statistic can be misleading because many Native Americans lack continuity of care with a healthcare provider. Often, healthcare providers participate in short contracts with the IHS or relocate within the IHS system and do not serve the

same population for more than a few years; this is especially true in very rural areas.

Barriers to healthcare are numerous and many American Indians live in poor socioeconomic conditions. Despite the reduction of absolute socioeconomic disparities, relative disparities have been increasing since 1985 (Singh & Kogan, 2007). Access to care is a major issue for many Native Americans living on and off reservations. The life course perspective illustrates how poor socioeconomic conditions equate to a depressed healthcare provision, which implicates access issues, and is then followed by lack of treatment and patient care. The absence of appropriate medical care exacerbates chronic health issues, leaves communities vulnerable to acute health issues that could be easily resolved, and less able to mitigate chronic health issues. This multigenerational cycle perpetuates and degrades the health status of Native Americans and their communities.

A level of mistrust among AI/ANs toward health care providers exists, especially among elder Native Americans, which has been influenced by a long history of oppression and repression of the American Indian, as well as intergenerational anger and intergenerational grief that have been experienced since the time that North America was colonized by Europeans (Hendrix, 2014). According to Guadagnolo, et al (2009), Native American cancer patients exhibit higher medical mistrust as well as lower satisfaction with health care as compared with the general US population. Multiple causes for differences in health outcomes for racial and ethnic groups include mistrust of physicians or hospitals, lack of knowledge regarding preventable diseases, inadequate cultural competency in caring for AI/ANs, and issues related to the IHS health care system and its funding status. In an effort to limit births in a selected Native American population, physicians working within the IHS performed 3,406 forced, or coerced, sterilizations during the fiscal years 1973 through 1976 (Rutecki, 2010). Per capita, this is equivalent to sterilizing 452,000 non-Native American women. Independent research estimated that 25% to 50% of Native American women were subjected to sterilization between 1970 and 1976. Sterilization procedures increased from 15.1% to 30.7% of total female surgeries between 1972-1978 on one Navaho reservation and a steep decline in childbirth for diverse AI tribes has been noted.

The IHS Baby-Friendly Hospital Initiative (BFHI) is an example of a successful approach to improving maternal and child health outcomes (Indian Health Service, 2014c). This initiative, co-administered by UNICEF and the World Health Organization, is an evidence-based practice care model designed to create a healthy start for infants and provide an early start toward preventing obesity and improve

MCH health outcomes (UNICEF, 2014). The BFHI provides education and counseling on breastfeeding and promotes practices that foster breastfeeding as the exclusive feeding choice for the first six months of life. The long-term goals of the initiative are intended to decrease future medical problems and reduce healthcare spending. Currently, there are six IHS facilities that have been certified as Baby-Friendly facilities by Baby-Friendly USA, Inc (Baby-Friendly USA, 2014). The ultimate goal is for all IHS facilities that offer obstetric services to achieve this certification.

Another successful approach to improve child health includes the immunization initiatives and programs (Indian Health Service, 2014f). Historically, these programs have had great success within many Native American populations living on reservations, with dramatic decreases in diseases that can be prevented by vaccine. This can be attributed, in large part, to the infrastructure of the IHS and immunization program home visits that provide many of these immunizations and health care services.

Methods

To compare Ohio data with national data, the 2011 Ohio birth data file was obtained from the Centers for Disease Control and Prevention, specifically the National Center for Health Statistics. This data set was then queried for Native American race status. There were 255 births identified as Native American in ethnicity. The births were then analyzed with SPSS 20 software for Macintosh. The analysis utilized the vital statistics categories collected and recorded for the National Center for Health Statistics.

The statistical analysis includes descriptive statistics and frequency counts. These statistics were then compared to an acquired data set from the National Center for Health Statistics. The comparison birth data is representative of all U.S. births in 2011, or the closest available year.

Relevant data was obtained from Centers for Disease Control and Prevention, specifically the National Center for Health Statistics, National Center for Health Statistics, Medicare-Medicaid Enrollee State Profile Ohio, Indian Health Service, Infant Mortality Task Force, National Center for Health Statistics, Office of Minority Health and Bureau of Primary Health Care, and Ohio Department of Vital Statistics. Applicable data was included as part of the results.

