Public Health Response Account: Update and Expenditures

Report To The Minnesota Legislature
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Public Health Response Account: Update and Expenditures

Minnesota Department of Health

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As requested by Minnesota Statute 3.197: This report cost approximately $4,147.00 to prepare, including staff time, printing and mailing expenses.

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Introduction and Background

Minnesota Statues § 144.4199, subdivision 8 requires the commissioner to:

> "Submit a report to the chairs and ranking minority members of the house of representatives Ways and Means Committee, the senate Finance Committee, and the house of representatives and senate committees with jurisdiction over health and human services finance, detailing expenditures made in the previous calendar year from the public health response contingency account."

The Minnesota Legislature and Governor Dayton created the Public Health Response Contingency Account (hereinafter Public Health Response Fund) in 2017 to enhance Minnesota's state and local response to urgent public health threats. The law provides $5 million for the account but limits its uses to major infectious disease outbreaks.

During the winter/spring of 2017, the Minnesota Department of Health dealt with three large infectious disease outbreaks: multidrug resistant TB (MDR TB) in Hmong elders predominantly in Ramsey County, measles in unvaccinated individuals predominantly in Hennepin County, and syphilis across the state, with clusters in tribal communities. Initially the agency's response efforts were managed by redirecting existing staff and resources to outbreak control activities. However, the breadth of these outbreaks, their cross-cultural complexities, and ongoing nature exceeded the agency's ability to respond by redirecting existing resources.

On July 10, 2017, the Department notified the Governor, Minnesota Department of Management and Budget (MMB), and legislative leaders of the need to access the public health response account. MMB submitted a request to the Legislative Advisory Commission (LAC) on our behalf for $613,583. These funds were requested to help the agency respond to tuberculosis, syphilis, and measles. MDH had also requested resources from the Centers for Disease Control and Prevention (CDC) to help address these outbreaks, but had not received any funding at that time. Our requests were based on the additional resources that were needed to augment the ongoing outbreak response, both at MDH and from tribal and local public health partners.

This report is intended to provide a summary of our activities and accomplishments as a result of the funding received from the Public Health Response Contingency Account in 2017.

Detailed information on expenditures is included as an attachment at the end of the report.

Program Specifics

Tuberculosis

Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis*. The bacteria usually attack the lungs, but can attack any part of the body such as the kidney, spine, and brain. Not everyone infected with TB bacteria becomes sick. As a result, two TB-related conditions exist: latent TB infection (LTBI) and TB disease. If not treated properly, TB disease can be fatal.

Multi-drug resistant tuberculosis (MDR TB) is an infection caused by tuberculosis bacteria that have built up resistance to the two most common and effective TB medications used to treat persons with TB (INH, Rifampin).

Treating MDR TB presents many challenges. There are multiple medications which are harsh and have many side effects. Daily treatment is long-term, from 18 to 36 months, which makes adherence difficult. Finally, the medications are expensive. A 2014 study found that direct medical costs, mostly covered by the public sector, averaged $134,000 per MDR TB patient; in comparison, estimated cost per non-MDR TB patient is $17,000.

Before 2016, Minnesota usually saw no more than one case of MDR TB each year. In 2016 MDH identified nine cases of MDR TB. Since that time, an additional eight MDR TB cases have been identified. Fourteen of the cases are occurring in Hmong elders in the East Metro area, with a cluster of 10 cases associated with an adult day care center.

MDH received a total of $224,635 to respond to this ongoing outbreak of MDR TB.

After this request was submitted to the Legislative Advisory Commission (LAC), the CDC TB program awarded funding to MDH for education and outreach. As a result, MDH transferred $10,750 back to the reserve for the public health response fund.

MDH hired two temporary epidemiologists to assist with contact investigations and screening—they began work on October 4, 2017. A third temporary epidemiologist started on January 10, 2018. That position is working at the St. Paul-Ramsey County Public Health (SPRCPH) and is assisting with contact investigations, screening, and data management.

MDR TB Outbreak Response Update

JULY 2017—DECEMBER 2017

The focus of our outbreak response work, in collaboration with SPRCPH, has been to conduct community outreach, provide education and training, and complete contact investigations.

Both MDH and SPRCPH have initiated an Incident Command System (ICS) structure to manage the outbreak. Staff from MDH and SPRCPH check-in regularly to evaluate progress on monthly metrics related to contact investigations, trainings, and outreach.

Community outreach has been a critical aspect of the work. MDR TB is not well understood by the community, especially among the Hmong elders. It is crucial that community and family members be engaged and have a better understanding of MDR TB and its treatment to stop the outbreak. A better understanding of the situation will make it more likely that they will support necessary TB screening, make certain elders complete treatment, and provide emotional support to family and community members dealing with MDR TB. Additionally, Hmong elders past experiences of trauma and separation while in the refugee camps contribute to their fear of isolation when they receive a TB diagnosis. Elders need the support of the community at this time.

Outreach

Staff from MDH and SPRPH are engaged in outreach with community leaders and elected officials to inform and increase awareness of the outbreak.

MDH staff have met with the Hmong 18 Council leadership on several occasions, most recently December 10, 2017, to review the status of the outbreak and seek their guidance in working with the community. The Hmong 18 Council was established in 1975 and serves as a leadership group around Hmong culture and values. It is very influential within the community. We have also engaged elected officials from the Hmong community and the East Metro and provided outbreak updates.

