NACCHO
National Association of County & City Health Officials

1100 17th Street, NW, Seventh Floor
Washington, DC 20036
Phone: 202-783-5550
www.naccho.org

2017 Model Practices

Applicant Information

Full Name: Alejandra Santisteban

Company: Denver Public Health

Title: Program Assistant

Email: alejandra.santisteban@dhha.org

Phone: (305)984-7246

City: Denver

State: CO

Zip: 80204-4505

Model Practice Title

Please provide the name or title of your practice: *

Denver

Practice Categories

Model and Promising Practices are stored in an online searchable database. Applications may align with more than one practice category. Please select all the practice areas that apply.: *

- [ ] Access to Care
- [ ] Advocacy and Policy Making
- [ ] Animal Control
- [ ] Coalitions and Partnerships
- [ ] Communications/Public Relations
- [ ] Community Involvement
- [ ] Cultural Competence
- [ ] Emergency Preparedness
- [ ] Environmental Health
- [ ] Food Safety
- [ ] Global Climate Change
- [ ] Health Equity
- [ ] HIV/STI
- [x] Immunization
- [ ] Infectious Disease
- [ ] Informatics
- [ ] Information Technology
- [ ] Injury and Violence Prevention
- [ ] Marketing and Promotion
- [ ] Maternal-Child and Adolescent Health
- [ ] Organizational Practices
- [ ] Other Infrastructure and Systems
- [ ] Organizational Practices
- [ ] Primary Care
- [ ] Quality Improvement
- [ ] Research and Evaluation
- [ ] Tobacco
- [ ] Vector Control
- [ ] Water Quality
- [ ] Workforce
- [ ] Conference Theme: Bridging Clinical Medicine and Population Health

Other::

Is this practice evidence based, if so please explain. :

Winnable Battles

To keep pace with emerging public health challenges and to address the leading causes of death and disability, CDC initiated an effort called Winnable Battles to achieve measurable impact quickly.Winnable Battles are public health priorities with large-scale impact on health and known effective strategies to address them. Does this practice address any CDC's seven Winnable Battles? If so, please choose from the following:: *

- ☐ Food Safety
- ☐ HIV in the U.S.
- ☐ Nutrition, Physical Activity, and Obesity
- ☐ Tobacco
- ☐ Healthcare-associated Infections
- ☐ Motor Vehicle Injuries
- ☐ Teen Pregnancy
- ☑ None

Overview: Provide a brief summary of the practice in this section (750 Word Maximum)

Your summary must address all the questions below:

- Brief description of LHD- location, demographics of population served in your community
- Describe public health issue
- Goals and objectives of the proposed practice
- How was the practice implemented/activities
- Results/Outcomes (list process milestones and intended/actual outcomes and impacts.
  - Were all of the objectives met?
  - What specific factors led to the success of this practice?
- Public Health impact of practice
- Website for your program, or LHD.

