Safe Healthy Children*:*
Improving Pediatric Immunization Series Completion in Rural American Indian Communities

Pfizer Independent Grants for Learning & Change
Pediatric Immunization Series Completion

Grant ID: 23198901

Main Collaborators:
Great Plains Tribal Chairmen's Health Board, Northern Plains Healthy Start, Great Plains Area Indian Health Service, Northern Plains Epidemiology Center

ABSTRACT

Safe Healthy Children seeks to improve the immunization completion and coverage levels in American Indian children in the Great Plains Area. The project uses a multifaceted approach that seeks to effect change from three different angles. 1. Mobilize the rural American (AI) communities in an effort to create a climate that encourages and empowers parents to immunize their children for the benefit of the community and tribe as whole. 2. The project engages providers in creating system change to reduce provider level barriers to under immunization and immunization timeliness and encourages them to adopt best practices and evidence informed strategies to improve immunization coverage. 3. The project seeks to mitigate patient level barriers and reduce parent hesitancy through education to reduce fears, dispel myths, and empower parents to choose immunization.

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SECTION C

Reviewer Comments

Requests for clarification are indicated in *italics*.

Critique 1: *"Please provide clarity around the evaluation."*
Response:
A detailed description of how the proposed project will be evaluated is addressed in the Evaluation Design section of this proposal (see Section D.5, pp.)

Critique 2: *"In the Full Proposal submission they have requested additional information around the sample size of the population for the Client satisfaction surveys as well as further details around the types of questions and expected response rate."*
Response:
The *Safe Healthy Children* Project will utilize an anonymous, self-administered survey that assesses client satisfaction with the services provided by the NPHS program. The 12 items follow:

1. The services that I receive here are helpful.
2. I value the services that I receive here.
3. I receive the help I need
4. If I could receive services somewhere else, I would still choose to receive services here.
5. I am able to receive services in a time that is convenient for me.
6. The staff here seems helpful and knowledgeable.
7. The staff encourages me to solve my problems
8. The staff believes that I am able to learn, grow, and change
9. The staff here is respectful of my culture and spiritual beliefs.
10. I am comfortable asking questions.
11. I am better able to make good choices.
12. I feel better prepared to make decisions about immunization

The paper survey will be given to clients with a self-addressed envelope at the conclusion of the visit to return to the NPHS Central Office for scoring. Responses to survey items will be scored using a 5-point Likert scale. A raw score will be generated that is based on summing the ratings of the individual items. At the time of writing 118 parents in the NPHS Program would be eligible to complete the survey after participation in immunization education activities. . A larger sample size is anticipated in the future as women are referred from various sources and enrolled in the project. Past experience with mail-in community surveys of AI in the Great Plains would adduce a return rate of approximately 50% or slightly greater.

Section D -Main Section

a) Overall Goals and Objectives

Goal: The overall goal of this project is to improve immunization coverage and series completion among American Indian (AI) children 19- 35 months in the target area to meet Healthy People 2020 goals of 90% by implementing innovative system based changes to address the barriers to immunization completion in a culturally responsive manner at the provider level, community level, and parent/patient level.

Alignment of focus: Immunization completion rates for AI children ages 19-35 months living in the Indian Health Services (IHS) Great Plains Region (GPR) are 19 percentage points below Healthy People 2020 goals of 90% [1] the focus of the RFP for this project is on improving series completion by addressing barriers through system based changes. This focus aligns with each of the organizational objectives of the Great Plains Tribal Chairmen's Health Board (GPTCHB). These objectives are not repeated here due to space constraints, but can be viewed in their entirety in **Section F** of this proposal. Through the chosen objectives and the design of this project we will demonstrate that this project addresses barriers through system based changes on three levels: Provider, Community/Tribal Leadership, and Parent/Individual. Further, this project aligns with and strengthens the system based changes that are being developed and implemented by Indian Health Services (IHS), the region's primary provider of immunizations to AI children.

Objectives: We have selected (3) primary objectives that will lead to achievement of our overall goal. These objectives are presented below and have been expressed more concretely by applying the **SMART** criterion.

Objective 1 - Increase awareness of current immunization trends and knowledge of evidence based improvement strategies among private and public healthcare providers, tribal leaders, and community members.

a) **By August 31, 2017**, we will have provided **(2)** education opportunities, **(2)** community events, and **(2)** culturally relevant Public Service Announcements designed to **increase awareness of current immunization trends and knowledge of evidence based improvement strategies among private and public healthcare providers, tribal leaders, and community members** in each of the **(7)** reservation communities in the target area with 75% of participants reporting that their knowledge and awareness has increased.

Rationale: This project recognizes the importance of tribal leadership and community membership in creating positive consistent messages surrounding the importance of immunization to tribal health. Any efforts to create system based change must include tribal leadership and community members as well as providers. A recent survey of medical residents found that 74% wanted to learn strategies for communicating the benefits and risks of immunization with their patients. [2] Additionally, providers underestimate system based barriers and perceptions of existing barriers often differ between provider and parent.[3,4] The

rationale behind this objective is a belief that system based change to reduce provider level barriers and improve immunization compliance can be achieved through provider education that encourages consistent messages about the benefit and risks of immunization and standardized practices that help to reduce missed opportunities for immunization.

Objective 2 - Assess and mitigate parent/patient level barriers to completion of 4:3:1:3:3:1:4 series immunizations using evidence based and innovative culturally appropriate strategies to improve immunization coverage, timeliness, and series completion.

b) By August 31, 2017, 90% of prenatal and interconceptional parents in each of the (7) reservation communities who participate in the Northern Plains Healthy Start program will have been assessed to determine their perceived parent/patient level barriers to completion of 4:3:1:3:3:1:4 series immunizations and will have received one or more evidence based, innovative, and culturally appropriate intervention strategies address those barriers and improve immunization coverage, timeliness, and series completion.

