**Prescription Drug Overdose (PDO) Deaths Among**

**American Indians and Alaska Natives in Minnesota**

Dr. Charles Snyder

Carley Anderson, MPH Candidate

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**ABSTRACT**

Prescription drug overdose (PDO), particularly from opioids, and substance use disorders are currently a serious public health concern within the state of Minnesota. This is especially true among American Indians and Alaska Natives (AI/AN) residing in the state, where the health disparities are stark in contrast to other races and ethnic groups. Although a number of initiatives and efforts are currently in place, both within the state and in other regions among comparable populations, the syndemic relationship between poverty and historic trauma response must be a consideration in any intervention pertaining to AI/AN. As such, future interventions will benefit from improved policies informed by culturally sensitive research and intervention proposals. This paper describes an intervention currently operational within Minnesota to mitigate PDO and proposes a new intervention that builds strongly on existing infrastructure in place within the state. The proposed program, called the Tribal Opioid Partnership Program, instates 3 “Tribal Opioid Partners” in place for each tribe, operating as support personnel derived directly from the tribes. These Tribal Opioid Partners provide on-call support, resources, and referrals to those at risk for PDO. Although more research is needed to fully understand the scope of the problem in light of limited data, combining evidence-based science with culturally sensitive and tribally-sourced, Native language speakers is recommended for an effective, focused intervention to reduce rates of PDO among AI/AN within Minnesota.

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**INTRODUCTION**

 Prescription drug overdose (PDO) is just one extreme manifestation of prescription drug misuse. While misuse describes a variety of situations in which medication is used in ways it was not intended, its outcome is often dangerous and can lead to overdose or death. Unfortunately, rates of death related to PDO have risen substantially in recent past. Most current data indicate unintentional injury (including intentional and unintentional poisoning) is the 4th leading cause of death nationwide,1 and unintentional poisoning (including from PDO) is the leading cause of injury deaths in the United States.2

 Despite the broad scope of this problem within the nation today, it does not uniformly affect all demographics or racial and ethnic groups. While age-adjusted rates of PDO deaths are highest among Whites, the group with the second highest rates of death associated with PDO from 2003-2015 has been American Indians and Alaska Natives (AI/AN), with an age-adjusted rate of 13.7 per 100,000 compared to 18.5 per 100,000 among whites in 2015 (see Figure 1).3 Those identifying as only AI/AN comprise only 1.3% of the population, but are at extremely high risk for PDO death, particularly among those aged 25-54 years old (see Figure 2).3 The objective of this paper is to draw attention to the problem of PDO among AI/AN through discussion of relevant data, evaluation of current interventions staged to mitigate the problem, and most importantly, to provide an evidence-based intervention recommendation for the purpose of reducing the prevalence of PDO deaths among the AI/AN within Minnesota.

Figure : Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2015, Multiple Cause of Death Files, 1999-2015. Centers for Disease Control and Prevention Wide-ranging Online Data for Epidemiologic Research (WONDER) Online Database. <https://wonder.cdc.gov/>. Released December 2016. Accessed September 18, 2017.3

Figure 2: Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2015, Multiple Cause of Death Files, 1999-2015. Centers for Disease Control and Prevention Wide-ranging Online Data for Epidemiologic Research (WONDER) Online Database. <https://wonder.cdc.gov/>. Released December 2016. Accessed September 18, 2017.3

**BACKGROUND**

**Rationale**

 Health disparities among AI/AN are well-documented outside the realm of PDO, including disproportional rates of cancer,4 cardiovascular disease,5 injury mortality,6 and more. Therefore, when contemplating intervention strategies for PDO, multiple syndemic factors must be simultaneously considered. For example, it is known that the prevalence of PDO deaths are higher in regions where healthcare providers more frequently prescribe. In light of this evidence, the Centers for Disease Control and Prevention recommends physicians adopt specific prescribing practices to reduce the quantity and strength of opioids prescribed and to recognize warning signs for those at risk of prescription drug abuse.7 Understanding the prescribing protocol for practitioners serving Native people within Minnesota may provide potential points of intervention while also highlighting the extent of the problem.