750 Word Maximum

Please use this portion to respond to the questions in the overview section. : *

Denver Public Health (DPH) is a nationally recognized public health department located in Denver, Colorado. DPH is organizationally housed under Denver Health and Hospital Authority (DH), a safety-net hospital system with integrated services from acute to primary/prevention care services. Denver's population of 682,545 is diverse; 52% identify as White, 32% Hispanic, 10% Black and 3% Asian (2015 census). The student population of Denver Pubic Schools (DPS) differs by being more ethnically and racially diverse (Hispanic 56%, Whites 23%, Blacks 14%, other 8%). Schools chosen for SLV clinics have high non-compliance rates, high free/reduced lunch rates, and have interest in participating. Maintaining adequate immunization rates is an important approach to avoid outbreaks of vaccine preventable diseases; however vaccination coverage rates remain inadequate. School-located vaccination (SLV) clinics are a convenient and alternative venue for increasing access to vaccinations. SLV clinics ensure that all children, regardless of insurance or provider status, have the opportunity to be vaccinated (e.g., children without a medical home) without the need for a health care provider visit or time off from school or work. Denver's In-School Immunization Program (ISIP) began in 2009 when DPH received two CDC grants to assess the feasibility and cost of providing vaccines in schools and billing third-party payers for vaccinations. One grant studied the delivery of influenza vaccine to students in select elementary schools while the other assessed the provision of all vaccines to adolescents in select middle/ K-8 schools. Since the completion of these grants in 2011, ISIP has continued to conduct SLV clinics with support obtained through grant funding and billing. The goal of ISIP is to provide vaccines to children through a comprehensive SLV program at select DPS elementary and middle schools. The objectives of the program are to: 1) increase vaccination coverage and decrease noncompliance rates at participating schools; 2) offer an alternative and convenient setting to receive vaccines, advancing the concept of an "Immunization Neighborhood"; and 3) continuously improve and implement efficient processes to sustain the program. ISIP strives to be financially sustainable by billing covered students' insurers for vaccines and administration fees, as well as utilizing the federal Vaccines for Children (VFC) program for eligible students. ISIP strives to minimize barriers by providing services to families irrespective of insurance status; parents are not billed for services. ISIP continues to improve service delivery and billing processes which have contributed to higher reimbursements for vaccine cost and administration. For 2015, 80% of vaccine and administrative costs were covered through billing third party payers. This is a 17% improvement compared to the previous year. Standard work has been developed for all aspects of the program resulting in more efficient completion of tasks and clinics. Parents complete consent packets during school registration and additional consent packets are sent to noncompliant students throughout the school year. DPH Immunization Program nurses review all immunization records to determine eligibility for the program. The program is conducted during the school year and parents are provided an updated vaccine record at the end of the school year. Schools participating in ISIP experienced a decrease in noncompliance rates. During the 2015-2016 school year, parents of 836 students consented to the program and 740 of these were vaccinated at our clinics. Of the 1,865 vaccines that were given, 20% were required vaccines to be considered compliant in DPS, contributing to a 25-80% reduction in noncompliance rates across participating schools. The remaining 80% of vaccines given were recommended vaccines (i.e. influenza, HPV and Meningococcal). Offering ISIP as an alternative and convenient setting to receive vaccines advances the concept of an "Immunization Neighborhood". Parents have the opportunity to vaccinate their children outside of their medical home without financial risk, eliminating the need for multiple provider visits and time out of school/ work. Vaccines provided through ISIP are entered into the Colorado Immunization Information System ensuring the student's medical home is able to access the vaccine records. Because completion rates of vaccines requiring multiple doses (e.g., HPV) are low, ISIP has focused on completion of vaccine series started elsewhere or through an ISIP clinic. Each middle/K-8 school has three clinics strategically spaced throughout the school year to accommodate the three dose HPV vaccine series. Since 2009, 1,774 students have received the HPV vaccine at an ISIP clinic and 76% have completed the three vaccine series through an ISIP clinic. This demonstrates the success of the Immunization Neighborhood; ISIP facilitated completion of the HPV vaccine series students may have started elsewhere. More information about ISIP is available at DenverPublicHealth.org/ISIP.

Responsiveness and Innovation

A Model Practice must be responsive to a particular local public health problem or concern. An innovative practice must be (1) **new to the field of public health (and not just new to your health department)** OR **(2) a creative use of an existing tool or practice**, including but not limited to use of an Advanced Practice Centers (APC) development tool, The Guide to Community Preventive Services, Healthy People 2020 (HP 2020), Mobilizing for Action through Planning and Partnerships (MAPP), Protocol for Assessing Community Excellence in Environmental Health (PACE EH). Examples of an inventive use of an existing tool or practice are: tailoring to meet the needs of a specific population, adapting from a different discipline, or improving the content.

- Statement of the problem/public health issue
- What target population is affected by problem (please include relevant demographics)
    - What is the target population size?
    - What percentage did you reach?
- What has been done in the past to address the problem?
- Why is the current/proposed practice better?
- Is current practice innovative? How so/explain?
    - Is it new to the field of public health
      OR
    - Is it a creative use of existing tool or practice:
      What tool or practice did you use in an original way to create your practice? (e.g., APC development tool, The Guide to Community Preventive Services, HP 2020, MAPP, PACE EH, a tool from NACCHO's Toolbox etc.)

- Is the current practice evidence-based? If yes, provide references (Examples of evidence-based guidelines include the Guide to Community Preventive Services, MMWR Recommendations and Reports, National Guideline Clearinghouses, and the USPSTF Recommendations.)

2000 Word Maximum

Please state the Responsiveness and Innovation of your practice (2000 Word Maximum) : *