Results

Background information regarding the parents of American Indian children was analyzed (Table 4). Less than half of AI children born in Ohio were born to mothers who were married (45.1%), compared to a rate of 59.3% nationally. Additionally, 16.1% of fathers of American

Indian births refused to acknowledge the birth of the child. There were wide ranges of parental educational backgrounds in the Native American data set. About half (49.4%) of fathers and 57.6% of mothers have no college degree. In addition, 14.9% of mothers and 11.8% of fathers never graduated from high school or obtained a GED.

The WIC (Women Infants Children) program was utilized during pregnancy in 41.6% of the births by AI/ANs in Ohio. Medicaid was the principle source of payment for the delivery in 31.4% of AI/AN births, significantly higher than the rate of 29.0% of AI/ANs in US and 17.8% for US all races. The total population receiving Medicaid was 19% in Ohio for all races and 20% in US for all races. There were no mothers in Ohio who utilized the Indian Health Service, as there are no IHS facilities or providers available in this state.

Over a third of the mothers in the data set had 10 or fewer prenatal visits (12-14 average) and 74.9% received their first prenatal visit during the first trimester of pregnancy. Of mothers receiving prenatal care beginning in the first trimester, 67.3% of AI/AN in US had live births compared with 83.2% of US all races.

Sixty-nine percent of AI/AN mothers in Ohio were breastfeeding their babies at the time of discharge after birth. Of the AI/AN births in Ohio, 8.6% were admitted to NICU and 1.2% of infants were not alive at the time of report.

Smoking in the third trimester was utilized as an indicator for smoking throughout the entire pregnancy. This study reveals that 15.7% of Ohio American Indian mothers report to have smoked throughout their entire pregnancy. This compares with a higher rate of 19.8% of AI/AN mothers nationally (2000), both of which are higher than the all races US rate of 12.2% (2000).

The rate of live births among mothers in the US with diabetes between 1999-2001 was identified. The birthrate of AI/AN mothers in all IHS areas who have diabetes was 49.0 per 1,000 live births compared with a birthrate of 29.3 per 1,000 live births of US all races.

The rate of children living in poverty at the national level for AI/AN children was 37% in 2012. This is significantly higher than the rate of 23% for US all races and 24% for Ohio all races. Data regarding AI/AN children in Ohio was not available; it was suppressed, as the confidence interval around the percentage is greater than or equal to 10 percentage points.

Low birthweight (LBW) for infants is an indicator of poorer health status. Percentages of LBW, defined as less than 2,500 grams, and very low birthweight (VLBW), defined as less than 1,500 grams, are listed in Table 5. The percentage of LBW for live births in 2010 was higher for

AI/AN in Ohio at 9.13% per 1,000 live births than the general population in Ohio of 8.58% per 1,000 live births for the same time period (National Center for Health Statistics, 2013). In comparison, LBW for all races US population was 8.15% per 1,000 live births and the rate for AI/ANs throughout the US was 7.61% per 1,000 live births, a rate lower than the national average. VLBW for AI/AN infants was found to be 1.28% for AI/ANs nationwide and slightly higher, at 1.45%, for US all races.

The number of live births as well as rates for infant mortality (the death of a child less than one year of age), neonatal mortality (the death of an infant from birth to <28 days), and postneonatal mortality (the death of a child from age 28 days to 364 days) are compared in Table six. In 2011, the infant mortality rate for AI/ANs in Ohio was 8.03 per 1,000 live births, compared with a rate of 7.87 per 1,000 live births for the general population in Ohio. For US all races, 2008, the infant mortality rate was 6.6 per 1,000 live births compared with the much higher 8.4 per 1,000 live births for AI/ANs in the US. The neonatal mortality rate for Ohio AI/ANs in 2011 was 0.00, with no neonatal deaths, and was 5.25 per 1,000 live births for Ohio all races, with a total of 1,086 neonatal deaths. The neonatal mortality rate in 2010 of 4.05 per 1,000 live births, with 24,572 deaths is reported for US all races, and a higher rate of 4.28 per 1,000 live births for AI/AN US, with a total of 387 deaths. Postneonatal mortality rates in 2011 was 8.03, with a total of 2 deaths, for AI/ANs in Ohio, compared with a significantly lower rate of 2.62, with a total of 362 deaths, for Ohio all races. A postneonatal mortality rate of 4.00, with a total of 187 deaths, was reported for AI/ANs throughout the US, with a significantly lower rate for US all races of 2.10 per 1,000 live births, with a total of 8,379 deaths.