- Met with Representative Fue Lee (July 28, 2017)
- Met with Minneapolis City Councilman Blong Yang (Week of August 21, 2017)
- Met with Senator Foung Hawj (September 25, 2017)
- Met with Representatives Lee, Jurgens, Ward, and S. Johnson (January 8, 2018)

MDH and SPRCPH staff have participated in a number of outreach activities with the Hmong community to increase awareness of TB and reach the adult children of the elders.

- Hmongtown Festival - MDH and SPRCPH staffed a table (June 24-25, 2017)
- Hmong Soccer Tournament - Through the Hmong Health Care Provider Coalition tent, provided 500 giveaway bags with TB information (July 4, 2017)
- Twin Cities World Refugee Day - Distributed TB information (July 16, 2017)
- Hmong Health Fair - SPRCPH staffed a table (October 7, 2017)
- Influenza Vaccine Clinic at Hmongtown - SPRCPH staffed a table (October 14, 2017)
- Hmong Health Care Professionals Fair - SPRCH staffed a table (October 21, 2017)
- Hmong American Partnership Health and Wellness Forum - MDH staffed a table and the MDH Infectious Disease Deputy Medical Director also gave a presentation (November 11, 2017)
- Hmong Radio and Hmong TV - MDH and SPRCPH staff have also been interviewed about TB.

Hmong Senior Centers

There are 17 Hmong Senior Centers (adult day care) in the Twin Cities metropolitan area. Because of the potential for spread of MDR TB to elders in other adult day care centers, MDH felt it was

important to educate both staff and attendees about the risks of TB and symptoms. The trainings were structured differently for staff and attendees.

Adult day care center staff received a TB 101 presentation "Tuberculosis (TB) and Community Health," which gave a general overview of TB. MDH staff emphasized the symptoms, provided a status on the current MDR TB outbreak, and provided resources on directing attendees to their primary care provider and local public health if there was any concern about TB. MDH staff also gave each senior center MDH contact information and a DVD presentation in Hmong about TB.

Senior day care attendees received a presentation "MDR TB and One Man's Story". This was a story-telling type of presentation given in Hmong with a Hmong medical translator. It is a fictional story about a man who had to flee Laos and lived in the Wat refugee camp in Thailand where he unknowingly contracted MDR TB. He emigrated to St. Paul, Minnesota and lived for many years as a "healthy" man with no symptoms of TB. Many years later, he develops a bad cough and goes to his doctor and is diagnosed with MDR TB. He undergoes treatment and is cured. The story goes on to explain that his family and friends he spent time with are a part of a contact investigation by public health. This presentation emphasized symptoms, treatment, next steps, and the important role staying healthy plays in their community. MDH staff provided the elders with magnets (see Appendix A) that explained the symptoms in both Hmong and English, our contact information, and the contact information for the local public health TB clinics. Attendees asked many questions and were engaged in learning about their health and the current outbreak taking place in their community.

MDH staff reached out to all seventeen Hmong adult day care centers in the Twin Cities metropolitan area, only one center refused to participate with MDH. Both staff and residents of the other 16 centers have received training and education on TB and MDR TB.

Department of Human Services

MDH is currently working with the Minnesota Department of Human Services (DHS) to educate licensed adult day centers (ADCs) about Minnesota rules pertaining to adult day care.[1] All adult day centers are required to "develop and maintain a written record for each participant…a report on a physical examination, updated annually…and documentation that the participant is free of communicable disease or infestations." Adult day centers represent a potential setting for transmission of TB because of the older population and congregate setting.

MDH worked with DHS to reach all ADCs to educate them about TB prevention and treatment. The goals included the following:

- Increasing awareness among DHS surveyors about the burden of TB in Minnesota and the potential for ADCs to be sites for TB exposure.
- Leveraging DHS's legal authority to increase TB prevention and control efforts in ADCs.

[1] Minnesota Rules, chapters, 9555.9660 and 9555.9710.

- Increasing awareness among ADC directors and registered nurses about the signs and symptoms of TB and what to do if participants may have TB.
- Educating ADCs about the need to be in compliance with DHS's current laws regarding control of communicable disease as it relates to TB.

MDH also created several resources and tools to support ADCs as they learn more about TB and increase compliance with appropriate TB screening of ADC participants (Resources include:

- Think TB Poster (see Appendix A).
- Adult Day Center Participant Tuberculosis (TB) Risk Assessment (tool)
- Adult Day Center Participant TB Risk Assessment FAQs (fact sheet)

Provider Education

The Department has focused on providing training on TB and MDR TB to health care providers serving the Hmong community. The goal is to increase their awareness of TB (signs and symptoms) and to encourage them to have a high index of suspicion for patients presenting for care with respiratory symptoms. Because there is no guidance on screening and treatment for MDR latent TB infection from CDC, MDH medical staff developed guidance for health care providers on this topic. Information is posted on the MDH website. Over the last six months of 2017, MDH staff have given multiple presentations on MDR TB for providers, including presentations for:

- Maplewood Clinic
- Hmong Healthcare Professionals group
- West Side Clinic
- Regions Internal Medicine Grand Rounds
- University of Minnesota Internal Medicine Grand Rounds
- University of Minnesota Travel and Tropical Medicine Seminar
- University of Minnesota's Internal Medicine Morbidity and Mortality meeting
- Minnesota Emerging Infections Conference
- Regions Hospital Care Coordinators and Nurse Managers
- In collaboration with the Minnesota Hospital Association (MHA) - created a webinar on MDR TB and archived it online.
- Created webinar to post on Minnesota Medical Association's site (MMA). MMA also provided free continuing medical education credits.