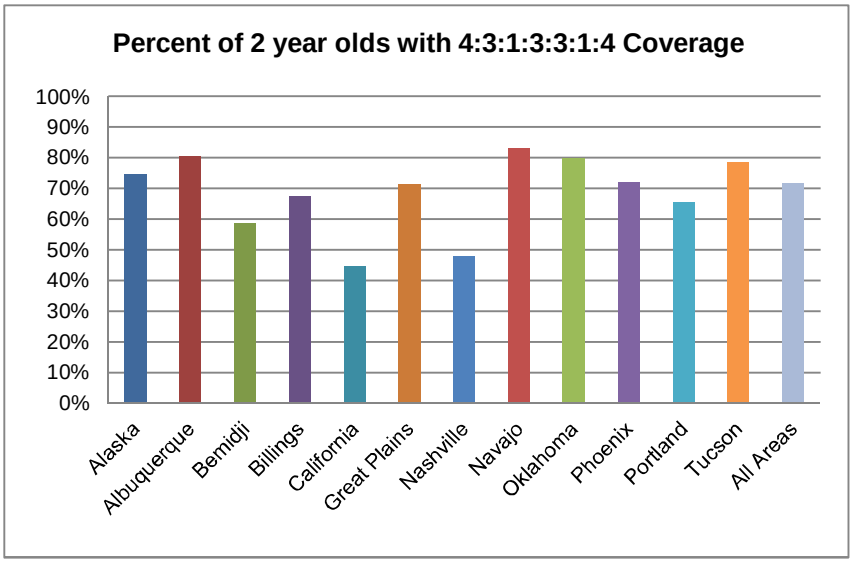
Rationale: A paucity of information exists on beliefs of AI parents regarding the importance of immunizations and AI parent perception of barriers to immunization completion. This objective will allow us to examine the unique attitudes of parents in (7) independent tribal communities and use the information used to address the barriers unique to the tribal members in each community. Together, these interventions will create collective impact in the region.

Objective 3 - Develop culturally appropriate tool kit, manual, resources, and collateral materials for use in the target community and dissemination to other tribal communities who wish implement the project.

c) By October 31, 2017, the resources, fact sheets, and other collateral material developed for use in the target communities throughout this project will be assembled into a culturally appropriate and adaptable tool kit and manual outlining the project. This will be distributed to 100% of the tribes in the Great Plains Region and made available to other tribal communities outside the region through the GPTCHB Website.

Rationale: There are more than 500 independent sovereign American Indian tribes. Each is unique with its own cultural and spiritual beliefs, customs and practices. Still they have much in common including health disparity and high risk for the burden of infectious disease. [5] Culturally relevant and adaptable tools and resources are needed to support and empower tribes to address these disparities. [6] This objective will allow the project to benefit tribal members and continue to improve immunization coverage and completion beyond the target area long after the project is ended.

2. Current Assessment of Need



a. The target area for this project is (7) reservation communities in North and South Dakota. They are part of the IHS service area known as the Great Plains Region (formerly known as the Aberdeen Area and the Northern Plains Region.) All 7 communities are extremely rural, geographically isolated, and impoverished. 56.8% of the AI children in the region live below the poverty level. The Infant Mortality Rate for the (7) reservations averaged 19.05% during the years 2007-2009. All are designated Healthcare Provider Shortage Areas. Some of the communities do not have a pediatrician available and do not offer well child clinics. It is not uncommon for pregnant women to travel 40-70 miles for prenatal care. These conditions make access to immunizations a major barrier. The children in this area are susceptible to infectious disease because they often live in crowded and substandard housing without running water and proper sanitation. Extended families of 12- 15 people living in a two bedroom house are common. Immunization is not only important for the child, but for the others that the child has the probability of infecting should they become sick. The children in these communities are at risk of adverse health outcomes and face health inequity. Immunization completion rates in the region consistently fall 19 percentage points below the Healthy People 2020 goals of 90% and routinely below other AI serviced by the IHS. The chart demonstrates the coverage levels at the end of the 2nd quarter of 2015.

b The Great Plains IH S Area office extracts summary immunization data on a quarterly basis from the IH S National Immunization Reporting System (NIRS). The NIRS is a web-based system that receives RPMS immunization data from all IH S and tribal facilities. This project will benefit from the long-standing partnership formalized through Cooperative Agreement that the GPTCHB has with the Great Plains IH S Area office to receive public health data. The Area Office will provide two standardized reports (3-27 Month-Old, and, Two-Year-Old reports). Ad hoc report templates may be created to meet more specific data needs of this project. These reports will *provide baseline and quarterly* data summaries of the 4:3:1:3:3:1:4 series. Primary metrics that will be monitored throughout the project period include rates of coverage and completion of vaccinations. The following two tables reflect immunization levels (series completion) and reveal missed immunizations (coverage). Figure 1 is an example of the way in which data abstracted from the Two-Year-Old report may be displayed. Overall, the rates of immunization completion for the Great Plains are quite comparable to all IH S facilities across the nation.

Figure 1. Quarterly Comparison of Rates of Immunization Series Completion among Two-Year-Olds: Great Plains Area vs. National I HS, 2013-2014

	2013				2014			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Great Plains Area	67%	70%	72%	73%	73%	73%	76%	75%
National IHS	72%	73%	74%	74%	74%	74%	74%	73%

Figure 2 shows an area-wide comparison with IH S rates of immunization coverage among two-year-olds over the same period. This data summary is based on data isolated from the 3-27 Month-Old report.

Figure 2. Quarterly Comparison of Rates of Immunization Coverage among Two-Year-Olds: Great Plains Area vs. National I HS, 2013-2014

	2013				2014			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Great Plains Area	65%	68%	73%	73%	71%	71%	74%	70%
National IHS	72%	72%	73%	73%	72%	72%	72%	72%

The NIRS report menu used by the Area office to produce reports offers flexibility for filtering, selecting and defining patient groups (for example, by date range, age group, facility, and community). Summary statistics on immunization coverage for each of the seven sites targeted in the Great Plains Area during the most recent quarter are shown below (see Figure 3).