 Another contributing factor for opioid misuse and PDO overdose among AI/AN is the effect intergenerational trauma may have on tribal descendants. Dr. Maria Yellow Horse Brave Heart describes the historic trauma experienced by generations of Native people in massacres, forced removal of children from family and home environments, and other disruptions of normal life which may negatively influence health of tribal nations to this day, including increased risk of substance abuse and PDO.8

 Health inequities related to PDO among AI/AN within the United States are particular stark in Minnesota. From available data on 16 states, this state had the highest crude rate of AI/AN deaths associated with PDO in 2015 at 42.8 per 100,000 (see Figure 3).3 Minnesota Department of Human Services (DHS) specifically identifies American Indians as at particular risk of PDO due to the high rates of opioid use disorder experienced in these populations.9 The severity of this issue within the state provides compelling rationale for implementation of an effective intervention.

Figure 3: Centers for Disease Control and Prevention, National Center for Health Statistics. Age-adjusted rates of PDO by state due to opium, heroin, other opioids, methadone, other synthetic narcotics, and other and unspecified narcotics among AI/AN, 2015. Centers for Disease Control and Prevention Web site. <http://wonder.cdc.gov/mcd-icd10.html>. Accessed October 8, 2017.

**CURRENT EFFORTS**

 A number of initiatives are currently in place across the United States aimed to reduce the prevalence of PDO deaths and opioid misuse. One of these, developed by the Alcohol and Drug Abuse Division of Minnesota Department of Human Services (DHS), is an opioid-focused program to be implemented between March 2017 and August 2019.9 The program was proposed as the Minnesota State Targeted Response to the Opioid Crisis (abbreviated MN Opioid STR), with SMART objectives stratified into 3 implementation phases and 9 strategic aims of intervention. It primarily functions through expansion and intensification of the healthcare model already operational in the state.9 Most notable pillars of the plan include: increasing the number of clinics participating in office-based medication-assisted treatment (MAT), broadening the distribution of naloxone kits throughout the state, implementation of prenatal and postnatal care to mothers misusing opioids, and buoyed healthcare for infants born with Neonatal Abstinence Syndrome.9 Other elements, such as their media campaign, are also noteworthy supports to the main tenants of the program.

*Strengths*

 The Minnesota Opioid STR acknowledges the different approaches required when working to reduce PDO deaths among American Indians and other rural communities within the state, as distinguished from its urban populations. For example, improving access to telehealth services is designed to respond to health disparities experienced by tribes in rural locations that might be prohibitively removed from services available in urban areas. Ensuring that methods of outreach are appropriate to the target community is critical for programmatic success.

 Another strength of the program is its interconnection with local partners. Minnesota’s Opioid STR outlines working relationships with the Minnesota Indian Affairs Council, American Indian Women’s Resource Center, and Great Lakes Intertribal Council’s Epidemiology Center, among others. Utilizing pre-existing infrastructure, particularly that dedicated to interests specific to Native Americans, not only strengthens the reach the program may have, but also can provide culturally-sensitive insight to inform the adaptation of the program through its evaluation and subsequent iterations.

*Limitations*

As is the case with any program focused on AI/AN populations, the MN Opioid STR is limited by lack of consistent and reliable data, especially that related to the population of interest in this paper. Inadequate data makes it difficult to accurately measure the scope of the problem and to properly inform future interventions, iterations, or modifications to the current program. The Minnesota Opioid STR plans to encourage data sharing between tribal and state partners to overcome this limitation in the future.

This program is also limited in its failure to address the etiology of PDO and opioid misuse among AI/AN, an identified priority population for the program. According to a 2012 study by the Pew Research Center, 25% of AI/AN nationwide were living in poverty.10 More recent figures from 2016 within Minnesota alone lists those identifying as only AI/AN with a poverty rate of 31.6%, the highest percentage of all ethnic groups identified for the state.11 Nonetheless, the MN Opioid STR does not specifically address the relationship poverty may have on PDO rates among this vulnerable population.

Finally, the association between intergenerational traumatic response and opioid misuse/PDO among AI/AN was not discussed in the MN Opioid STR, which limited the intervention from access to critically important cues that could have informed intervention strategies. Indeed, respect for the varied experiences of Native people have successfully informed other substance-abuse interventions,12 and could have provided a starting point for development of evidence-based, culturally sensitive intervention strategies in this topic area as well. The syndemic relationship between both poverty and the historic trauma response must be a consideration in any intervention pertaining to AI/AN, and by not acknowledging this, the MN Opioid STR is limited in the potential effectiveness its intervention may have.