Contact Investigations/Screening

TB contact investigations are one of the most important components of a TB control program. Every case of TB was once a contact. Anyone can get TB. Those who spend a lot of time in enclosed spaces with people who have TB disease are at the highest risk of becoming infected with tuberculosis. This may include family members, friends, roommates, or coworkers. These people, or contacts, are identified by public health workers through interviews with patients who have TB disease. Public health workers are responsible for ensuring that these high-risk individuals are evaluated for TB infection and TB disease, and treated when appropriate. This activity is called a contact investigation.

Contact investigations focus on individuals who have had prolonged contact with an infectious case of TB, starting with those with the greatest exposure. It is not easy to become infected with TB. Usually a person has to be close to someone with tuberculosis disease for a long period of time. This is very different from measles in which a person only needs to have shared air space with someone to become infected. Household contacts are usually the first group screened. Because the cases of MDR TB were in elders, we didn't have work settings to evaluate but did evaluate those who attended adult day care with the cases. We are also evaluating individuals with prolonged contact in other settings as well, such as church Bible studies.

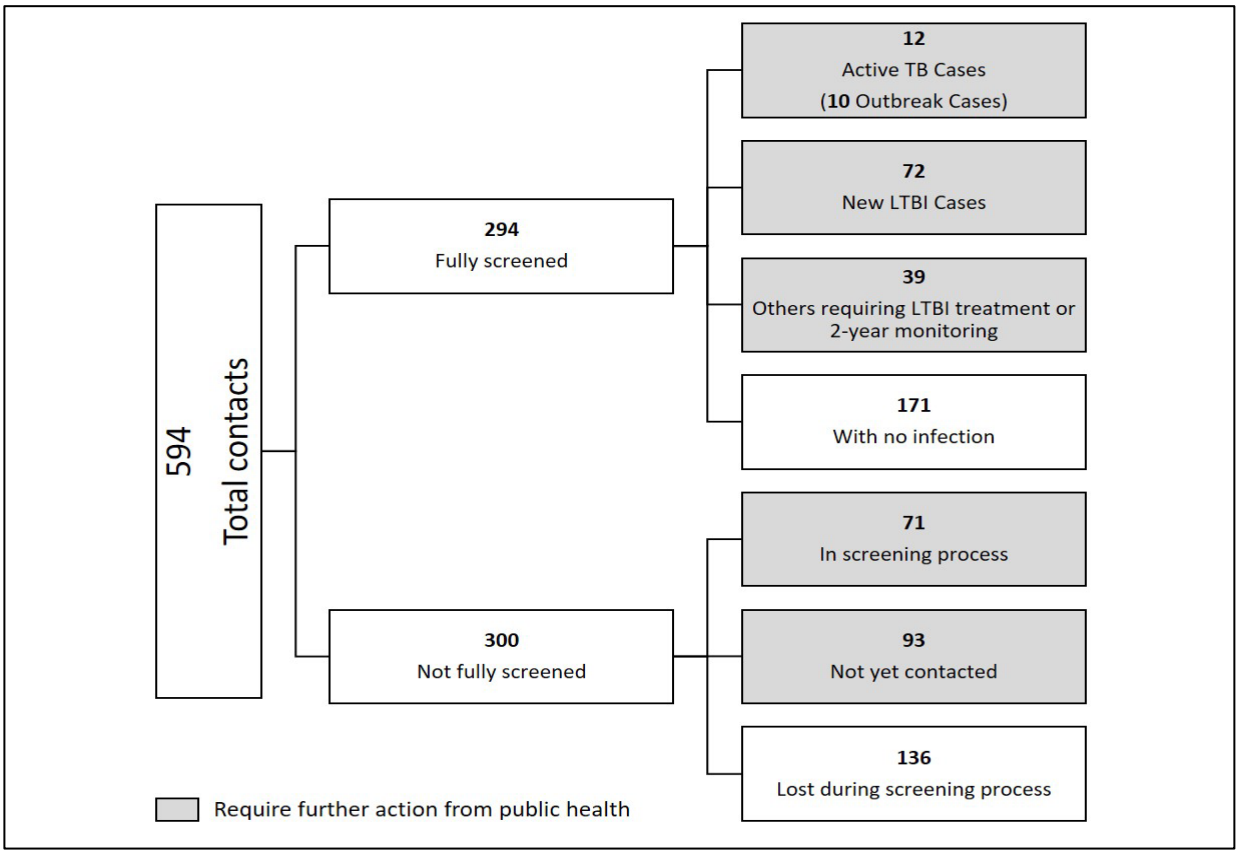
Once a contact has been identified, they are screened for TB. Screening involves assessment for medical risk factors, symptom screen, a blood (or skin test) to measure a person's immune activity to TB, and for many contacts in this outbreak, an X-ray.