Figure 3. Immunization Completion of Two-Year-Olds by Site (July 1 through September 30, 2015)

Site	Number Vaccinated	Patient Population	Percent vaccinated
Crow Creek	64	67	96%
Flandreau*	--	--	--
Ft. Berthold*	--	--	--
Lake Traverse	153	192	80%
Spirit Lake	103	150	69%
Standing Rock	114	189	60%
Turtle Mountain	229	279	82%

*This site has not been able to upload quarterly immunization data to the NIRS due to recent staff changes. The site recently reported that plans are underway to begin uploading local data to the NIRS

3. Target Audience

This project targets (7) tribal reservation communities in the Great Plains Region: The Fort Berthold Reservation, Turtle Mountain, and Sprit Lake Reservation in North Dakota and the Flandreau, and Crow Creek Reservations in South Dakota, and the Standing Rock and Lake

Traverse Reservations which span North and South Dakota. Three audiences are targeted for engagement in these communities. These audiences include providers, community members, and parents-children. Providers are those licensed health professionals employed or contracted at any of the IH S, or tribal facilities that are authorized to vaccinate infants and children. The community consists of all stakeholders, including tribal government, educators, health professionals, involved citizens, and any other individuals or groups with an interest in immunization-related topics, at each of the 7 sites.

All infants and children born to women who self-identify as American Indian (AI) and choose to enroll in the NPHS Program will automatically be enrolled, and benefit from, educational opportunities offered in the Safe Healthy Children Project. A participating parent may be a father, birth mother, or other legal guardian authorized to decide if a child may be vaccinated. The parent's place of residence must be within the boundaries of one of the Great Plains Area counties served by the NPHS Program. Parents will be recruited to participate in the parent-child interventions through one of several different avenues. Prenatal mothers will be recruited to participate through referrals from prenatal clinics, WIC, and the NPHS Program. An additional source of referral for parents with children will be generated from patient lists compiled from RPMS reports at each of the 7 sites. Finally, "Welcome Packages" distributed to postpartum mothers of newborns at delivery hospitals and self-referrals from outreach activities will serve as additional opportunities for recruitment of parents and children.

a) Commitment of participants

Currently, sufficient information does not exist to tell us the level of commitment that the providers, community members, and parents in the target communities have toward improving immunization completion and coverage in their community. The project will use the Community Readiness Model and Assessment to determine this. This is the culturally appropriate way to approach change in American Indian communities and it an evidence based fact that the most effective way to effect lasting change in communities is to meet the community where they are and let the key stakeholders in the community drive the action plan.

What we do know is that providers in the community are highly committed individuals who work in an environment where the facilities are seriously understaffed and underfunded and the patient need for services is critical. The commitment of the providers is demonstrated in the sacrifices they make to live and work in the isolated impoverished rural reservation communities where housing is often substandard, services for their families are limited, and the winters are harsh. The tribal leadership in the communities is passionately committed to the Oyate they serve. It is challenging to serve a community where there is so much need and so little resource. These are a strong and resilient people. Children are sacred in American Indian culture and the parents in these communities do not lack commitment to their children, though social ills that are a result of historical and generational trauma, lack of economic opportunity, and lack of resources often lead outsiders to question their commitment. The American Indian people of this region share a cultural and spiritual belief that they are responsible for the next

generation and the one before. If the importance of immunization to the health and wellbeing of the tribe as a whole and that timely, and complete immunization of the tribe's children is vital, beliefs will guide behavior and we will see immunizations complete. Education is the key.

We also know that there is a tremendous commitment on the part of the organizations that will collaborate with us. The Great Plains Tribal Chairmen's Health Board passed a resolution in support of this effort in July, 2015, and in November at the Great Plains Area Budget Formulation meeting Maternal Child Health is the top priority and Immunization Completion is the number (2) preventative measure priorities out of (11).

B) **Scope of impact** – The scope of the target audience(s) is big enough to impact the gap that we are endeavoring to close. System wide changes and mobilizing the whole community should allow us to meet our local goals. Reservation communities are very different from urban communities because the intimately close relationships of tribal members have a strong impact on the climate and culture. This is why the multi-faceted strategies applied to address barriers at the provider, patient, and community level are so important. There were approximately 700 children in the (7) communities who were age 19-35 in the 2nd quarter of 2015. They represent 34% of the entire region's children in this age group.

A major strength of this application is the comprehensive, multi-level approach proposed for increasing immunization rates. This approach recognizes that there are many stakeholders in tribal communities with a vested interest in protecting the health of its children against vaccine-preventable diseases. The implementation of the proposed approach is consistent with current evidence which recommends that an optimal vaccination strategy for children should include a combination of community-based interventions that lead to increases in community demand, enhanced access to community services, and reductions in missed opportunities by providers.[10] The three audiences targeted in this project will benefit from an array of culturally appropriate, evidence-based intervention strategies. These strategies will be carried out by experienced NPHS CHWs who are members of the local community. The anticipated effect of these strategies will be assessed using methods and instruments that have been scientifically validated.

Beneficiaries: The primary beneficiaries will be all of the AI children age 2-35 months living in one of the (7) communities who will experience improved immunization coverage. Because herd immunity is so important, the communities as a whole are secondary beneficiaries in closing the gap. This is particularly true for the elderly who are the second most vulnerable group. Additionally, the work done in the (7) communities to assess the readiness of each of the communities to address immunization coverage and series completion will benefit our collaborative partners and the work that they are doing. For example, mothers who learn about immunization for their children and address their hesitancy are also more likely to immunize themselves against other vaccine preventable infectious disease. It is very likely that the target communities will also see increases in adult immunizations.

4. Project Design and Methods

a) Description of design and methods

Design: The proposed project will employ a cohort design with 18 months of follow-up of parents and children who elect to participate in the project. The capture of individual birth and immunization data on infants born during the two-year performance period will allow us to obtain the fullest advantage of the time available to observe immunization status.

Sample: The base population will consist of infants and children born to AI women over an 18-month period where the mother's place of residence falls within the boundaries of one of the Great Plains Area counties. The shaded areas in Figure 4 depict all 56 reservation counties in North Dakota and South Dakota. Postnatal follow-up, including well-baby visits and vaccinations, are delivered by providers from IH S and tribal health clinics upon return of a mother and newborn to their home community.