**Comparable Research**

Evaluating the intervention staged by Minnesota DHS is relevant to understanding the efforts currently in place within the region; yet, consideration of comparable substance abuse and/or opioid programs among AI/AN in other geographical areas may provide insight into elements that should also be considered in similar intervention proposals. A number of such interventions have been staged, including those targeting adolescents13-15 and elders16 within Native tribes. This paper will closely evaluate one conducted by Venner et al using evidence-based substance use disorder treatment in a Southwest tribe.17 Although the interest of this research is not specifically on PDO and more broadly on substance use disorder, PDO primarily occurs through substance misuse and abuse18 and is therefore analogous for the purpose of this research.

 Venner et al took two commonly accepted evidence-based treatments for alcohol and drug substance use disorder—cognitive behavioral therapy, and motivational interviewing—and adapted them to be sensitive to the traditions and values of the Native Americans among whom this study was conducted.17 Such adaptations included traditional greetings (with discussion of clan/heritage), introduction of spirituality to the counselor/client discussion, and use of American Indian counselors who fluently spoke the client’s native language.

*Strengths*

A hallmark of the work conducted in this Southwest tribe was the respect paid to the unique cultural traditions and mores held by the community. The main premise of the paper was that evidence-based treatments can be dismissive of the particular cultural distinctions between particular AI/AN tribes, bands, and communities.19 Assuming that a universal intervention strategy will be equally effective among all groups at risk for PDO or substance use disorder will greatly inhibit the effectiveness of any intervention program. The program implemented by Venner et al demonstrated the strength of culturally tailoring evidence-based treatments to acknowledge the unique cultural background of the tribe in which the intervention is staged.

*Limitations*

 The research by Venner et al is limited by the number of participants included in the intervention. Over the course of 8 months, 65 individuals seeking treatment for substance abuse disorder at the treatment center were approached for inclusion in the study. Of those, only 13 opted to participate, and based on the inclusion criteria for this paper, ultimately only 8 individuals total were able to be included in this intervention. Outside the already limiting generalizability of interventions targeting those of AI/AN heritage due to unique tribal identities and cultures,15 this study is further constrained by the very small sample size.

**INTERVENTION PROPOSAL**

This purpose of the proposal presented herein is to reduce rates of PDO deaths among tribes within Minnesota, and therefore promote health equality between AI/AN and the population of the state as a whole. The proposed intervention will be executed through federal, state, and tribal partnership, through a program called Tribal Opioid Partnership Program (TOPP). The hallmark feature of this intervention is the installation of individuals to support those at risk for opioid use disorder and PDO who are sourced from the very tribes they will serve. By deriving personnel from the specific tribes included in the intervention who are familiar with the unique cultures, traditions, and dialect of the tribe, it is expected TOPP will be effective in meeting the program objectives.15 The outcome goal of the program is that by January 2020, the age-adjusted rate of PDO deaths among AI/AN within Minnesota will reduce from 42.8/100,000 (2015 rate) to 30.0/100,000.

 **Program Objectives**

The proposed intervention has the following five primary mechanisms of operation:

**1.** By March 2018, an initial and secondary multi-format (print, social media, in-person meetings with tribal elders) awareness campaign will be disseminated through 100% Minnesota tribes, with the first iteration describing the prevalence of opioid use disorder and PDO, and the second recruiting representative volunteers for each tribe.

**2.** By March 2018, all (100%) tribal emergency responders and police officers will be trained in the administration of and equipped with Naloxone kits for all response calls, with a regularly scheduled inventory check to ensure currency of medication with manufacturer’s expiration dates.

**3.** Three representative tribal member volunteers (Tribal Opioid Partners) from each federally-recognized tribe within Minnesota will be recruited, instated, and provided training about opioid use disorder and PDO by June 2018.

**4.** By September 2018, data about activities conducted by each Tribal Opioid Partner from all 11 tribes will be provided to Indian Health Service (IHS) for data synthesis, analysis, reporting, evaluation, and further tailoring of intervention activities.