Since January of 2016, we have had 14 cases of MDR TB in the Hmong community, and ten of those have been identified as outbreak cases, resulting in a large number of community members who have been exposed (contacts) to MDR TB. To date we have identified 594 people who are contacts to MDR TB. This includes household contacts and healthcare workers, as well as contacts in congregate settings such as adult day centers, long term care facilities, and church congregations. In order to facilitate screening, two on-site screenings were held at the senior center where the majority of cases were identified.

To date, 294 people have completed the necessary screening. In addition to the 10 outbreak cases of MDR TB (active disease), 72 new cases of MDR LTBI (infection but not yet disease) have been identified. These individuals will also require treatment and follow-up. Seventy-one contacts are currently in the evaluation process and may also require treatment and follow-up. Ninety-three individuals have not yet been reached. We have considered 136 lost to follow-up due to inadequate locating information, death, and refusal (see Figure 1). Follow-up to reach contacts has included phone calls, letters, and home visits. We expect to identify more contacts as the outbreak progresses as new settings for exposure are identified and as new cases are identified.

A RedCap database was developed by MDH to track screening and clinical outcomes. One of the TB epidemiologists is managing the data from contact investigations and screening to track progress and help prioritize activities.

Figure 1: Summary of Contact Investigations/Screening



CDC Funding Resources

The resources received from CDC for TB education and outreach ($91,198.00) are being used to develop a training video. The Tuberculosis Prevention and Control Program will be putting out a quick call for a professional/technical service contract to produce multilingual educational videos on multi-MDR TB. The purpose and goal of the videos is to raise awareness of MDR TB in senior cultural communities, especially Hmong elders but also in the Karen and Somali communities. The three products for creation include:

1. Educational video short providing information about TB and MDR TB directed at elders in identified cultural communities who may not be aware that they are still at risk of developing TB. Hmong with English subtitles.
2. Educational animated video short providing information on the risks of TB/MDR TB in their community and to identify symptoms directed at the adult children/caretakers of Hmong elders. English with Hmong subtitles.
3. Live action video shorts directed at the general public and identified communities to raise awareness about TB/MDR TB. Scripted in English, Somali, Hmong and Karen.

Upon completion, the contractor will broadcast the videos via appropriate networks, such as public broadcasting and partner social media.

Syphilis

Syphilis is a sexually transmitted disease that can be treated with antibiotics. If left untreated, syphilis can affect the nervous system and cause paralysis, sensory deficits and dementia. Moreover, pregnant women infected with syphilis who are not treated can pass it on to their fetus. Congenital syphilis can result in miscarriage, stillbirth, low birth weight or death shortly after birth. Babies born with congenital syphilis can have bone deformities, anemia, enlarged liver and spleen, jaundice, blindness or deafness, meningitis, skin rashes, have seizures and may be developmentally delayed.

Syphilis is on the rise in Minnesota. We have seen a 30 percent increase in syphilis cases from 2015 to 2016. There were 852 cases of syphilis reported in 2016 compared to 653 in 2015. In 2015, we had two congenital syphilis cases; in 2016 we had seven congenital cases. Preliminary data for 2017 suggests one case of congenital syphilis was reported in Minnesota. In 2016, based on the increase in congenital syphilis cases, MDH recommended that all pregnant women receive syphilis testing at three points in the pregnancy (first prenatal visit, at 28 weeks', and at delivery).

All communities are experiencing cases regardless of region, age group, gender, or race/ethnicity. However, health disparities due to social determinants of health (e.g., barriers to education, lack of health care access, inadequate housing, and insufficient income) do make some communities more vulnerable to infectious diseases such as syphilis. Unfortunately, in the case of syphilis, drug use is an added risk factor. While drug use is not a direct risk for syphilis infection, syphilis can only be transmitted through sexual activity. Drug use is considered a risk factor as it may increase an individual's likelihood to engage in higher-risk sexual behavior. Providing HIV and hepatitis C prevention services to injection drug users through harm reduction methods can be an incentive to bring individuals in to receive syphilis screening.

Outbreak Current Status

As of January 3, 2018, the total number of outbreak related syphilis cases reached 74. A case for this outbreak is defined as any reported syphilis case diagnosed in 2016 or 2017 that resides in Mille Lacs County, Cass County, Beltrami County, Mahnomen County, or Itasca County with known or reported drug use or a reported case of syphilis that is linked to a case that is part of the outbreak. Males accounted for 30 cases (41%) and females 44 cases (59%). Ten (23%) of the female cases were pregnant at the time of report; all pregnant females have been treated with antibiotics. The outbreak is disproportionately impacting communities of color, with sixty-nine (93%) cases among people of color and five cases (7%) being White non-Hispanic people. Fifty-seven (77%) of the cases have admitted or known history of drug use; 18 (24%) cases are hepatitis C positive. We have been able to conduct disease investigation interviews with 65 cases (88%) to date. These interviews are used to identify sexual partners who may have been exposed to syphilis so that they can be tested and treated if appropriate. Four individuals (5%) have refused to be interviewed; we have been unable to locate 4 cases (5%) and one interview is pending.

MDH received a total of $288,503 to respond to the ongoing syphilis outbreak.