Maintaining and increasing immunization rates is an important approach to achieve the Healthy People 2020 goal of keeping lives free of preventable diseases (Office of Disease Prevention and Health Promotion. Immunization and Infectious Diseases, Healthy People 2020. 2016; https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases. Accessed December 2, 2016). SLV programs have been proposed as an effective vaccination program outside the medical home and are essential to ensuring that all children—regardless of insurance or provider status—are protected from vaccine preventable diseases. ISIP provides an alternative and convenient location for immunization delivery, billing third-party payers for immunization services and providing immunizations to anyone regardless of insurance status. ISIP minimizes barriers to access and provides a safety net for Denver children to obtain vaccinations at low or no cost. ISIP has provided vital immunization services to adolescents and young children at DPS since 2009. DPS has a total of 234 elementary, K-8, middle, and high schools. ISIP is currently implementing clinics in nine participating DPS schools (three elementary, two K-8, and four middle schools), serving 6% of the DPS population. Participating schools are chosen based on their rate of noncompliance and their willingness to help in the coordination of the clinics. Other DPS schools not participating in ISIP generally have access to School Based Health Centers (SBHC), so ISIP serves the portion of DPS students who do not have access to a SBHC. For the 2015-2016 school year, 20% of the total population at these nine participating schools consented for participation in the program. For the 2015-2016 school year ISIP provided all vaccinations including the influenza vaccination to both elementary and middle school students. Of the 740 students who were vaccinated during the 2015-2016 school year, 72% were Medicaid insured, 16% were uninsured, 9% were privately insured and 2% were CHP+ insured. Throughout the school year, parents of 836 students consented for their children to participate in the program. Equal percentage of students (47%) reported their primary language as English or Spanish with 6% reporting other languages (i.e. Amharic, Arabic, Burmese and French). ISIP focused on enhanced partnerships and the use of evidence-based strategies to increase vaccination uptake including: expanded onsite and outreach clinical services for all clients irrespective of ability to pay; ongoing provision of vaccines in schools; implementation of comprehensive billing for all immunization services offered; improvement of vaccine inventory management, streamline clinic flow and avoid waste of vaccines; support and mentorship to other Colorado Local Public Health Associations (LPHAs) to enhance their billing capabilities and teaming up with research activities to study effective approaches to increase vaccine uptake in public and private practices. ISIP has aligned its programmatic work (what was done, how well things were done, and whether anyone was better off) with the overall population-level goal of reducing vaccine preventable diseases. SLV programs have proven effective in increasing vaccination rates in multiple studies. These studies assessed a range of vaccines administered by a diverse set of providers (including health department staff). The Community Guide recommends SLV programs as they have shown a reduction in client out of pocket costs and an increase in access to vaccination services through these methods (Community Preventive Services Task Force. Increasing Appropriate Vaccination: Vaccination Programs in Schools and Organized Child Care Centers. 2010; https://www.thecommunityguide.org/sites/default/files/assets/Vaccination-Programs-at-Schools-Childcare-Centers.pdf. Accessed December 2, 2016). The program follows Advisory Committee on Immunization Practices (ACIP) guidelines regarding vaccine schedule for childhood and adolescent vaccinations as part of evidence based medicine towards achieving the Healthy People 2020 goal to increase immunization rates and reduce preventable infectious diseases (Centers for Disease Control and Prevention. Recommended Immunization Schedule for Persons Aged 0 Through 18 Years, United States 2016. 2016; https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html. Accessed December 2, 2016). When ISIP started in 2009, processes previously utilized by Denver Community Health Services (DHCS) a DH primary care program, were initially used to provide vaccine delivery in a school setting. DCHS only vaccinated students eligible for the VFC program and did not bill health insurance, so billing and inventory management processes were developed based on best practices (e.g., separating private versus public vaccine stock). DPH billed third-party insurance for vaccination services after each clinic; for students with private or State Children's Health Insurance Program, insurers were billed for both vaccine purchase and vaccine administration, for Medicaid-insured students insurance was billed for administration but not for vaccines (these children received VFC vaccines), and uninsured students received VFC vaccines and parents were not billed (Daley MF, Kempe A, Pyrzanowki J, et al. School-located vaccination of adolescents with insurance billing: cost, reimbursement, and vaccination outcomes. J Adolesc Health. 2014; 54(4):282-288). Several models for providing SLV programs in other locales were examined to develop an optimal and efficient program (e.g., Vaccinate before you graduate in Rhode Island and IZ Xtreme in El Dorado County, California). Ideally patients would receive all vaccinations within their medical home- most likely from their primary care provider. However, parents may be resistant to take their child out of school or take off time from work for a quick vaccine visit. For children who don't have a provider or insurance, parents may not seek out immunization services or may only give their child what is required for school due to financial barriers. For vaccine series like the HPV vaccine, multiple provider visits are required resulting in more missed time from work or school and more copays for the provider visit. This often leads to missed opportunities for completion of the HPV vaccine series. Offering SLV clinics contributes to an increase in the likelihood that patients receive all required HPV doses. This new and innovative concept of an Immunization Neighborhood aims to create a culture of collaboration using a network of vaccine partners (e.g., LPHAs, school clinics, pharmacies) that supports the primary care medical home and is patient-centered allowing them to conveniently obtain services they need (Taylor E, Lake T, Nysenbaum J, Peterson G, Meyers D. Coordinating Care in the Medical Neighborhood: Critical Components and Available Mechanisms. Rockville, MD: Agency for Healthcare Research and Quality; 2011). ISIP has been successful in contributing to the advancement of the Immunization Neighborhood as demonstrated by data showing that 76% of students who have received doses of the HPV vaccine in one of the program's clinics end up completing the series. Since the program began in 2009, 91% of students who received their second dose of HPV at ISIP after receiving their first dose elsewhere completed the three dose series at a subsequent clinic. ISIP has learned the importance of working collaboratively with partners to strategically choose schools for the program based on school district needs and individual school's administration interest (including each school's nurse). For example, because DPS nursing administration wanted to

offer additional services to improve vaccination coverage of their elementary students, we now offer all required and recommended vaccines to elementary school aged students. This addresses one of Colorado's 10 Winnable Battles to reduce infectious diseases by increasing the percentage of children up-to-date on their DTaP immunizations at school entry (Colorado Department of Public Health & Environment. Infectious Disease: Outbreak Response Infrastructure. 2016; https://www.colorado.gov/pacific/sites/default/files/CDPHE_WB_InfectiousDisease.pdf. Accessed December 2, 2016). DPH continues to meet with DPS nursing administration to discuss successes, challenges, and additional schools to offer the program at. ISIP is unique. Few SLV outreaches are able to offer vaccines to all students irrespective of insurance status, and most only offer the flu vaccine. ISIP provides a unique opportunity for DPS families at select schools to be able to receive vaccinations at no cost in a school setting with minimal parental involvement (parents/guardians do not need to be present at the time of the clinics), and has served as an important method of improving Denver's overall childhood immunization rates.