Table 7 identifies the infant, neonatal, postneonatal mortality rates in Ohio per 1,000 births for 2011. The data shows AI/AN rates for infant mortality (8.03) that are higher than any other racial group except African Americans, with an infant mortality rate of 15.96 per 1,000 live births. Total infant mortality rate for all races in Ohio was 7.87 per 1,000 live births. The AI/AN postneonatal mortality rate is higher than any other racial group, at 8.03 per 1,000 live births. The postneonatal mortality rate for African Americans is 4.95 per 1,000 live births and the total postneonatal mortality rate is 2.62 per 1,000 live births. The neonatal mortality rate was highest for African Americans, at 11.01 per 1,000 live births. No American Indian infants died between birth to <28 days of age, yielding a rate of 0.0 per 1,000 live births.

According to Healthy People 2010 objectives, 3 of the 10 largest health disparities for the AI/AN population involve maternal and child health (Garcia, Keppel, & Hallquist, 2010). When analyzing cases of fetal alcohol syndrome in 1995-97, the group with the best rate, and

fewest cases, is white non-Hispanic, with a rate of 0.2 per 1,000 live births. In contrast, the rate for AI/ANs of 3.2 per 1,000 live births is significantly higher, with a 1500% difference between the “best” group rate and the AI/AN rate. The lowest percentage of cases of women smoking during pregnancy in 2004 was among the Asian group, at 2.2%, compared with AI/AN rate of 18.2%, with a 727% difference from the “best” group rate to the AI/AN rate. In 2003, disparities in numbers of cases of sudden infant death syndrome (SIDS) were identified. The Hispanic group had the lowest incidence, at 0.3 per 1,000 live births, compared with the AI/AN rate of 1.2 per 1,000 live births. The difference between the “best” group rate for SIDS and the AI/AN group was 300%. Additional disparities between the AI/AN population and the racial and ethnic group with the best rate increased for other objectives. Regarding objectives from the Maternal, Infant, and Child Health focus area, a 100-percentage point or more increase in disparity is noted for 15-44 year-old women abstaining from smoking during pregnancy between 1998 and 2004. Prenatal care in the first trimester and preterm births at <37 weeks gestation both fell in the 10-49 percentage points increase in disparity from the time period between 1998 and 2004.

Table 4

**Statistics & Background Data for American Indian/
Alaska Natives in Ohio, 2011 and all races Ohio 2010,
AI/AN in US 2010, and all races US 2010**

	AI/AN in Ohio 2011	All Races in Ohio 2010	AI/AN in US 2010	All Races in US 2010
% Mothers identifying as Native American	100%			
% Fathers identifying as Native American	11.8%			
% Mothers married @ birth or conception	57.3%		59.3%	
% Mothers married @ birth	45.1%		16.1%	
% Live births to unmarried mothers			65.6% (e)	40.8% (e)
% Fathers who refuse to acknowledge birth	16.1%			
% Mothers without high school graduation/GE D equiv	14.9%			
% Mothers without college degree	57.6%			
% Fathers without high school graduation/GE D equiv	11.8%			
% Fathers without college degree	49.4%			
% Mothers who utilized WIC	41.6%			
% Receiving Medicaid	31.4%		21.6%(2010) 29.0%(2011) (e)	16.9%(2010) 17.8%(2011) (e)
% Total population receiving Medicaid		19% (d)		20% (d)
% Mothers utilizing IHS	0.0%			
% Mothers with 11 or fewer prenatal visits	~50%			
% Mothers receiving first prenatal visit during first trimester	74.9%			