In October 2017, MDH hired a full-time, temporary, syphilis prevention coordinator to oversee the syphilis prevention projects to be conducted with response funds. A summary of activities follows.

Syphilis Prevention Projects Update

JULY 2017—DECEMBER 2017

Jail Syphilis Screening Project

During disease investigation interviews in 2016-2017, MDH found a significant number of syphilis cases had a history of incarceration and drug use. Among these cases were pregnant women and/or women of childbearing age. This is concerning due to the risk of passing syphilis to their baby, congenital syphilis. One purpose of the screening project is to provide syphilis testing for incarcerated pregnant women. This is very important because they often do not access traditional prenatal care services. Additionally, because history of drug use was found as a commonality among the syphilis cases, it is important to screen and treat incarcerated individuals booked on drug related charges.

The MDH Syphilis Prevention Coordinator has developed relationships with three county jails (Mille Lacs County, Crow Wing County, and Scott County) in Minnesota to implement a screening project to:

- Identify and treat syphilis cases among individuals booked on drug-related charges in the jails.
- Prevent cases of congenital syphilis by identifying and treating cases of syphilis among pregnant females in the jails.

As a part of the project, the Coordinator developed protocols and procedures necessary for each jail site to screen inmates. Logistics coordination with MDH Public Health Lab for specimen transport and testing, and evaluation planning has also been finalized. Jail site visits will begin in January, 2018. In addition to jails, the Coordinator is working with tribal detention centers to explore options for syphilis screening services of inmates from Tribal Health and/or Indian Health Services (IHS).

This project will last through June 2018, followed by an evaluation.

Tribal Grant Agreements

The Department has been responding to outbreaks in the American Indian community since 2016, with a cluster in Central Minnesota and the northwestern part of the state. Thus, some of the contingency funding was designated for two tribal grants for syphilis prevention, which the Coordinator will manage. These grants are:

Mille Lacs Band of Ojibwe Grantee Duties (January 1 – June 30, 2018: $80,000)

The funding will go to the Mille Lacs Band of Ojibwe for the purpose of:

- Purchasing syphilis testing supplies and funding clinician time to increase syphilis testing, syphilis surveillance, and follow-up to positive cases of syphilis.
- Increasing prevention awareness and education through outreach and distribution of informational materials.

- Providing HIV and hepatitis C prevention services to injection drug users through harm reduction methods (distribution of sterile syringes, sharps containers, and alcohol wipes).

Tentative White Earth Nation Grantee Duties (January 1 – June 30, 2018:

$50,000) The funding will go to the White Earth Nation for the purpose of:

- Increasing syphilis testing.
- Increasing prevention awareness through the planning and implementation of STD Awareness Month outreach events.
- Developing and facilitating a STD prevention and harm reduction leadership training and toolkit to be presented at White Earth Nation Harm Reduction Summit in May 2018.

There is $20,000 remaining in contractual costs and the use of this funding will be determined as the grants move forward.

Education

The Syphilis Prevention Coordinator is working with KAT Communications and their American Indian-focused media outlet, GoodHealthTV, to create and distribute culturally-centered educational materials that resonate with American Indian Tribal Nations and Urban American Indians.

Phase one is a set of three print materials set for distribution on January 15, 2018:

- A poster for Tribal Health, IHS, and Urban American Indian health care facilities
- Informational 'rack cards' (small brochure) and business card-sized 'resource cards' for distribution at various facilities that serve American Indians in both urban and tribal settings.

Phase two will be a targeted two-month social media campaign (Facebook, Instagram) alongside a targeted radio public service announcement. MDH hopes to launch these two activities in late January or early February 2018.

Outreach

The Syphilis Prevention Coordinator is working with the MDH Family Home Visiting (FHV) program to prevent congenital syphilis through education and awareness to pregnant clients who may not be accessing prenatal care. The Coordinator is joining regional meetings with FHV, including Family Spirit (an American Indian-specific FHV program), to present about syphilis and congenital syphilis and the importance of screening with pregnant clients.

In January 2018, the Coordinator in collaboration with the MDH Director of American Indian Health will begin planning outreach specific to Urban American Indians.

The STD, HIV, and Tuberculosis Section Manager and the Infectious Disease Division Medical Director already distributed updated screening recommendations regarding syphilis, HIV, and hepatitis C. These recommendations were sent to drug treatment centers through the Minnesota Department of Human Services on September 25, 2017.

The STD Nurse Specialist and Medical Director completed a plan to ensure the adequate supply of Bicillin, which is a treatment for syphilis.

There is ongoing communication with Tribal Health and MDH will present updates on the outbreak at the Tribal Health Directors Meeting on February 15, 2018.

Outreach will continue throughout 2018 to ensure all needs are being met.

Trainings

In collaboration with CDC, MDH developed a provider training plan for a syphilis webinar series. Session 1 was held December 8, 2017 and session 2 will be held on January 19, 2018.