**Implementation Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Responsible Stakeholder** | **Activity** | **Suspense** | **Cost** | **Objective** |
| Minnesota Department of Health (MNDOH) | Develop public service announcement materials (poster, social media post, oral talking points/questions for meeting with tribal leaders). | 01/14/2018 | $1,000 | Objective 1 |
| Indian Health Service (IHS) officers | Meetings with tribal leaders* to hear their perspective of the opioid problem within their tribe (“listen louder” to collect qualitative, descriptive, and anecdotal data)
* to describe TOPP program, and
* offer campaign materials for public posting.
 | 02/01/2018 | $500 | Objective 1, Objective 3 |
| Centers for Disease Control and Prevention (CDC) | Develop Tribal Opioid Partner training* describing risk factors for opioid use disorder and the causes of PDO to explain limited opioid prescribing practices or combination Naloxone/opioid prescribing practices of physicians
* description of symptoms of opioid use disorder and PDO prevention strategies, and
* providing sources to which individuals may be referred to local outpatient Medication-Assisted Treatment (MAT) facilities. 20
 | 02/01/2018 | $700 | Objective 3 |
| IHS pharmacies | Distribute 100 Naloxone kits to 100% of tribal emergency responders and tribal police departments. | 03/01/2018 | $4,000 | Objective 2 |
| IHS officers | Second meeting with individual tribal leaders to hear anecdotal feedback of initial awareness campaign, recruit three Tribal Opioid Partner volunteers (per tribe), and schedule training. | 04/01/2018 | $500 | Objective 1, Objective 3, Evaluation |
| IHS officers | Training provided to 100% (n=33) of all Tribal Opioid Partners, in-person or offered real-time remotely (webinar). | 06/01/2018 | $500 | Objective 3 |
| Tribal Opioid Partners | Quarterly submission of all response/outreach activities. | 09/01/201812/01/201803/01/201906/01/2019etc. | $200 | Objective 4, Evaluation |
| IHS, local hospitals, mortuary data | Quarterly PDO surveillance collection on events occurring within each quarter. | 09/01/201812/01/201803/01/201906/01/2019etc. | $200 | Objective 4, Evaluation |

The role of the three Tribal Opioid Partners in each tribe is critical to the success of the program. Each tribe’s Tribal Opioid Partners will maintain an on-call schedule of availability to inform members of their tribe about the opioid-related support available to them. Tribal Opioid Partners are not intended to be emergency response to overdose situations, but instead to provide information about services, resources, and referrals available for those who struggling with opioid use disorder. They will be trained to provide information about the safe opioid prescribing practices (e.g., co-prescribing Naloxone) to provide health literacy about pain management to patients,21 the risk factors for opioid use disorder and PDO, and resources available to those at risk for opioid use disorder and/or PDO.

**Implementation Challenges**

TOPP faces several obstacles that might challenge its successful implementation. First, as stated earlier, the linchpin of the program is the establishment of a number of Tribal Opioid Partners, which will operate on a volunteer basis. This is inherently challenging, because it requires individuals whose personal lives are sufficiently free enough to allow them to be available as needs arise. Additionally, longevity beyond the scope of the two-year implementation plan of this program may be challenged if the designated Tribal Opioid Partner’s personal lives undergoes changes.

To counteract these challenges, the personal meeting with tribal leaders is of critical importance. By thoroughly explaining the concept to the elders and encouraging contribution of tribal members back to their Native community, it is expected that participation will be compelling.22

**Additionally, to extend the continuity of the program, it is recommended that the three Tribal Opioid Partners for each tribe operate on a rotational three-year appointment. One Partner will serve a one-year appointment, to be replaced with another with a three-year appointment; a second partner will start at the same time as the first, serving a two-year appointment, to be replaced with another with a three-year appointment; and so on (See Figure 4—each color indicates length of term).

Figure 4—Depiction of proposed personnel overlap in the Tribal Opioid Partnership Program.