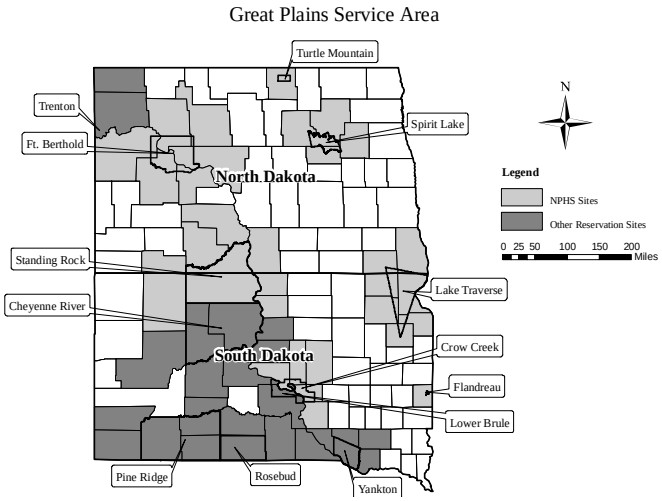


Figure 4. Reservation Counties in North Dakota and South Dakota

The majority of births occur in facilities contracted by the IH S to provide labor and delivery services. Figure 5 shows the number of live births for the most recent two years at the 7 NPHS sites.

An interventional cohort will be formed by infants born to mothers who reside in one of the 7 tribal communities designated by the counties shaded in light gray. The NPHS CHWs based at each of the 7 sites will follow up with participants who are recruited into the project. The 7 sites are shown below.

Tribe	No. of Live Births
Crow Creek	208
Flandreau	39
Ft. Berthold	343
Lake Traverse	272
Spirit Lake	307
Standing Rock	202
Turtle Mountain	541
Total	**1,912**

Figure 5. Number of Live Births, Seven NPHS Sites, 2013-2014.

A second comparison cohort will consist of those infants and children born to mothers over the same period of time who are residents of counties that constitute the other 6 tribal communities in the region. These are the counties shaded in dark gray. Members of both cohorts will be identified and verified using birth records obtained from the state offices of vital records. Individual birth certificate data on enrollees in the intervention cohort will be linked to immunization records kept at the IH S facilities at the 7 sites or entered directly into the state immunization registries. Both cohorts will be followed prospectively for up to 18 months to ascertain postnatal immunization status.

Safe Healthy Children will employ a multifaceted set of strategies to improve immunization completion. The design of this project capitalizes on already existing assets, resources, and relationships in the (7) tribal communities selected. GPTCHB operates the Northern Plains Healthy Start (NPHS) Program in each of these communities. The NPHS program serves women of childbearing age and their children from birth to 24 months and provides case management, health education, screening and referral services, enabling services (such as transportation and accompaniment), and home visiting services through Community Health Workers (CHW) who are members of the local community. The project will benefit from already existing MOU(s) with each of the tribes, HIPAA Compliant Business Agreements with IHS and agencies such as WIC, existing data collection systems, data coordination staff, and an initial parent/child client base that will be expanded through recruitment efforts. The Safe Healthy Children project will approach the issue and under immunization using **(3) strategies** guiding a series of programmatic activities designed to help us meet our objectives and ultimately reach our overall goal:

- **Strategy 1:** ***Encourage and support the community to mobilize*** around the need to improve immunization completion by engaging each of the (7) targeted communities in Community Readiness Assessment (CRA) through which their current level of engagement in surrounding immunization can be determined, community level barriers can be identified, and a plan for change can be adopted. The action plans that develop will be community driven, unique, and specific to each community and their needs, as identified in the CRA. In year (2) of the project, Safe Healthy Children will provide support to each community to carry out its action plan. Additionally, in year (1) a program of consistent health messaging will be distributed through education opportunities at each community's Annual Health Fair and other cultural/ or community events, PSAs, and through outreach activities of the NPHS CHWs. Some of these messages will include the importance of herd immunity to AI communities, and the importance of having all immunizations current by 12 months. In year 2 of the project, these health messages will be community specific based on the areas of need identified in their CRA. The products and activities conducted in implementation of this strategy are detailed in the work plan section of this proposal.

- **Strategy 2 -*Implement system changes*** in collaboration with IHS providers to reduce barriers at the provider/facility level and improve pediatric coverage and completion. Providers are included in the project's definition of community and there will be provider representation in the CRA that is conducted in each of the (7) communities. In addition to this assessment, collaboration and support will be given to the providers at IHS/tribal clinic facilities to identify an immunization champion from among their staff who will serve as a point of contact and work closely with Safe Health Children program staff and NPHS CHW in the community. This group will work together to inventory current strategies that the providers are using in the facility and explore new strategies and best practices that they might like to adopt in an effort to reduce system barriers to immunization and reduce missed opportunities to immunize children, and improve immunization coverage and completion. In Year 1, live interactive

education opportunities using a rapid response polling system will be created to inform providers on current series completion trends and missed opportunity trends in their facility and share possible strategies and best practices that could be implemented in their facility. We would seek CME incentives through the IHS Customer Support System, if possible, to encourage providers to participate. In year 2, education topics would be driven by each facility's needs as determined by the community CRA and the action plan they develop. The goal of these education events will be sharing and encouraging the development of policies and system changes that will continue to have a positive impact on coverage and completion levels past the end of the Safe Healthy Children project period.