The Syphilis Prevention Coordinator has also been in communication with Tribal Health Directors to offer training and address any needs to implement increased syphilis screening. The MDH STD Prevention Nurse Specialist has provided the following trainings for Tribal Health clinical staff on the topics of syphilis and taking sexual histories during the fall of 2017:

Date	Audience
October 5, 2017	Leech Lake – three sites
October 12, 2017	St. Louis Co. Public Health and Human Services Conference
October 24, 2017	Greater MN Disease Intervention Specialist (DIS) for White Earth tribal health nurses and clinic assistants
October 25, 2017	Greater MN Disease Intervention Specialist (DIS) for Indian Health Services (HIS) medical staff in White Earth.
October 26, 2017	Bois Forte medical staff at Vermillion clinic
October 31, 2017	Chemical dependency counselors and nurses at the annual Minnesota Association of Resources for Recovery and Chemical Health (MARRCH) conference

Trainings will be held for providers at Red Lake and the Upper Sioux Community at the beginning of 2018. More clinical trainings will be added in 2018 according to need and requests.

In January 2018 additional MDH staff will receive training on testing for syphilis, HIV, hepatitis C, and bloodborne pathogens to ensure and increase capacity to continue to respond to this outbreak.

Screening Events

MDH staff performed screening tests for syphilis and HIV and provided education at three Mille Lacs Band of Ojibwe health fairs (10/18 – 10/20) in collaboration with Mille Lacs Band of Ojibwe Ne-Ia-Shing Clinic.

Fifty-seven people were tested for syphilis; four preliminary positives were identified. These individuals were interviewed and three received treatment on site. Two of the four individuals with preliminary positive results received confirmatory testing, and results were negative. The additional

two individuals did not attend clinic for confirmatory testing. Four sexual partners of cases were identified at this event and all tested negative. Fifty-one people were tested for HIV with one preliminary positive, who was later found to be negative.

Sixty-four people received vouchers to come to the clinic to be tested at another time. Thirty-four vouchers were redeemed: 33 were tested for syphilis with one positive, 34 were tested for HIV and all were negative, and 34 tested for hepatitis C and one was positive.

These events were supported using both public health response funds and federal funds. More testing events will be completed in 2018 as needed and as requested using public health response funds.

Measles

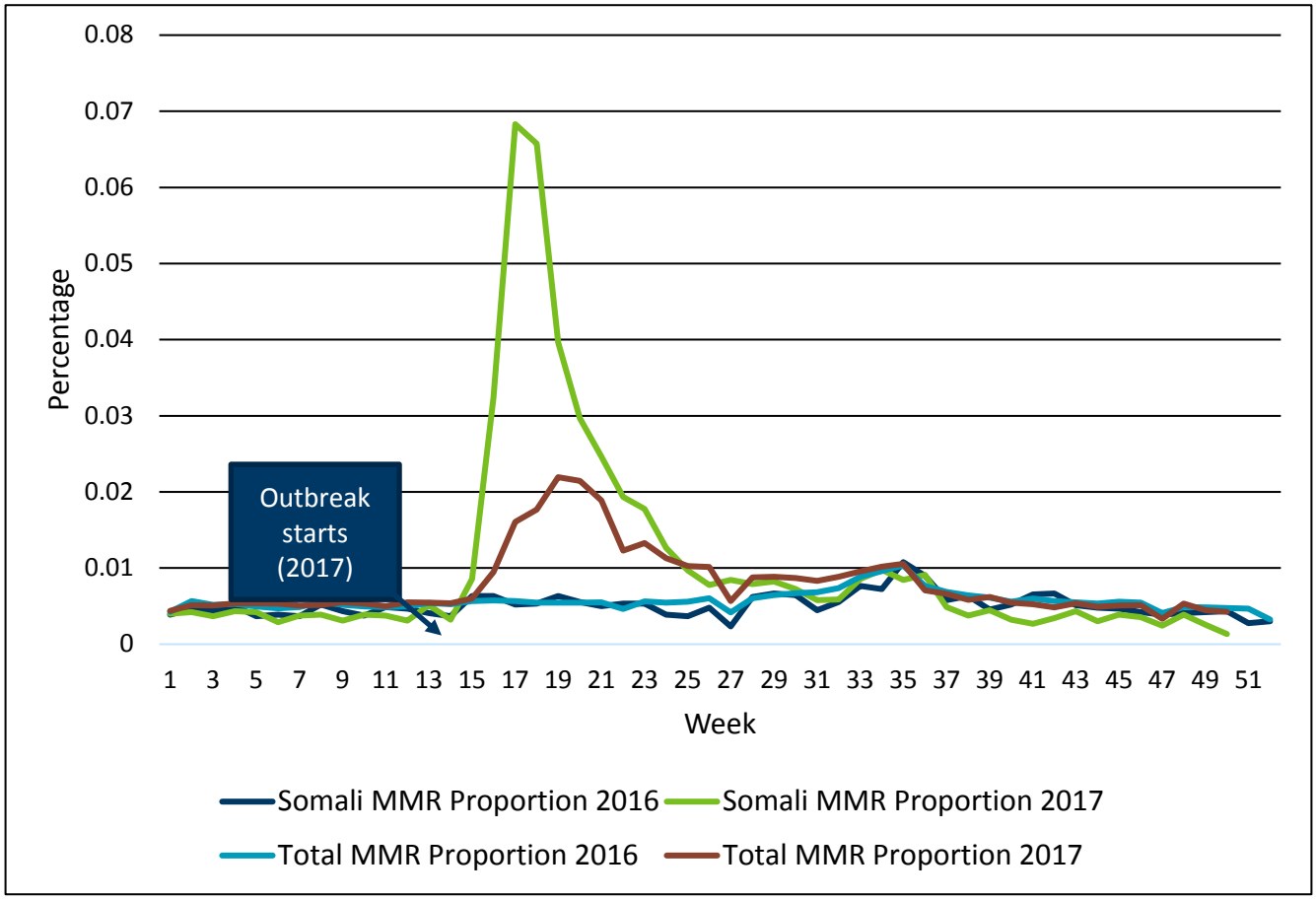
Minnesota experienced a large measles outbreak in the spring and summer of 2017. The outbreak affected predominantly unvaccinated children, 90 percent of the 79 cases were unvaccinated. Twenty-two individuals (28%) were hospitalized. Eighty-one percent (64/79) of cases occurred in Somali Minnesotans. However, there was also spread to unvaccinated children in Le Sueur and Crow Wing counties.