LHD and Community Collaboration

The LHD should have a role in the practice's development and/or implementation. Additionally, the practice should demonstrate broad-based involvement and participation of community partners (e.g., government, local residents, business, healthcare, and academia). If the practice is internal to the LHD, it should demonstrate cooperation and participation within the agency (i.e., other LHD staff) and other outside entities, if relevant. An effective implementation strategy includes outlined, actionable steps that are taken to complete the goals and objectives and put the practice into action within the community.

- Goal(s) and objectives of practice
- What did you do to achieve the goals and objectives?
    - Steps taken to implement the program
- Any criteria for who was selected to receive the practice (if applicable)?
- What was the timeframe for the practice
- Were other stakeholders involved? What was their role in the planning and implementation process?
    - What does the LHD do to foster collaboration with community stakeholders? Describe the relationship(s) and how it furthers the practice goal(s)
- Any start up or in-kind costs and funding services associated with this practice? Please provide actual data, if possible. Otherwise, provide an estimate of start-up costs/ budget breakdown.

5000 words maximum

Enter the LHD and Community Collaboration related to your practice (5000 words maximum): *

The goal of ISIP is to provide vaccines to all children through a comprehensive SLV program at selected DPS schools. Schools are invited to participate based on noncompliance rates, free/reduced lunch rates, and willingness to participate in the program. ISIP is offered to all students in selected DPS schools irrespective of insurance status. Clinics have been offered every school year since 2009. For the 2015-2016 school year, a total of 21 all-vaccine clinics were conducted at participating schools. At the six K-8 and middle schools three all-vaccine clinics were conducted during the school year, adequately spaced to complete specific vaccination series (e.g. HPV, Hepatitis A and Hepatitis B) and at the three elementary schools a single all-vaccine clinic was done. The objectives described below represent the activities conducted in the 2015-2016 school year. All objectives and respective evaluations were completed at the end of the school year. Objective 1: Increase vaccination coverage and decrease noncompliance rates at participating DPS schools. Activities: 1) Prepare easy-to-complete consent packets (one for each student in participating schools) and systematically distribute consent packets during school registration to all families. ISIP program staff explains the program and answers any parent questions at registration activities. 2) Post information about clinic dates in schools (school websites, posters, reminders, and announcements) before each clinic. 3) DPS paraprofessional and ISIP program coordinator review consent packets and obtain vaccine records of consenting students prior to each clinic. 4) Update students' vaccination records in school's information system and DPH's electronic health record (EHR). 5) DPH Registered Nurses review each consented students' vaccine record and consent form to determine eligibility for the program and vaccines needed. 6) ISIP program coordinator disseminates communications toolkit to participating school nurses including: a) Emails to school staff and teachers to remind them of the upcoming clinic. b) Emails to parents of students at participating schools to remind them of the upcoming clinic. c) Newsletter and/or website content with the reminder for the upcoming clinic. d) Auto-dial scripts for the school to call all parents and remind of the upcoming clinic. 7) DPS paraprofessional distributes reminder cards to entire school population to remind about the upcoming clinic and encourage parents to continue to complete consent packets for their children to participate in the program. 8) Conduct SLV vaccination clinics in participating schools. a) Three all-vaccine clinics at DPS middle schools and K-8 schools (October, January, and April) b) One all-vaccine clinic at elementary schools (November) 9) Input record of vaccines administered into DPH's EHR and Colorado immunization information System (CIIS) after each clinic. 10) Update school's noncompliance rates and use this information to continue to target specific students who remain noncompliant with required vaccines for school. 11) Update vaccine records and send to student's family at the end of the school year. Objective 2: Offer an alternative and convenient setting to receive vaccines, advancing the concept of an "Immunization Neighborhood". Activities: 1) Attend school registrations to inform parents and students about the availability of an alternative setting for vaccine provision. 2) Educate parents about the ability to complete vaccine series previously started elsewhere, such as at their primary care provider. 3) Report to the state registry for providers to be aware of their patient's vaccination status. 4) Market other opportunities for vaccinations in alternative settings (e.g. Saturday offsite clinics). Objective 3: Continuously improve and implement efficient processes to sustain the ISIP program. Activities: 1) Improve billing accuracy by developing infrastructure for an automated billing tracking system. a) Work with DH Billing