- **Strategy 3 -Apply innovative strategies to reduce barriers and empower parents** through education to improve immunization completion for their children. Parents are a subset of the "community" and parents will be represented in the community CRA which will include the identification of barriers that parents face in each community. They will also be represented in the community action plans and the activities that arise as the community mobilizes. In addition, parents will be recruited to receive direct services from NPHS through referrals from IHS, WIC, prenatal clinics, labor and delivery facilities, and other outreach activities conducted by NPHS CHWs.
  Direct services include education on immunizations using the evidence based ***Family Spirit*** curriculum modules. Attention will be given to prenatal parents to provide education to help them make the decision, while they are still pregnant, to immunize their children. Certificates honoring their decision to parent a ***Safe Healthy Child*** will be given to prenatal parents who receive education and make the choice to immunize. Other innovative strategies to encourage parents to immunize their children will include the use of social media to promote immunization, send consistent health messages surrounding immunization, and allow parents to proudly share their decisions to immunize on a Safe Healthy Child social media page. (More detail on specific products and materials that will be used or developed for implementing this strategy can be found in the work plan and deliverables section)

b) Addressing the Need: The planned project addresses the need to improve immunization series completion by using a strengths perspective and engaging all stakeholders in the process to create a community wide culture that supports and encourages protecting the tribe's members from vaccine preventable diseases through timely, appropriate, and complete immunization of its children against the burden of infectious childhood disease. This multi-participant approach is consistent with the cultural value and worldview of connectedness held by the AI people of the region and with the research demonstrating increased efficacy when multilevel approaches are employed to increase immunizations. Further, it approaches the need from a strengths perspective that views the entire community as having something to contribute to improving immunization and benefiting from improved immunization.

c) E**ngagement**: The project is designed to engage all stakeholder groups in a variety of ways. A Community Readiness Assessment (CRA) will be conducted in each of the (7) communities. We will use the Community Readiness Model developed at Colorado State

University for this assessment. While the university is no longer providing technical assistance for this model, GPTCHB, through NPTEC, has experience in using this model and will provide technical support to our project staff in conducting and scoring the assessment. This assessment tool will become a measurement of each community's level of engagement on the key elements required for creating positive change in a community. These areas include: Knowledge of efforts surrounding the current issue – in this case immunization, Leadership, Community Climate, Knowledge about the issue, and Resources available to support improving the current condition. Additionally, level of engagement will be determined for every education activity and community event through self- report questionnaires will be collected. These questionnaires will include key questions regarding the participant's current level of engagement in the CRM (5) key areas, as well as whether the particular event they are participating in has increased their engagement. Engagement of parents who participate in the project through activities with NPHS will be determined through a self-report assessment that asks about their use/ and or the value of various tools, materials, and resources that are made available to them; they will complete pre and posttests when education modules are presented to them and they will conduct surveys that ask how helpful these materials were to them in increasing their engagement in one of the (6) key areas and how informative and helpful the other materials and information they received was to them. Lastly, as part of the process evaluation with CHWs We will develop an instrument to collect their observations of participant engagement.

d) Non Duplication Measures: In preparing this proposal, our grant writing team has committed considerable time to research the current body of literature on improving immunization completion and found that a paucity of research exists on projects that improve immunization coverage and completion for American Indian children. Most of the work that has been done in AI communities has been in the area of adult vaccinations, flu vaccinations, and HPv. We were unable to find any project that used a multifaceted approach with providers, community, and individuals. We were unable to find any work that had been done with American Indian prenatal women to help them make the decision to immunize. GPTCHB has over 30 years of experience working with Tribes and the IHS in the Great Plains Region and we bring historical and current knowledge of the activities and projects currently being conducted with the AI communities in the region's 18 tribal communities that span 4 states and we find that while many of the strategies employed throughout the project are not themselves original, these strategies have not been implemented as a collective set of strategies used to improve pediatric immunization in among American Indian children in the Great Plains Region. When appropriate, we have also chosen tools, materials, and assessments for the project's use (e.g. CRA, CDC fact sheets, brochures, schedules) that have been developed, so as not to duplicate these efforts. When culturally specific materials and resources are deemed more appropriate for use in our communities, we will develop them.

e) How this project builds on existing work:

This project builds on existing work in the target communities in three synergistic ways. Preliminary discussion with IHS immunization program managers in preparing this proposal

revealed that IHS is interested in using text messaging. Through these preliminary discussions, a site has been identified that would like to pilot a text messaging reminder system and the preliminary plans to have the system running in time for a January 2016 implementation date have been made. If this proposal is funded, we will work with IHS as they pilot the TeleVox/VAKS system in one of our targeted communities. Project staff, including NPHS CHWs in the pilot community, will provide support to this work. They will introduce the system to NPHS parents in the pilot community, follow up to determine if parents begin using the system, and query how they feel about its value if they do use it. In all (7) areas NPHS parents will be queried about their interest in text messaging as a reminder method. Currently, there are 108 parents in the NPHS program that are eligible to be queried on their interest in text messaging for appointment reminders, but this is expected to grow to a minimum of 250 over the next year based on current program goals. This opportunity for collective impact in working with the IHS facilities to eventually bring text messaging to the entire region led us to remove our original strategy of building our own text messaging system through this project. We feel that supporting the IHS service unit's work is a better stewardship of resources and it supports work that will benefit the region for years to come because it is sustainable and will not go away after this project ends. We took the same approach with the immunization hotline that we included in our LOI. Further investigation into the potential of this resource and evaluation of what is already available revealed that the CDC operates a hotline already and our resources would be better used to promote this valuable tool within the communities in the target area, once again leveraging the opportunity for collective impact.

This project also builds on the outreach goals of NPHS and their efforts to decrease infant mortality in the Great Plains region. NPHS has continuously operated the HS program in communities throughout the region (including (3) of the (7) selected for this project) over the past 25 years. This project leverages the work that is already being done by NPHS CHWs and the program's resources such as the Family Spirit Curriculum and staff FTE to provide education to parents on immunization. It also leverages existing relationships in all (7) communities with IHS, WIC, and other Maternal Child Health agencies/providers to conduct outreach and recruitment activities, give and receive referrals, distribute education materials, and spread positive consistent messages throughout the communities regarding the importance of immunization to community health and wellbeing. Lastly, the project allows us to build on the work that is being done in the region by the NPTEC. NPTEC's mission is to promote and improve the health and wellness of American Indians in the Northern Plains by partnering with Tribal communities and key public health stakeholders to provide public health and epidemiology expertise, education and training and health research. Since its inception, NPTEC has continued to develop new programs and built strong partnerships for health surveillance and monitoring, data dissemination, health promotion and research. NPTEC actively works to mitigate the disparity in AI communities caused by infectious disease and currently Maternal Child health issues are also a major priority and focus of their activities. Their technical support to us will be invaluable as we work to conduct the Community Readiness Assessments in the (7) targeted

communities and the information that we gain in learning the readiness of each community will support their current efforts to address infectious vaccine preventable disease.

f) Sharing of collateral materials: A number of products including instruments, surveys, questionnaires, educational materials, fact sheets, brochures, PSAs, and other resources will be developed or adapted for cultural appropriateness. These items will be gathered into a toolkit to meet the project's 3rd objective. The (7) communities participating in the CRA will be given the opportunity to present their experience and highlight the community action plan and activities that were developed a result of their CRA. This will also be included in the toolkit which will be available to the public through the GPTCHB website free of charge.

