NACCHO
National Association of County & City Health Officials

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2017 Model Practices

Applicant Information

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Model Practice Title

Please provide the name or title of your practice: *

Southern Nevada Health District's Innovative Response to Prevent Outbreaks of Legionaire's Disease

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
- ☐ 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. : *

Clark County is Nevada's largest county located in the southern most portion of the state. The incorporated citiies in Clark County include; Las Vegas, Henderson, North Las Vegas, Boulder City and Mesquite. The county's population of over two million residents additionally hosts over 42 million visitors each year. Tourism is the biggest industry of Clark Couty accounting for nearly $36 billion in spending each year by the county's visitors. The public health agency for Clark County is the Sothern Nevada Health Distirct. The District provides services to both the residents and visitors of Clark County. While the marketing slogan "What happens in Vegas, stays in Vegas" may be true for some vistors, outbreaks of illness that occur in Clark County garner nationwide attention. Outbreaks can also cost the implicated facilites litigation costs as victims of the outbreak sue the owners for damages. As a result of the national attention of outbreaks in Clark County, SNHD has developed tools to ensure that outbreaks of disease are limited to the greatest extent possible. One such example is the District's response to reports of Legionellosis. Between 2001 and 2011, SNHD investigated seven outbreaks of legionellosis. Two of the outbreaks in 2011 gained the attention of the national media. As a result of this attention, SNHD developed a program in 2012 to conduct environmental investigations for every reported case of ld. The goal was to prevent outbreaks by determining if a property has an issue with Legionella pneumophila contamination and properly addressing the contamination to prevent an outbreak of legionellosis at the facility. Using experience in investigating these previous outbreaks, SNHD staff developed a procedure to investigate every case of legionellosis reported to it that may have had an exposure at a permitted facilty such as a hotel, or pool, or other area accessible by the public. These investigations were completely voluntary for the facilities' and were not compulsory. The investigations included conducting an environmental assessment of the facility and taking water samples from various sources of exposure. These samples were shipped to an ELITE commercial laboratory to be tested for the presence of Legionella bacteria. Based upon the results of these investigations, SNHD staff would make reccomendations to the facilty to ensure that the presence L. pneumophila if found was corrected. Prior to implementation of this aggressive program, SNHD staff conducted a number of trainings to make the stakeholders in the tourism industry aware of the problem Legionellosis poses to Clark County along with the District's change in investigating these reports and outbreaks. The training was well received and has resulted in the industry's full cooperation in allowing SNHD to conduct these investigations. To date, the District has not been allowed to provide assitance to the industry when it recieves a report of legionellosis. In 2016, the program was slightly modified to improve its sustainablity by decreasing the number of samples, and requiring facilites to cover the cost of testing at the commercial laboratory. Also, since the implementation of the investigation program, there has yet to be an outbreak of legionellosis occurign in Las Vegas. Based on SNHD's previous expierince, there would be an expectation of one or two outbreaks to occur in the the four years that the program has been practiced.