Department and DPH Informatics to implement a system which automatically reconciles private versus public immunizations once billed. b) Discuss strategies to avoid using inappropriate vaccine type (public versus private). 2) Monitor financial viability. a) Review actualized monthly revenue tracking system. b) Monitor existing insurance contracts to ensure the continuation of adequate reimbursement (i.e. administration and vaccine fees reimbursed). c) Monitor reimbursement of newly created or revised contracts to track trends and accurate reimbursement. d) Conduct annual cost versus reimbursement analysis and identify areas where expenses can be decreased 3) Streamline processes to ensure efficient clinics, use of staff time and resources. a) Evaluate the changes in workflow due to DPH's new EHR. 4) Utilize DH's EHR insurance verification and billing capabilities to more appropriately administer public versus private vaccines. Obtaining written informed consent and providing appropriate vaccination information to families are critical elements for offering a successful SLV program. Consent packets are distributed to parents at school registration and packets are sent home with students. The legal departments for DPH and DPS were required to approve the consents used. Parents were asked to provide written consent for their child to be vaccinated at school. Parents of adolescents are given the opportunity to decline consent for specific vaccines if desired. The consent packets collected information regarding: student demographics, parental documentation for refusing specific vaccine administration, insurance status, and a health questionnaire that assessed medical issues that could impact provision of a specific type of vaccine. DPH nurses review each consented student's vaccine record to determine vaccination needs and eligibility for the program. Health questionnaires are carefully reviewed to ensure no contraindications to needed vaccines exist. Clinics are conducted by DPH nurses during school hours without requiring the presence of parents/guardians. Insurers are billed for vaccines and administration fees and eligible students receive vaccines through the VFC program. Parents do not receive bills for services. During or immediately after clinics, clerical personnel enter vaccination data into DPH's EHR and the state immunization registry. At the completion of the final clinic, each family receives an immunization record. ISIP is a collaborative effort between DPH and DPS. Each of the partners has an important role in ensuring that the success of the program. DPS administration and nursing services are actively involved in establishing all of the processes needed to performing pre-clinic activities within the purview of the Family Educational Rights and Privacy Act (FERPA) (e.g., obtaining parental consent, reviewing school immunization records) and for conducting the on-site clinics. Because of FERPA regulations, DPH is not allowed to review immunization records or consents until receiving parental approval. To address this barrier, DPH funded a paraprofessional hired by the school district to support activities for this program. This paraprofessional works closely with the ISIP team to support all activities and ensure that clinics are conducted smoothly and assists with pre/post-clinical duties, helping to reduce personnel costs of the program. DPS nurses are asked to respond to a survey to offer suggestions for improvement and ISIP staff meets quarterly with DPS nursing administration to discuss issues and address concerns. Six of the nine participating DPS nurses responded to the survey. Results showed that 83% were very satisfied with the overall experience of the ISIP clinics. For comments provided on recommended improvements, the ISIP staff revised processes to better streamline clinical services offered in the school. For example, school nurses provided feedback that they had not utilized the communications toolkit as intended. After discussions with each school nurse regarding how to make the toolkit more user-friendly, ISIP staff tailored the communications tools and created toolkits specific to each school and their capabilities to do auto-dials, newsletters, or emails to parents. The communications toolkit was then sent to each school nurse two weeks prior to their specific clinic. Feedback will be collected at the end of the current school year on this improved communications toolkit and dissemination strategy. ISIP has maintained a strong relationship with DH Billing and Finance Department. In the first year of this program, this partnership was not well utilized. ISIP now works with DH Billing staff to address billing issues and improve billing processes. Because of this, reimbursement rates have increased by 17% since 2014 (with now 80% of total vaccine and administration fee costs covered by billing). This partnership with DH Billing Department has resulted in ISIP being included in any commercial contract revisions and billing issues discussions as they arise. Startup costs for developing this program were not measured during the beginning stages of this grant. These costs were difficult to quantify due to the extensive planning needed to develop and implement the program which involved a number of partners at DH, DPH, and DPS. Additionally, these startup costs did not represent the true costs to develop the program since ISIP involved an extensive evaluation as part of the grant, so startup costs were not measured. However as part of the grant, a micro-costing approach was used to assess the cost to administer a vaccine through the program during the 2010-2011 school year. Estimated vaccine administration costs were calculated to be $23.98 per vaccine for the adolescent project and $24.69 per influenza vaccine for the elementary school project, which is within the range of cost estimates of pediatric private practices. These calculated administrative costs have been used to establish the fees sent to insurance companies as part of billing for the services rendered. Additionally, Medicaid administrative fees now align with the estimated costs to provide a vaccine. Since June of 2015, ISIP began to receive reimbursement of $21.68, an increase from the previous $6.33 reimbursement per vaccine administered, which did not adequately cover the administrative costs to deliver the vaccine. Most recently, annual costs were calculated to run the program which we then compared to annual reimbursement from billing third party payers. Annual cost was calculated using day of clinic costs (e.g. staff time, medical supplies and private vaccine), printing of consent packets and reminder cards, and staff time for ISIP Coordinator and DPS Paraprofessional to plan and run the program. Current program costs covered by billing reimbursement are 48%, a 3% increase from 2013. Total estimated program costs have decreased 64% since the program's inception. ISIP continues to utilize state-funded VFC vaccine for students, who have no insurance, are underinsured, or who have Medicaid. This practice allows ISIP to recoup much of the cost of vaccinating these particular students. Streamlining of billing processes and implementation of several quality improvement projects to offer shorter and more efficient clinics and using the DPS paraprofessional for all clerical tasks has reduced costs associated with performing the program. These actions have contributed to the financial health and sustainability of the program.