5. Evaluation Design

a) Metrics: Determining if the Practice gap is addressed

Methods of Evaluation: The proposed project will employ several types of evaluation. A formative evaluation will be performed in Year 1 using the *Community Readiness for Community Change* model (Oetting et al., 2014). This program uses a formal assessment process for determining a community's level of readiness to address a community issue. The assessment is based on the collection of data in 5 different domains: (1) Community knowledge of the issue; (2) community knowledge of efforts; (3) community climate; (4) leadership; and, (5) resources. The attitudes, knowledge, efforts and activities, and existing resources of the community and its leadership are abstracted in order to assess a community's readiness for change and to develop a follow-up action plan. Also, baseline data will be collected prior to the start of continuing education activities or workshops with providers; data from parents on knowledge of childhood immunizations will also be collected.

Identify Data Sources:

Safe Healthy Children is a project rich in data sources. The table below shows the details of the data sources that will be used during the 2 year project Period.

Figure 6. Evaluation Metrics

Metric (P=Process; O= Outcome)	Artifact or Instrument	Description	Data Source(s)	Frequency of Data Collection
Community Readiness Assessment				
P: Number and type of participants at CRA community workshop	☐ Sign-in sheet ☐ CRA Goals Analysis worksheet	Tool used in community workshop that lists goals for Action Plan.	☐ Parents ☐ Providers ☐ Other cmmunity members ☐ External stakeholders	Year 1: 1 time for each of 7 sites = 7 instances
P: Number and type of participants at CRA SWOT Analysis	☐ Sign-in sheet ☐ CRA: Documentation of SWOT Analysis	Summary of activity that informs Action Plan	☐ Parents ☐ Providers ☐ Other community members ☐ External stakeholders	Year 1: 1 time for each of 7 sites = 7 instances

O: Five dimensional scores and overall score of community readiness	Community Readiness Assessment (CRA): Key Respondent Interview/Brief Assessment	Semi-structured, scored interview that assesses 5 dimensions of community readiness	Providers (n=2) Parents (n=2) Key informant community members (n=2)	Year 1: 1 time per group per site per year = 21 instances
O: Community Action Plan document	CRA: Community Action Plan	Record of planned community interventions and strategies	Parents Providers Other community members External stakeholders	Year 1: 1 time for each of 7 sites = 7 instances
O: Number of participants at community events	Sign-in sheet	List of persons who attend event	Stakeholders	Years 1 and 2: 2 times per site per year = 28 instances
Providers				
P: Enhanced understanding of provider perspective on immunization at each site	Unstructured interview with site champion	Formal interview with site champion to solicit input and feedback on site engagement and participation	Providers	Years 1 and 2: 4 times per site per year = 56 instances
P: Number of participants	Sign-in sheet Provider Interview Guide (Groom et al., 2012)	Group interview that assesses barriers and immunization best practices	Providers	Year 1: 1 time for each of 7 sites = 7 instances
O: Number and percent of individuals with increased awareness and knowledge of immunization trends and strategies	Audience Response System (ARS)	Anonymized data collection technology that allows group participants to enter workshop data in real-time at item level	Providers	Years 1 and 2: 1 time per site per year = 14 instances
O: Number and percent of individuals with increased awareness and knowledge of immunization trends and strategies	Pre- and post-test provider survey of knowledge and awareness of immunization issues	Provider survey of knowledge gained after attending an educational event	Providers	Years 1 and 2: 1 time per site per year = 14 instances

O: Number of System or policy changes at the I/T/U level	☐ Change in health facility policy ☐ Tribal proclamation ☐ Tribal resolution	System of policy changes at facility or tribal government levels	☐ Clinic or Tribal Administration	As occurs
Parents				
P: Number and percent of enrolled parents who participate in module activities	☐ *Family Spirit (FS)* Infant Care Modules 10 and 11 – Knowledge Assessments	Two 5-item pencil-and-paper instrument that measures immunization topics	☐ Parents	At time of one-on-one education visit between parent and NPHS CHW
P: Individual satisfaction score	☐ *Safe Healthy Children* Client Satisfaction Survey	A 12-item survey collected data at each encounter for quality improvement.	☐ Parents	As occurs; at the conclusion of each parent encounter
O: Number and percent of individuals with increased knowledge of immunization trends and strategies	☐ *Parent Attitudes about Childhood* Vaccines (PACV) (Opel et al., 2013)	15-item, self-administered paper survey that assesses parental attitudes and beliefs about	☐ Parents	As occurs; during one-on-one education visit with NPHS CHW
O: Individual scores on assessments	☐ *Family Spirit (FS)* Infant Care Modules 10 and 11 – Knowledge Assessments	Two 5-item pencil-and-paper instrument that measures knowledge of immunization topics	☐ Parents	At time of one-on-one education visit between parent and NPHS CHW
O: Antepartum Decision to Immunize	☐ Proclamation document	A signed document that declares intent to immunize	☐ Parents	As occurs
O: Reduced impact of barriers to immunization	☐ Quarterly RPMS report	Case manager option in RPMS reports menu to identify immunization eligible children with missed appointments	☐ Parents	Years 1 and 2: 4 times per site per year = 56 instances

Data Collection and Analysis

Data Collection will occur at each encounter or event using the instruments listed in the chart above. Some data will be collected by self-report; some will be through observation of key informants and CHWs as part of their process evaluations. A great deal of data will be available to the project through the IHS RPMS system. This system allows us the opportunity to query the Electronic record and run reports to analyze the coverage and completion rates in each facility as well as the number of times that a child was in the facility and not immunized, the number of

missed appointments and other information that will help us to determine practice gaps and measure the change that is occurring over time in immunization coverage.