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) : *

Between 2001 and 2011, Clark County suffered seven reported outbreaks of Legionellosis. Legionellosis is one of the most under reported diseases in the nation. The CDC reports that there are 5,000 cases of legionellosis each year, but the number is under reported due to under utilization of diagnostics tests. Since Clark County's biggest industry is tourism, reports of outbreaks of disease can have a significant impact not only on the implicated facility, but also the larger community. Outbreaks investigated by SNHD gain the attention of the media. The larger or more sensational outbreaks gain national attention. Each year the over two million residents of Clark County host over forty- two million visitors each year. The average age of these visitors is 48 years old. Most of these visitors stay in one of the 150,000 guests rooms found in Clark County. Most of these rooms are located in buildings that have an increased risk of harboring Legionella pneumophila bacteria and are required by the recently published ASHRAE 188 standard to have water management plans that meet the requirements of the ASHRAE standard to manage the risk of legionellosis in building water systems. This program targets SNHD's 450 permitted hotels and motels. These permitted facilities represent the 150,000 rooms available to Clark County visitors. The program also ensures that the nearly 2,000 permitted public spas or other public potential exposure sources do not cause outbreaks of legionellosis. SNHD analyzed the outbreaks between 2001 and 2011 and found that prior to each of the seven reported outbreaks, there were single cases of legionellosis in the months prior to the identification of the outbreak. In 2010 after suffering two outbreaks in quick succession, SNHD took the aggressive stance to investigate each reported case of legionellosis that had an exposure at a permitted facility such as a hotel, motel or spa, or other non-permitted public place. Prior to implementation of this program, SNHD waited for multiple cases of legionellosis to occur both in time and location. These outbreaks resulted in an aggressive, compulsory investigation of the facility that included not only water sampling and environmental assessments, but also additional case finding. This additional case finding inevitably led to media attention of the outbreak. Because of the media attention, some of the facilities investigated were reluctant to fully assist in the investigation. The investigation of the outbreaks required many hours of work from employees at both SNHD and the implicated facility so that the outbreak was fully investigated and the large scale remediation of the faculty to eliminate the risk of legionellosis occurred in a timely manner. These investigations cost SNHD tens of thousands of dollars, and the facility even more. The primary purpose of investigating each case reported to SNHD is to give the facility that may pose a potential source of an opportunity to appropriately respond and correct any deficiencies before an outbreak occurs. If a facility uses this opportunity to address the presence of L. pneumophila within their building water systems, then an outbreak may be prevented and a savings of costs of investigation by SNHD and subsequent litigation costs to the facility are avoided. The tools used by SNHD investigate single cases are the same tools used to conduct environmental investigations of outbreaks. These include the CDC's Environmental Assessment, CDC's recommended sample site identification along with SNHD's past experience in investigating outbreaks. The innovative approach is to use the single case as an early warning signal and respond by conducting a voluntary environmental investigation to determine if there is an opportunity for L. pneumophila to cause an illness. If L. pneumophila is identified in the facility's water system, then the facility's owner has an opportunity to intervene and remove the threat before additional cases occur. In the four years since implementing the practice, SNHD has yet to identify an outbreak of legionellosis, while in the ten years prior to 2011, SNHD identified seven outbreaks of legionellosis. SNHD has continued to improve the program. In the fall of 2016, SNHD conducted an analysis of the data it collected as a result of the investigations. Nearly 300 samples were taken between January 2012 and May 2015 at investigations associated with public accommodations. The review found that the sampling of cold water from the various faucets located in the room could be removed from the investigation without resulting in a change of the finding of the investigation. Since that time, SNHD has only sampled the hot water outlets at these facilities and made recommendations on remediation based on those results alone. This practice is innovative in that it attempts to intervene in the colonization L. pneumophila before an outbreak can happen. The practice uses the cooperation of the industry to inform them of the potential to be an exposure source for L. pneumophila, by using environmental investigation principles to identify possible sources for exposure to L. pneumophila. SNHD has also been an early adopter of supporting the industry standard of ASHRAE 188 to establish minimum risk management requirements for building water systems by informing the industry of the status of the proposed standards leading up to adoption in June, 2015.