The active response period of the outbreak lasted five months at a cost of $2.3 million for the three entities for which we have cost information ($575,000 for MDH, $395,349 for Hennepin County and $.3 million for Children's Hospital and Clinics). There were many other health systems involved in the response for which we do not have cost information. Additionally, the Minnesota Department of Human Services and Minnesota Department of Education invested time and resources in responding to the outbreak.

While we were able to issue an 'all-clear' on August 25, 2017 (two incubation periods of 21 days without a new case), the situation is still critical. This outbreak was caused by extremely low vaccination rates in the Somali community—only 42 percent for MMR (measles, mumps and rubella) in children 24 to 36 months of age. Until vaccination rates in the Somali population improve, Minnesota is at risk for a similar situation occurring again.

The following graph outlines the proportion of the population vaccinated with MMR vaccine by week comparing 2016 (non-outbreak year) with 2017 (outbreak year) (see Figure 2). The graph compares Somali children under 6 years of age versus the total Minnesota population of children under 6 years. There was a definite increase in MMR vaccination in response to the measles outbreak in both Somali and non-Somali children during the time of the outbreak. However, that increase was not sustained once the outbreak was over. This is concerning for the Somali population since they were already behind on having their children up to date for MMR vaccination (42%) going in to the outbreak. While the vaccination rate increase during the outbreak helped to get more children to be up to date with their MMR vaccination, we have a great deal more work to do in this area.

Figure 2: Proportion of population vaccinated with MMR by week, 2016 vs 2017 (Total Minnesota population under 6 years and Somali populations under 6 years)



The temporary Somali outreach worker who was hired during the outbreak to assist in case investigation has been extended to oversee the measles projects to be conducted with response funds. A summary of activities follows.

Measles Projects Update

JULY 2017—DECEMBER 2017

Public Health Laboratory

Public Health Contingency funds were used to pay a portion of the salaries for current employees whose time was redirected from their normal daily routines to focus on the measles outbreak response. This included a Bacteriology Laboratory Specialist who conducted testing, as well as a Management Analyst 1, who was responsible for receiving the specimens in the lab and ensuring the results were reported out properly through our laboratory information system. Due to the technical nature of the work involved, the need to be able to report results per CLIA, and the short time-period for the response efforts, hiring of a temporary worker to perform these services was not possible, and funds were used to pay for staff redirected to this project from other areas. Funds were also

spent to pay for reagents (testing materials) and consumable materials needed to perform the measles screening assay, measles genotyping, and the validation studies for the new assay.

The MDH Public Health Laboratory (MDH-PHL) response to the outbreak continued at an elevated level even after the last positive outbreak-associated case was identified on July 10, 2017. Between July and December, 2017, the MDH-PHL performed 175 measles screening tests in specimens submitted by Minnesota hospitals and clinics. In comparison, the five-year average testing volume over this time period for this test (2012-2016) is 29 specimens. The majority of these specimens were received between July 1 and September 1, coinciding with the end of the outbreak. Since the declared end of the outbreak on August 25, submission numbers have remained slightly elevated over the five-year average (38 vs 19), but have returned to a manageable number.

No additional measles cases have been identified since the end of the outbreak. However, some additional testing was required to confirm the virus genotype (the genetic make up of the virus) of specimens that screened positive for measles virus during the outbreak, as well as specimens that screened positive for measles that were received after August 25. Measles virus genotyping plays an important role in tracking transmission pathways during outbreak investigations. Genotyping is also the only way to distinguish whether a person has wild-type measles virus infection (real, infectious disease), or a rash caused by a recent measles vaccination. In total, genotyping analysis was performed on 47 specimens. We confirmed the presence of the outbreak-strain of measles virus in 26 specimens during this time period, and were able to rule-out the outbreak strain in eight specimens.

To assist with faster identification of specimens that are positive for measles virus due to recent vaccination (but not infectious and therefore do not need public health intervention), funds from the public health response fund were used to test and validate a molecular test that can identify the genotype of the measles virus that is found in vaccines. The genotyping test currently used by the MDH-PHL is very resource intensive, in terms of labor, testing materials, equipment and time, requiring at least 48 hours to complete. The new test we are validating could potentially be performed within four hours of an initial positive result.