Evaluation

Evaluation assesses the value of the practice and the potential worth it has to other LHDs and the populations they serve. It is also an effective means to assess the credibility of the practice. Evaluation helps public health practice maintain standards and improve practice. Two types of evaluation are **process** and **outcome**. Process evaluation assesses the effectiveness of the steps taken to achieve the desired practice outcomes. Outcome evaluation summarizes the results of the practice efforts. Results may be long-term, such as an improvement in health status, or short-term, such as an improvement in knowledge/awareness, a policy change, an increase in numbers reached, etc. Results may be quantitative (empirical data such as percentages or numerical counts) and/or qualitative (e.g., focus group

results, in-depth interviews, or anecdotal evidence).

- What did you find out? To what extent were your objectives achieved? Please re-state your objectives.
- Did you evaluate your practice?
    - List any primary data sources, who collected the data, and how (if applicable)
    - List any secondary data sources used (if applicable)
    - List performance measures used. Include process and outcome measures as appropriate.
    - Describe how results were analyzed
    - Were any modifications made to the practice as a result of the data findings?

2000 Words Maximum

Please enter the evaluation results of your practice (2000 Words Maximum): *

An evaluation plan was developed to assess completion of objectives and progress made toward completing program goals. The objectives of the program are: 1) increase vaccination coverage and decrease noncompliance rates at participating schools; 2) offer an alternative and convenient setting to receive vaccines, advancing the concept of an “Immunization Neighborhood”; and 3) continuously improve and implement efficient processes to sustain the program. The evaluation plan assessed a number of important parameters including: number of students eligible, consented and vaccinated; vaccinations administered; demographics such as insurance status, race and ethnicity of participating students; change in noncompliance rates at participating schools; HPV vaccine completion rates; and satisfaction of participating DPS nurses with the program. Success in the program was defined by maintaining the partnerships and satisfaction with DPS at each participating school, the number of vaccines provided to elementary and adolescent students, decreasing noncompliance rates at each school, the amount and rate of insurance reimbursement, and calculating the revenue generated and percentage of program costs covered. All objectives were achieved for the 2015-2016 school year. Following each clinic and at the end of each school year, a final report on the ISIP program was developed and shared with stakeholders. Data were also presented at the Colorado Public Health in the Rockies Conference in Breckenridge, CO in September 2016 and at the National Immunization Conference in Atlanta, GA in September 2016. Objective 1: Increase vaccination coverage and decrease noncompliance rates at participating schools. Data was entered manually into an Access database by the paraprofessional and analyzed by the program coordinator. During the 2015-2016 school year, parents of 836 students (20% of the population at the nine participating schools) consented for their child to receive vaccines through an ISIP clinic if needed. Of the consenting students, 740 received at least one vaccine in our clinics. Primary reasons for children not vaccinated included not eligible for vaccination, absent the day of clinic or medically contraindicated to be given the vaccine. ISIP administered a total of 1,865 vaccines to adolescents during the school year. These vaccinations contributed to a 25-80% reduction (mean of 53%) in noncompliance across the participating schools. There was a decrease in participation for 2015-2016 school year compared to the prior school year (2014-2015) when 1,043 parents of children (33% of the population at selected schools) consented to participate in the program, and 950 (30% of the population at participating schools) received at least one vaccine in the program. This reduction was likely due to changing the location of the SLV clinics to a few new schools for the 2015-2016 year (see below for details on the approaches used to address these changes). In order to increase participation and vaccination rates for upcoming years, ISIP is working on new strategies for promoting the program. A new marketing plan has been developed in order to better reach and educate parents about the program and make program materials more readily accessible. ISIP staff assesses each currently participating school for factors that may have limited participation such as saturation, support of the program by the school, and participation by parents. Changes in the schools participating in the program (elimination of current schools and addition of new schools) were done based on this review. Because some of the schools have