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 this practice was twofold. The first goal was to prevent further outbreaks from occurring in Clark County by conducting an environmental investigation of a single case of legionellosis associated with a permitted facility or exposure to aerosols in a public venue. The working hypothesis was simple; by providing an opportunity to apply an intervention before an outbreak was identified, the outbreak could be prevented from occurring. The second objective was to provide education opportunities to the regulated community on both the complex nature of Legionella pneumophila colonization of various water systems and the ongoing development of industry standards to manage the risk of legionellosis within a building's water systems. In 2010, after two outbreaks at local hotels gained the attention of the national media, and recognition that both outbreaks had a sentinel case reported to SNHD in the months leading up to the identification of the outbreak, the SNHD's chief health officer asked that two objectives be set to meet the two goals mentioned above. The first was to develop and implement a formal practice to conduct an environmental investigation into every case of legionellosis that had an associated exposure at a permitted facility or other public location. Staff from SNHD Office of Epidemiology and Environmental Health worked together, using their previous experiences of investigating outbreaks of legionellosis. The teamdrafted a procedure to conduct an environmental investigation into each reported case reported of legionellosis that may have had an exposure to an aerosol during the incubation period at a permitted facility such as a hotel, motel or pool or other public location. Since an outbreak was not being investigated, the facility owners and representatives could refuse to provide SNHD access to conduct the investigation. Participation on the facility's part was voluntary. The practice was developed modeling the environmental investigation of an outbreak. When SNHD receives a report of a case of legionellosis, and if the case stayed at a permitted public accommodation, used a spa or was exposed to an aerosol of water in a public location, SNHD Environmental Health Staff will commence an investigation within two to three weeks of the report. These investigations are conducted in three phases. The first phase is education of the facility representatives on what legionellosis is, the basic ecology and pathogenesis of Legionalla bacteria, the history of legionellosis both nationwide and in Clark County, and industry's current standard on controlling the risk of legionellosis in the building's water systems. The second phase is the administration of an environmental assessment of the water systems using the CDC Legionella Environmental Assessment form. The final phase is the selection of rooms for the sampling of hot water. Two rooms are selected; the room where the case stayed, and a room on the distal end of the hot water supply line. Each fixture supplied with hot water has two samples taken; one from the first draw of water, and one after one minute of flushing. Various water parameters are measured, and environmental swabs of the inside of the fixtures are taken. An additional sample is taken where the hot water returns to the water heating system. All of these samples are then shipped to an ELITE certified commercial laboratory to be tested for the presence of L. pneumophila. When SNHD receives the result of the sampling, the results are forwarded on to the facility with a recommendation. If the results indicate the presence of L. pneumophila of the same serotype that caused the illness in the case, SNHD recommends that the building be remediated. If the sampling indicates that L. pneumophila is present that is not the serotype of the case, SNHD recommends that the facility contact its water management consultant and determine what next steps are necessary. If no L. pneumophila is found in the sampling, SNHD staff advise the facility that L. pneumophila was not found and that the facility should continue following its water management plan or if they do not have one, to develop one. SNHD requests from the facility that it be notified of how any remediation is to occur and when it will occur. SNHD will spot check the remediation to ensure that it is taking place as described. Once remediation has taken place, SNHD will request follow up sampling be implemented to ensure that L. pneumophila does not recolonize the water system. All costs associated with the time SNHD spends in sampling and testing is billed to the facility. SNHD also developed a training program. The training provided attendees a basic understanding of the history of legionellosis, ecology of L. pneumophila, how L. pneumophila causes legionellosis, past outbreak investigations and the new practice that SNHD would be implementing in investigating each case of legionellosis reported to it and how it would be funded. The training was focused toward building engineers, risk managers and hotel operators. The ongoing costs of the program include the sending of samples and testing of those samples for L. pneumophila, SNHD staff time to conduct the investigation and to provide adequate follow-up. During SNHD's complete fiscal year from July 1, 2015 to June 30, 2016, SNHD staff conducted twelve investigations. Each of these investigations took a total of 100 staff hours and required the submission of nearly 250 samples to a private ELITE certified laboratory. Each sample cost $95. SNHD staff spent 50 hours conducting these investigations and appropriate follow-up.

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): *

While no formal evaluation has been done on this practice, SNHD has found that no outbreaks were identified after implementation of the practice in 2012. Since its implementation, SNHD has conducted 51 investigations at various locations; 45 were at located at permitted public accommodations, 5 at permitted spas and 1 at a public venue.

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): *

This practice has built in sustainability. SNHD staffing costs of the program are provided by the permit fees paid by the regulated community. The costs of the samples are now paid for by the affected facility. A master of public health thesis published in 2014 examined the costs and benefit of this practice. While the costs to the local health department and facility increased after implementation, the prevention of a single outbreak the new practice was worth the extra investment. The thesis found that the total annual cost to both the local health department and resort industry was $1.6 million over the study period of 1.5 years far outweighed the cost of single outbreak which was found to be $700 thousand in investigation and remediation costs and hundreds of millions in litigation costs. SNHD has found that the resort industry is very accepting of the practice. Each facility notified of a case has allowed SNHD to conduct its environmental assessment. Since the implementation of the practice in 2012, there has yet to be an outbreak identified while during the time from 2000 and 2011, there were seven identified outbreaks.

Additional Information

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

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