% Live births when prenatal care began in first trimester 1999-2001			67.3% (b) all IHS areas	83.2% (b)
% Babies breastfeeding @ hospital d/c	69.0%			
% Newborns admitted to NICU	8.6%			
% Babies not alive at time of report	1.2%			
% Mothers who smoked during pregnancy (3 rd trimester)	15.7%		19.8% in 2000 (b)	12.2% in 2000 (b)
Rate of live births among mothers with diabetes per 1,000 live births 1999-2001			49.0 (b) all IHS areas	29.3 (b)
% Children living below the federal poverty level 2012	Estimates suppressed	24% in 2012	37% in 2012	23% in 2012

Table 5

Comparison of LBW and VLBW, AI/AN Ohio & US and all races Ohio and US, 2010

	AI/AN Ohio 2010	All Races Ohio 2010	AI/AN U.S. 2010	All Races U.S. 2010
% LBW (less than 2,500 grams) per 1,000 live births	9.13%	8.58%	7.61%	8.15%
% VLBW (less than 1,500 grams) per 1,000 live births			1.28%	1.45%

Table 6

Comparison of maternal and infant health statistics for AI/AN Ohio and US populations and all races Ohio and US populations

	AI/AN Ohio 2011	All Races Ohio 2010 (unless otherwise noted)	AI/AN U.S. 2010 (unless otherwise noted)	All Races U.S. 2010 (unless otherwise noted)
Total live births 2010	253	139,034	46,760	3,999,386
Total live births 2011	249	138,024		
Infant mortality rate per 1,000 live births	8.03	7.87 (2011)	8.4 (2008)	6.6 (2008)
Total number of Infant deaths per 1,000 live births	2	1,086 (2011)	387	24,572
Neonatal mortality rate per 1,000 live births	0.00	5.25 (2011)	4.28	4.05
Total number of Neonatal deaths per 1,000 live births	0	724	200	16,193
Postneonatal mortality rate per 1,000 live births	8.03	2.62 (2011)	4.00	2.10
Total number of Postneonatal deaths per 1,000 live births	2	362	187	8,379

References for Results Tables 4,5,6

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Table 7

2011 Neonatal, postneonatal, and infant mortality, Ohio, rates per 1,000 births

Population group	Infant deaths	Neonatal deaths	Postneonatal deaths	Infant mortality rate	Neonatal mortality rate	Postneonatal mortality rate	Live births
Total	1,086	724	362	7.87	5.25	2.62	138,024
White	672	439	233	6.41	4.18	2.22	104,906
African-American	371	256	115	15.96	11.01	4.95	23,252
American Indian	2	0	2	8.03	0.0	8.03	249

Discussion

AI/AN health in general and maternal and child health in particular in Ohio and nationally is worse than for the general population. The analysis of this data set was very limited in scope, but yielded important frequency and distribution reports that can be compared to reference data. Challenges obtaining a complete data set may be attributed, at least in part, to the relatively smaller population of AI/ANs in the US (1.2%) and in particular, in Ohio (0.3%). For example, AI/AN infant mortality rates for 2008-2010 could only be reliably computed for the 15 states with higher Native American populations. Many lapses exist within the results tables, especially for data regarding the Ohio general population. In addition, it was difficult to obtain all reference data for the same year/time period. Most reference data was obtained from 2010 and 2011, but 2007-2009 was the most recent reference data for some information. This makes direct comparisons difficult and correlations must be made with caution.

Many Native American women living in Ohio do not have access to Indian Health Services, and many do not have other forms of medical insurance. American Indian mothers in Ohio utilize Medicaid at a much higher rate than AI/AN throughout the nation, and at a much higher rate than the rate for the US general population. AI/AN mothers smoked during pregnancy at a higher rate in Ohio and US than the general population. In addition, smoking among AI/AN pregnant women is a Healthy People 2010 objective with one of the largest health disparities, at a 727% higher rate than the “best” rate among pregnant Asian women. The rate

of live births among mothers who have diabetes is significantly higher than the rate of live births for the general population. AI/AN children live below the poverty level at a much higher rate than the general population.