participated in ISIP for several years, it is possible that the program has reached saturation in some of these schools, such that the children currently attending have already been fully immunized. Thus, different outreach approaches have been identified to contact parents regarding obtaining their child’s influenza vaccine at school and to follow-up with parents who’s children may have started the HPV vaccination last year and didn’t finish. An additional outreach focused on parents that originally refused the HPV vaccine on the consent form was conducted during the 2015-2016 school year. Public Health Nurses called each parent who refused at the Middle and K-8 Schools. Out of the parents who were contacted, an average of 58% of parents at three of the schools change their mind after being educated by a nurse about how important vaccination against HPV-related cancers was for their child. Objective 2: Offer an alternative and convenient setting to receive vaccines, advancing the concept of an “Immunization Neighborhood” The Immunization Neighborhood facilitates vaccination in alternative settings to increase vaccination uptake due to increased convenience of vaccine provision. ISIP offers a convenient option for parents to get their children immunized without needing to take time off of work or school. Rather than taking a few hours to go to a doctor visit, a time study revealed that during the 2015-2016 school year a group of four students was out of class for only an average 15 minutes. Due to the potential burden of getting the 3 dose HPV series at a providers office, HPV vaccination data was pulled from DPH’s EHR and analyzed. During the 2015-2016 school year, 545 HPV vaccinations were given; 28% of these were dose 1, 40% were dose 2, and 32% were dose 3. Since the program began in 2009, 1,774 HPV vaccines have been given. Of the 1,095 students who received their first dose at an ISIP clinic, 65% completed the series at an ISIP clinic. Of the 430 students who received their first dose elsewhere and received their second dose at ISIP, 91% completed the series with us. An additional 250 students received their third dose at ISIP, contributing to an overall completion rate of 76% for students participating in ISIP clinics. This data demonstrates the benefits of the Immunization Neighborhood; ISIP enabled students to easily complete their HPV vaccine series which they may have started elsewhere (i.e., their medical home). Objective 3: Continuously improve and implement efficient processes to sustain the program. Billing data for the 2015 calendar year demonstrated an increase in reimbursement compared to previous years. Reimbursement for vaccines has increased by 17% since the previous year (80% of administration fee and vaccine costs are covered by billing insurances). This increase is important for the future financial sustainability of the program. An important factor in the ability to bill for services is the number of children covered by insurance. Since the 2014-2015 school year, the rate of uninsured students decreased from 26% to 16%. This means that DPH is responsible for incurring less of the vaccine cost and administration fees associated with vaccination services. The percentage of students covered by Medicaid increased from 58% to 72%, allowing DPH to bill more for services and recoup cost of vaccines and administration fees. Continued work in ensuring students are covered by insurance is vital to ISIP’s sustainability. Pre and post-clinic work is labor intensive and takes up significant staff time. A cost versus reimbursement analysis was conducted, showing that these tasks amounted to approximately 748 hours of work done by the DPS paraprofessional and ISIP program coordinator (average 35 hours per clinic/21 total clinics). Combined with the staff time and medical supplies needed to conduct the day of clinic, the cost to conduct the program over the calendar year is approximately $95,585. When vaccine purchasing costs are added to this, insurance reimbursement covers 48% of total program costs ($110,000). Following implementation of DPH’s new EHR, a preliminary analysis was conducted to determine the hours that would be cut down by the improved registration and billing processes of the new electronic system. Preliminary analyses show a 18% decrease in program costs. Staff is becoming more comfortable with the EHR which will continue to increase efficiency and hopefully decrease staff time and program costs.

Sustainability

Sustainability is determined by the availability of adequate resources. In addition, the practice should be designed so that the stakeholders are invested in its maintenance and to ensure it is sustained after initial development (*NACCHO acknowledges that fiscal challenges may limit the feasibility of a practice's continuation*.)

- Lessons learned in relation to practice
- Lessons learned in relation to partner collaboration (if applicable)
- Did you do a cost/benefit analysis? If so, describe.
- Is there sufficient stakeholder commitment to sustain the practice?
    - Describe sustainability plans