**EVALUATION PLAN**

Evaluation of the program will exist through a myriad, multi-faceted approach of data collection to IHS through events of opioid overdose reported through emergency services statistics (medical billing), IHS services provided, and local hospital data. Primary data on the effectiveness of the Tribal Opioid Partners will be determined by Partners’ reports of responses provided by each through a standardized form. These statistics will be compiled and analyzed quarterly. It is understood that outreach and response activities may increase as the program gains momentum and awareness spreads through the tribes, anticipated to peak at one year of the program. It is critical that this not be interpreted to infer an increase in actual opioid use, but as an indicator of more complete reporting and a metric of program effectiveness in reaching the community. It is expected Tribal Opioid Partner response frequency will decrease after year one, and will be correlated to an actual decrease in PDO events among AI/AN in Minnesota for the second year. Secondary data collection of opioid use disorder prevalence will be validated and compare to data collected by IHS, local hospitals, MAT facilities, and mortuary data.

**Evaluation Challenges**

 Because the effectiveness of evaluation of TOPP relies heavily on the Tribal Opioid Partners’ own evaluation and self-reporting of activities, evaluation may be limited by their own engagement and interest in the program. However, this challenge is also a strength, in that an absence of reporting may also indicate a lack of activity in the Tribal Opioid Partner role and can highlight needs within the tribe for additional support.

 Another challenge with TOPP is that much of the feedback garnered relies heavily on anecdotal feedback from tribal elders rather than quantitative data. This challenge is countered by multiple layers of event surveillance and data verification from multiple stakeholders. Nonetheless, it is critical to acknowledging the importance of orally-transmitted information within the tribes, even when only anecdotal. Not only does this more descriptive and qualitative information provide a more comprehensive understanding of the problem when dealing with a comparatively small proportion of the national population, but it also demonstrates respect the culture of storytelling as a mechanism of sharing history within AI/AN.

**Existing Programs**

 In many ways, TOPP heavily builds on the opioid program already in place in Minnesota. Of the major elements of MN Opioid STR, three of the primary priorities are mirrored in the objectives proposed in TOPP, including overdose prevention through Naloxone, expedited treatment through peer support, and a statewide media campaign.9 However, TOPP is specifically tailored to strengthen cultural considerations that are weak or lacking in the statewide program. For example, ensuring each tribe has a Tribal Opioid Partner for whom their own dialect is their native language ensures a sense of familiarity and trust which may be difficult to develop with a non-native speaker.23 Additionally, utilizing tribal members to both inform and facilitate the intervention through conversation with tribal elders and recruiting tribal members to the Tribal Opioid Partner role empowers the target population to make existing efforts more effective than they would be otherwise. Based on the existing framework established throughout Minnesota State, there is an economy of efforts that is strengthened by collaboration beyond the sum of its individual parts.

**DISCUSSION**

 In absence of an intervention within Minnesota that gives specific consideration to the needs of AI/AN, it cannot be expected that strategies designed to target the general population will be effective among this population. Rather, genuine respect for the historic and intergenerational experiences of those within tribal nations, bands, and clans is critical to ensure maximum implementation of the recommended intervention, and to provide ongoing evaluative feedback so the intervention can be adjusted to meet needs as they evolve throughout implementation.

 The United States is only enriched by the widely diverse population within its borders. It is clear that PDO, particularly from opioid-based drugs, is at epidemic proportions across the nation, and disparately so among AI/AN. The nation cannot afford to blindly ignore the disproportionate deaths occurring from the overdose of prescription drugs among its indigenous peoples, particularly in Minnesota where the prevalence is so high.

The public health impact that addressing PDO among AI/AN in Minnesota will have cannot be understated. Implementing TOPP as described is anticipated to improve public health through avenues described in some of the Ten Essential Public Health Services:24 it will provide greater understanding of health problems within the AI/AN community, linking people to essential public health services (the Seventh Essential Public Health Service). Data collection and surveillance monitoring will improve, leading to enriched diagnostic effectiveness and investigation into the etiology and factors influencing PDO among tribes (answering the Second Essential Public Health Service). Finally, the proposed intervention will aid in mobilizing partnerships across the community, empowering individuals to work within their own regions to reduce PDO deaths and improve the health and wellbeing of their communities (the Fourth Essential Public Health Service).

**Limitations**

 Although statistics for this paper were compiled from databases strictly categorized according to racial and ethnic origins, limitations of such a system must be fully weighed in discussions of appropriate public health interventions. First, the diversity of culture between distinct tribes, bands, and groups categorized as AI/AN must not be overlooked. The societal norms, traditions, and cultural mores for individuals from different tribal nations or bands may vary widely and an assumption of pan-tribal identity across all AI/AN will only distract further discussions.15 Inferring the intervention outcome may be universal across all AI/AN does not appropriately acknowledge the unique facets and societal characteristics of each tribe. Future projects should be tailored and adjusted to be culturally sensitive to the unique characteristics of each tribe, clan, and nation.