Analytic Plan:

•Baseline analysis of subgroups of children defined by age since birth will aid in the identification of gaps in coverage prior to the implementation of the proposed strategies.

•Immunization rates of coverage and completion at the intervention sites will be compared with rates at the comparison sites.

•No. of late doses per quarter in both intervention and comparison cohorts

•Examination of the individual and group response to the text messaging will help to evaluate the feasibility of the TeleVox system.

At 19 months:

•Percentage of days under immunized by site, within-cohort, between cohorts

•Cross- site differences and overall 7 sites

The change in knowledge of providers will be determined by self-report and also using rapid response polling during workshops. The changes will be evidenced by the system changes that are adopted at the service unit and recorded as observations by the immunization champions at each facility as part of their participation in process evaluation. The change in knowledge among parents will be measured through a variety of self-report surveys collected over the project period. Additionally parents will take pre and posttests after each education model. The relationship between change in knowledge and short-term outcomes will be evidenced by changes that occur at the service unit level. For example, system changes like more attention to flagging accounts so that lost opportunities can be now be leveraged to vaccinate when children are in the facility for other reasons, or improved reminder systems that help parents remember appointments. These system changes that come through increased knowledge then lead to increased coverage and completion that is demonstrated in RMPS reports. Relationships between provider barriers to vaccination and immunization status can be measured using the PIP Key informant interview guide and the relationship between parental barriers to vaccination and immunization status can be measured using the parental attitudes about childhood vaccines PACV instrument.

Data Sources: The project will acquire and utilize data from multiple sources. The NIRS and state immunization registries will be used to measure progress on the intermediate outcomes. Public Health Data Sources Such as the Departments of Vital Records will also be used. Preliminary discussions with state Departments of Vital Records/Statistics Individual birth record data will be obtained from the North and South Dakota Departments of Health. The GPTCHB currently has a strong working relationship with the departments. We will leverage this relationship with appropriate approvals and through the appropriate channels to obtain individual birth record data, as recorded on the birth certificates.

State IIS registries will also be used. Immunization records for all AI children will be used in subsequent analyses. Data that will be used include: Race, date of birth, county of child's residence, vaccine name, provider type and date of administration. [RPMS/NIRS]: The Great Plains Area Indian Health Service (GPAIHS), which operates in all area IHS and tribally managed

service units to provide health care, receives quarterly data updates from each of the participating facilities via the IH S National Immunization Reporting System.

b.) Quantify the amount of change that your expect

The amount of change expected from this project will vary with the metrics used to assess progress with each target audience. The project will also utilize a set of performance standards for monitoring progress toward both Healthy People 2020 and IH S goals. [HP 2020] The Safe Healthy Children Project will also monitor changes in immunization coverage for the 4:3:1:3:3:1:4 series in children over the 18-month measurement period. Our overreaching goal is to see this number increase to 90%, and that is a lofty goal, but with the multifaceted approach that is being implemented to raise the needle on this metric the goal is possible. The measure that it is raised will vary from community to community depending on their readiness to change, but we expect to go from a baseline measurement of 71% to our goal of 90%.

c.) Outcome dissemination

We will seek opportunities to publish articles of our experience in peer reviewed journals and trade publications. We will also seek opportunities to share our experience at the GPYCHB Annual Health Summit, Healthy Start Annual Convention, and other it would be disseminated The project will create a tool kit and it will be available on the website. All of the promotional materials, surveys, and other collateral materials that are developed or modified during the course of the project will go in it. The tool kit will also have story pages highlighting the experience of the communities as they participated in the Community Action Plan process through the project. Since Storytelling is part of AI culture this product should be particularly helpful to others who want to effect change in immunization coverage in their communities.

6. Detailed Workplan Narrative

Safe Healthy Children is a (2) year project with integrated deliverables that approaches meeting project objectives and deliverables through tasks that are organized in (3) key areas or strategies:

Project Strategy 1 - Mobilizing the community to create a community wide culture that encourages and empowers parents to immunize their children – This will occur through activities to conduct a community specific readiness assessment and action plan that will drive the community events, education activities, and Health Messaging in each community.

Project Objective 1 - By August 31, 2017, we will have provided (2) education opportunities, (2) community events, (2) culturally relevant Public Service Announcements, and (2) other health messaging products designed to increase awareness of current immunization trends and knowledge of evidence based improvement strategies among private and public healthcare providers, tribal leaders, and community members in each of the (7) reservation communities in the target area with 75% of participants reporting that their knowledge and awareness has increased.

Project Strategy 2 - Implement system changes at the provider level – Project strategy 2 also contributes to achieving objective 1, but in this case through specific provider level activities with the IHS facilities in each community. This will result in reduction of provider level barriers that parents face, by adopting facility specific provider selected system changes. (See Workplan Table below and Strategy 2 under Section D – Program Design). Each facility will have its own ideas about what these changes will be based on the need, but an example might be the adoption of a text messaging system like TeleVox/ VAKs. The work on this strategy will involve a collaborative ongoing effort throughout the project by project staff (Immunization Champion) and the IHS facility to assess, implement, and monitor best practices and evidence informed strategies to improve series completion.

Project Objective 2 - Increase awareness of current immunization trends and knowledge of evidence based improvement strategies among private and public healthcare providers, tribal leaders, and community members.

Project Strategy 3 - Apply innovative strategies to reduce barriers and empower parents – these activities in the Workplan leverage the NPHS CHWs to conduct individual assessment and education to reduce barriers and empower parents. They also include the use of Social Media and in the TeleVox pilot site Text Messaging reminders. Community level outreach and promotional activities, such as Health Fairs and presentations to the community that work to create an immunization aware and empowering climate are also part of this strategy leading toward reaching the Project Objective 2.