1500 Words Maximum

Please enter the sustainability of your practice (2000 Words Maximum): *

Although some aspects of implementation are challenging, providing vaccines at schools is an effective method of protecting children and adolescents from vaccine preventable diseases. Lessons learned are published in the Journal of School Health (Shlay JC, Rodgers S, Lyons J, Romero S, Vogt TM, McCormick EV. Implementing a school-located vaccination program in Denver Public Schools. J Sch Health. 2015; 85: 536-543). The ISIP program continues to evolve to be more streamlined and financially successful. Over the past year, several insightful lessons have been learned. First, it is important for ISIP to continue to focus on noncompliance rates. This builds school engagement since non-compliance rates are publicly reported each year and helps to build strategies to better reach students who are not up-to-date on both their required and recommended immunizations for school. ISIP was successful in decreasing noncompliance rates (25-80% reduction) at participating schools. Second, the DPH ISIP staff needs to continually work to maintain its partnership with DPS Nursing Administration. This partnership has been crucial to the success of ISIP. A component of this partnership involves carefully reviewing schools to be selected to participate in ISIP in order to maximize the number of children who could be vaccinated, improve noncompliance rates, and thus increase the impact of ISIP. Third, the program offers an invaluable component of the Immunization Neighborhood supporting the use of alternative settings for vaccine provision. Finally, increased process efficiency and billing for immunization services continues to improve which contributes to the financial sustainability of the program. The program has worked strategically to develop approaches to be sustainable. When choosing schools, we took into account schools that had minimal support from the school nurse which can contribute to lower student participation in ISIP at their school. This continues to be a problem when school nurses have competing priorities and in some circumstances are only staffed one day a week at each of their schools. Thus, for the 2015-2016 school year, we reduced the number of schools that would offer ISIP services in order to provide more directed attention for those that were more fully engaged in participating in the program. To continue and encourage participation in the program, the DPS paraprofessional sends consent packets home to noncompliant students with a letter indicating the required vaccines they are due for. This strategy has helped get students enrolled in the program and we will continue this activity in upcoming years. The communications toolkit offered to school nurses also helps to increase awareness of the program and encourage participation. The toolkit will continue to be refined in order to best publicize our efforts and increase the amount of students consented into the program. Billing reimbursement rates have increased. ISIP is confident that financial sustainability is attainable in the future based on many of the processes enacted over this past year. This year, staff conducted a cost versus reimbursement analysis to assess the cost of sustaining the program. This analysis reviewed: day of clinic costs (i.e., staff time, medical supplies), printing of consent packets and reminder cards, percentage of a coordinator's salary to conduct the program, the salary for the DPS paraprofessional, and the cost of purchasing private vaccines. For the 2015-2016 school year it was estimated that the cost to administer the program for the calendar year was approximately $110,000. This was a 40% decrease from projected program costs in previous years. Total reimbursement from billing insurance was $54,135, thus program costs covered by revenue were 48%. Billing reimbursement has increased due to two major factors that ISIP has been working on since the inception of the program. First, ISIP provides services to a number of patients who are enrolled in the Denver Health Medicaid Choice program, a Medicaid managed care provider (67% of total ISIP population). Originally, we were unable to obtain reimbursement for this select population. The process of obtaining reimbursement had been a challenge. Over the past few years, ISIP program staff has worked with Denver Health Medicaid Choice staff to ensure we receive reimbursement. Having this process in place has contributed to financial sustainability of the program. The second issue is related to traditional Medicaid reimbursement for administration fees. With enactment of the Affordable Care Act (ACA), reimbursement rates for administration fees increased due to newly established attestation funds. Starting in June of 2015, ISIP began to receive reimbursement of $21.68, an increase from the previous $6.33 reimbursement per vaccine administered, which did not adequately cover the administrative costs to deliver the vaccine. This has contributed largely to ISIP's increased revenue, resulting in a greater coverage of program costs. With the enactment of the ACA we have seen a reduction in the number of uninsured children. From the 2014-2015 to 2015-2016 school year, the percentage of uninsured students at participating schools has decreased by 10% (2014-2015: 26%, 2015-2016: 16%). The percentage of children in participating schools who are enrolled in Medicaid increased from 58% in the 2014-2015 school year to 72% in the 2015-2016 school year. Because more children are covered by insurance we are able to increase the billing for our services, and thus receive more reimbursement. While the number of people without insurance should diminish over time, there will always be a certain percentage of uninsured (e.g., undocumented) children who have no resources, therefore a gap will remain in funding to cover the costs of these individuals. DPH will continue to offer services to all students irrespective of their insurance status as part of our public health mission. While pre and post-clinic work will continue to take a significant amount of staff time, efforts to further streamline processes and utilize DPH's new Electronic Health Record (EHR) could lead to reduced program costs. A preliminary analysis was conducted to determine the hours that would be cut down by the improved registration and billing processes of our new electronic health record. This analysis shows a possible 18% decrease in program costs. Program staff also plans to explore options for online consent packets to decrease printing costs. Until issues related to the FERPA requirements are addressed (which is unlikely to change), ISIP will continue to support the salary of a DPS paraprofessional who facilitates information sharing between DPS and DPH and who performs duties previously done by DPH staff. This individual supports programmatic efforts, reduces duplication of efforts, and contributes to the overall sustainability of the program. Sustainability hinges on maintaining partnerships, addressing the challenges surrounding the FERPA regulations, information sharing, and effectively developing approaches to finance this program. The program developed with DPS effectively addresses all of the areas of sustainability listed. Our collective goal is to ensure that children are healthy and thus able to be effective learners. By ensuring that they obtain necessary vaccines efficiently, this helps the school district meet its educational goals.

Additional Information

How did you hear about the Model Practices Program:: *

- [x] I am a previous Model Practices applicant
- [ ] At a Conference
- [x] NACCHO Website
- [ ] Public Health Dispatch
- [x] Colleague in my LHD
- [ ] Model Practices brochure
- [ ] NACCHO Exhibit Booth
- [ ] NACCHO Connect
- [ ] Colleague from another public health agency
- [x] E-Mail from NACCHO
- [ ] NACCHO Exchange