Secondly, although some data referenced refers to rates of PDO deaths among other states for comparison, the living arrangements of AI/AN throughout the country vary widely.25 Some may live on reservations their entire lives, some for only their childhood, while some may have never experienced life on a reservation at all. In many instances, reservations are not constrained to strict state-line boundaries,26 and therefore information about specific rates of PDO among AI/AN within a given state may not provide meaningful information about rates of PDO among the tribes represented therein. This limits the inferences that can be derived from information about rates of PDO among AI/AN within Minnesota, especially as compared to other states.

 Finally, racial classification of AI/AN is notoriously inaccurate in mortality data. This occurs not only because of post-mortem misidentification,27 but also because those reporting multiple other races in conjunction with AI/AN increased by 40% between 2000-2010.28 Therefore, the author has herein utilized data collected using the racial classification of those who identified as AI/AN alone (rather than in conjunction with one or more races) to achieve a preliminary understanding of the scope of the problem. However, the findings cannot be understood to broadly inform pan-tribal interventions and must be understood as most likely an underrepresentation of the scope of the problem since those identifying as multiple races or ethnicities is expected to only increase.

**Research Challenges**

In conducting research on this topic, the author found significant challenges given the lack of data, both at the federal and state level on AI/AN in Minnesota. The Centers for Disease Control and Prevention has been issued a data suppression rule which states that no figures where events number less than 10 can be included in subnational figures.1 Ergo, while state-specific data was queried, only 16 states had sufficient data available about PDO events occurring among AI/AN. This does not mean that Minnesota necessarily has the most acute opioid misuse problem, but only that it does of the 16 states for which data was available and unsuppressed. While privacy concerns legitimately drive the data suppression rule, improved surveillance would broaden current understandings of the PDO problem among AI/AN within the United States.

**Knowledge gaps**

Although culturally adapting evidence-based treatment was effective in one study at increasing the length of time participants remained abstinent from the most commonly-used substances,17 it remains to be seen whether such a program could be modified to a large-scale intervention among an entire tribe, or more implausibly, an entire region or state. Further research is needed to determine to what extent and in what ways future interventions can be tailored to respect and implement the different cultural heritages, and the effect such adaptations may have on program outcomes.

**Policy gaps**

Efforts have been made among Indian Health Service (IHS) pharmacists to curtail prescribing practices, to co-prescribe naloxone with opioids, and to expanding access to MAT in targeted regions,10 such policies have not yet been implemented agency-wide. The only exception to this is the requirement to check Prescription Drug Monitoring Program databases prior to dispensation of opioids, a policy instated last year within IHS.28 Mandating more extensive policies related to opioids within IHS is an unmet need which could more widely protect against potential overdose, open avenues for MAT where it was previously unavailable, and lower the risk of initial drug dependence.29

 Given the sovereignty of tribes, federal or state influence must not be seen as the only route to instate policies designed to mitigate PDO. Instead, public health professionals must seek ways to shape policies originating within the tribal governments themselves when invited30 and must understand that connections between programmatic intention and desired health outcomes may take circuitous routes to the intervention objectives.31

**CONCLUSION**

Reducing rates of PDO among AI/AN within Minnesota would significantly improve the public health of the Native people residing in the state, given the trend toward increased rates of PDO among this demographic seen in the presented data. Despite the existing intervention instated currently within the region, the health disparity between AI/AN and other racial and ethnic groups within the state remains, and the MN Opioid STR is insufficiently equipped to rectify this inequity. Using evidenced-based science, it is anticipated that positioning support personnel (Tribal Opioid Partners) derived directly from the tribal nations and engaging in conversation with tribal elders to strategically intervene will result in reduced prevalence of PDO deaths among AI/AN in Minnesota. By instating trained Tribal Opioid Partners who can refer those at risk for PDO to appropriate resources and services, the Tribal Opioid Partnership Program is expected to successfully reduce the rates of PDO among AI/AN in Minnesota to 30.0/100,000 by January 2020.

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