Project Objective 2- By August 31, 2017, 90% of prenatal and interconceptional parents in each of the (7) reservation communities who participate in the Northern Plains Healthy Start program will have been assessed to determine their perceived parent/patient level barriers to completion of 4:3:1:3:3:1:4 series immunizations and will have received one or more evidence based, innovative, and culturally appropriate intervention strategies address those barriers and improve immunization coverage, timeliness, and series completion

Sustainability

This project seeks to achieve impact past the project end date creating ongoing collective impact with the community and opportunities for ongoing and continuous quality improvement within the systems that effect immunization coverage and completion in a community. In order to accomplish this we will create a toolkit that can be used by other communities who want to effect change and improve immunizations. Through the project we will create a Social Medial Page will be maintained after the project period by GPTCHB staff as part of the MCH department website. This will allow the communities to continue to support and promote their action plans after the project period and will become a venue to promote positive messages surrounding immunization to all of 18 tribal communities represented by the GPTCHB. The Toolkit created through this project will be maintained after the project period by GPTCHB staff as part of the MCH department website. It will provide a FREE resource to change agents nationally who might want to create positive change in their own communities.

Project Objective 3 -By October 31, 2017, the resources, fact sheets, and other collateral material developed for use in the target communities throughout this project will be assembled into a culturally appropriate and adaptable tool kit and manual outlining the project. This will be distributed to 100% of the tribes in the Great Plains Region and made available to other tribal communities outside the region through the GPTCHB Website.

Workplan Table

Strategy / Objective	Activities	Responsible Person All include project lead/director	Deliverable	Month Yr. 1	Month Yr. 2	Due date Yr. 1 Yr. 2
Start Up	Recruit Staff, Champions	Project Lead/Director	Hire (2) Staff, recruit (7) Champions (1) in each community	1-2		12/31/16
Start Up	Develop Surveys and data collection instruments	Program Assistant	Initial surveys and data collection instruments to be added to the tool kit	1-3		12/31/16
Start Up	Create and launch Social Media page	Program Assistant	Social Media page	1-3		12/31/16
Mobilize Community	Develop Health Messaging	Program Assistant	Yr. 1 – Initial Health Education message products Yr. 2 – Community Specific Health Education message products	1-3	1-3	12/31/16
Objective 1 Objective 3						8/31/17
Mobilize Community	Disseminate messaging	Program Assistant	Consistent messages distributed to community	1-12	1-9	12/31/16
Objective 1 Objective 3						8/31/17
Mobilize Community	Begin CRA Interviews	Project Program Assistant/CHW	Interview Transcripts from 7 sites	2-8		8/31/17
Objective 1						
Mobilize Community	Scoring CRA	Project Program Assistant/Program Assistant	Knowledge of community readiness	2-8		8/31/17
Objective 1						
Mobilize Community	Community Education Events	Project Program Assistant/CHW at Site	(7)Community Action Plans presented, (7) Community Education Events (1)	3-10	3-10	8/31/17
Objective 1						

Strategy / Objective	Activities	Responsible Person All include project lead/director	Deliverable	Month Yr. 1	Month Yr. 2	Due date Yr. 1 Yr. 2
Provider Level System Change / Objective 1	Begin gathering reports in preparation for Provider Education & Awareness Workshop	Site immunization champion/Project Program Assistant	Reports showing facility status on series completion and missed Opportunities	1-3	4-6	8/31/17
Provider Level System Change / Objective 1	Implement Provider Education & Awareness Workshop	Site immunization champion/Project Program Assistant	Provider Education & Awareness Workshop	1-3	4-6	8/31/2017
Provider Level System Change / Objective 1	Establish and conduct ongoing quarterly check-ins with the clinics	Site immunization champion/Project Program Assistant	Quarterly reports from RPMS and evaluation reports from Immunization Champions	3-12	1-9	9/30/2017
Provider Level System Change / Objective 1	Implement & begin ongoing selected system changes	Site Champions Project Program Assistant	Quarterly reports from RPMS and evaluation reports from Immunization Champions	3-12	1-9	9/30/2017
Individual Parent Level Activities are conducted within the Healthy Start Program with existing Healthy Start Participants and Parents that are recruited through Project Activities at the Community & Provider level						
Reduce Parent Barriers / Objective 2	Train CHWs at each site to implement the project activities	Program Assistant/ CHWs	CHWs knowledge & Capacity increased.	1		8/31/2017
Reduce Parent Barriers / Objective 2	Develop and disseminate educational materials	Program Assistant /CHWs	Brochures, fact sheets, welcome packets	1-12	1-10	8/31/2017
Reduce Parent Barriers / Objective 2	Begin educating parents with Family Spirit modules	Program Assistant/ CHWs	Pretest/ post tests Surveys Knowledge/capacity increase	2-12	1-8	8/31/2017
Reduce Parent Barriers / Objective 2	Begin barriers assessments with parents	Program Assistant/ CHWs	Parent Barriers Survey	2-12	1-8	8/31/2017

Strategy Objective	Activities	Responsible Person All include project lead/director	Deliverable	Month Yr. 1	 Yr. 2	Due date Yr. 1 Yr. 2
Reduce Parent Barriers Objective 2	Begin PACV assessments with parents	Program Assistant/ CHWs	PACV results Decision to immunize certificates	2-12	1-8	8/31/2017
Reduce Parent Barriers Objective 2 Objective 1	Outreach Activities	CHW/Program Assistant	Annual Health Fair Participation Community/ Tribal Presentations Health Education disseminated	2-12	1-8	8/31/2017
Reduce Parent Barriers Objective 2 Objective 1	Establish and conduct ongoing quarterly check-ins with the clinics	Site immunization champion/CHW	Quarterly reports from RPMS and evaluation reports from CHWs	3-12	1-9	9/30/2017
Tool Kit and other Efforts of Sustainability						
Objective 3	Maintain and update Social Media page	Program Assistant	Social Media Page	4-12	1-12	10/31/2017
Objective 3	Assemble collateral materials for tool kit	Program Assistant	Tool Kit	4-12	1-12	10/31/2017
Objective 3	Collect Community Case reports and prepare for publishing in tool kit	Program Assistant	Tool Kit	4-12	1-12	10/31/2017
Wrap up- and Dissemination on of what we learned						
Wrap up	Collect final data, analyze and prepare final reports	Evaluator	Final reports and articles for dissemination		10-12	12/31/2017
Wrap up	Disseminate what we learned	Project Lead and Evaluator	Final reports and articles for dissemination		10-12	12/31/2017

SECTION E
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