LBW infants of AI/AN mothers in Ohio are reported at a higher rate than for Ohio all races, US AI/AN, and for the general population. Native Americans have higher risks of low birth weight and preterm birth and have elevated risks of post-neonatal and infant mortality. Due to a small population of Native Americans in Ohio, the infant mortality rates vary from year to year, but trend toward being higher for AI/ANs than for the general population. Infant mortality rates are higher for AI/AN in the US and Ohio than for the general population and second only to African American infant mortality. The postneonatal mortality rate for AI/AN babies in Ohio is more than three times as high as the rate for Ohio general population and AI/AN postneonatal mortality for the US is twice as high as for the US general population. According to the birth outcomes of Native American, Hispanic, and White Mothers from 1995-2001, AI/ANs have poorer outcomes regarding LBW, preterm births, neonatal mortality, postneonatal mortality, infant mortality, and SIDS.

A large discrepancy exists when comparing the rate of live births in the US between 1999-2001 by mothers who have diabetes. The birth rate among AI/AN mothers with diabetes in all IHS areas was at a rate of 49.0 per 1,000 live births, compared with the significantly lower 29.3 per 1,000 live births of US all races.

Three of the 10 largest health disparities for the AI/AN population involve MCH. The disparities are significant and fall far short of the Healthy People objectives.

Many Native American leaders are working to promote the importance of “Behavioral Health” (Indian Health Service, 2014i). This is accomplished through health status issues and problems addressed via the promotion of positive behaviors throughout the community. The Indian Health Service has developed many innovative community-based initiatives to address the high rates of alcohol and substance abuse, social services, mental health disorders, suicide, violence, and behavior-related chronic diseases among AI/NA population. Behavioral and health policy interventions to reduce smoking, improve access of care, improve early and comprehensive prenatal care, and implement universal health care have the potential to reduce socioeconomic inequalities in infant mortality in both absolute and relative terms (Singh, 2007). The IHS continues to work toward prevention of chronic disease, preventable mortality, and health promotion, with a goal to develop and share collaborative, community-driven programs throughout the Indian health system. In spite of these initiatives, maternal and child health outcomes continue to fall far behind health outcomes of the general populations.

Conclusion

AI/AN population statistics indicate that Ohio’s MCH outcomes for Native Americans are worse than national Native American MCH outcomes, which are worse than those of the general Ohio and US MCH population. The AI/AN maternal mortality rate of 16.9 per 100,000 live births (2005-2007) was the second highest rate in the US and fell far short of the Healthy People 2010 target of 4.3 deaths per 100,000 live births (Amnesty International, 2011). Many significant disparities exist for maternal and child health among the AI/AN population nationally and in Ohio when analyzing the available data.

It is imperative that public health efforts and initiatives are taken to mitigate and resolve the social injustices that still exist and have manifested as chronic health issues for Native Americans. Improving maternal and child health needs to be at the forefront for tribal leaders and healthcare providers. Immense change can be effected within the realm of maternal and child health, and it is within this realm that improvements can foster healing, optimistic life course outcomes, and positive multi-generational impacts.

Governed by the ideals of social justice and health equity, healthcare providers, in conjunction with tribal leadership, have the opportunity to recast and forge a healthy, holistic identity for American Indians. The collection of quality data and a focus on maternal and child

health are paramount to improving health outcomes for the American Indian.

The significant and unique health inequities and disparities in the Native AI/AN population are remarkable and have a devastating impact on their respective communities. This population has exceptionally poor health outcomes when compared to the general population in Ohio and in the US. The manner in which we recognize and respond to these disparities is critical.

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Circulation: THE PROVIDER (ISSN 1063-4398) is distributed on the CSC website to health care providers working for the IHS and tribal health programs, to medical schools throughout the country, and to health professionals working with or interested in American Indian and Alaska Native health care. If you would like to subscribe, go to <https://www.ihs.gov/provider>.

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