Being able to identify vaccine-associated cases more quickly will allow for a faster identification of cases that actually need public health follow up and intervention such as isolation. This could allow for more judicial use of resources during an outbreak. The validation testing done by the MDH-PHL has indicated that this molecular test performs very well to quickly and accurately identify specimens positive for measles due to recent vaccination. The MDH-PHL is working on the final documentation needed to put this assay into use.

Survey Background

MDH received feedback from our Somali outreach staff, the Somali community, and local health care providers that a follow-up with Somali families who received MMR was needed for two reasons. The first was to better understand the Minnesota Somali community's experience around receiving MMR and interactions with the health care system. The second, was to understand what factors influenced MMR hesitant families to get vaccinated during the outbreak. It was also noted that this feedback

and stories should be shared with the Somali community. These activities will not only help build trust and continued communication between MDH and the Minnesota Somali community, but also help public health understand what communication is effective for vaccine hesitant families during outbreaks.

The MDH Immunization Program staff, which includes Somali outreach staff, decided to do a survey based on the above feedback from stakeholders and the fact that we saw over 2,200 Somali children get caught up on MMR vaccination. The survey was developed in partnership with the University of Minnesota School of Public Health who have expertise in survey design. The survey is designed to obtain data through conversational interviews. The results will then be used to assist us in increasing immunization rates for this population. The survey was piloted with 16 families and based on that experience, some changes were made. The survey is being conducted in Somali by our Somali outreach staff.

Survey Status

We have been successful in our attempts to connect with Somali families to document their experiences during the outbreak, including the influencing factors in vaccinating. As of January 4, 2018 we have reached over 120 families that vaccinated their child(ren) during the outbreak.

The interviews typically take 30-45 minutes. At times, families request that we contact them during the evenings or weekends. With the commitment of our Somali outreach worker, we were able to initiate this survey quickly after the outbreak, which has been key to a good response. Nearly all families contacted are willing to share their stories. We have also identified several additional opportunities for outreach through these stories and conversations with families. The Somali outreach worker will be following-up on these new outreach ideas in the coming months. These potential follow up opportunities center around three main themes:

Several of the families have expressed a desire to talk in more detail about their experiences with vaccination and their interactions with the health care system. We are considering a focus group discussion with survey participants to enhance the information we have gathered and to provide an additional way to reach parents who may still struggle with decisions around vaccination.

Somali mothers identified a need for immunization information to be readily accessible in their own language. The Somali outreach worker will be working with MDH's videographer and a community-based organization to develop a YouTube video in Somali that addresses the most common concerns for vaccine hesitant parents.

Some families are navigating barriers that play into vaccination decision-making that are beyond the purview of the immunization program. We have partnered with Somali outreach staff in the Maternal Child Health section to connect these families to resources. Most families are satisfied with the connections we offer, but the general need for child health resources in the community is very high.

Our Somali outreach worker is an integral part of the analysis and summarization of these interview findings. She will help guide MDH in bringing this information back to the community and subsequent development of interventions to improve immunization coverage.

MMR Vaccination Status

Unfortunately, in order to most accurately evaluate the current MMR status of Somali children we need to wait until February 2018 when we can assess the vaccination status of the 24-36-month old birth cohort. This particular cohort will give us a better idea of whether kids are getting vaccinated on time—which is our goal and the single best way to prevent another outbreak. In the absence of data at this time, we interviewed MDH Somali staff on what was happening in the Somali community regarding immunization conversations.

Anti-vaccine groups are still active, but the community seems to be more questioning of the information these groups provide. Community members will frequently share anti-vaccine messages and videos with MDH Somali outreach staff, usually asking "is this true?" Community members know the anti-vaccine groups are working in the community, but it is somewhat covert. Community members are clearly hearing anti-vaccine messages but will not say where they heard them. The perspective of MDH outreach workers is that the community is confused. We take it as a good sign that community members are sharing these videos with MDH outreach workers and asking for credible information. The desire for information in the community has definitely increased since the outbreak.

There are a growing number of child care centers in Minnesota that are owned and operated by Somali-Minnesotans and serve primarily the community's children. MDH identified child care centers as an important setting for outreach about five years ago because of the high risk for outbreaks among children and for the opportunity to reach parents and caregivers. Prior to MDH's concentrated outreach, these centers didn't consistently submit annual immunization reports and did not have knowledge of immunization requirements under Minnesota statute. Each year, MDH Somali staff identify newly opened centers and provides technical assistance with the annual report as requested. They provide additional reminders and phone calls to centers that have been operating on top of the usual reminders MDH and DHS send to all licensed centers.

In 2017, MDH identified and communicated with nearly 80 centers that served primarily Somali-Minnesotan children regarding their annual reports. At the conclusion of the reporting year (usually Jan-Feb) we identify centers that completed their reports, but have reported less than 60 percent MMR coverage. Somali outreach staff visit these centers to give them basic information on vaccine-preventable disease and why vaccines are so important. Beginning in 2016, some of the center owners requested that the outreach staff give this same information to parents of the children they serve. MDH staff had been providing education to parents, where they focus on basic information about vaccines and also information on child development with the help of MDH's Children and Youth with Special Health Needs staff.

These relationships proved to be absolutely critical during the outbreak. Most of the owners knew and trusted the MDH staff. This brought the department credibility in the community and in most cases, we were able to communicate our recommendations for exclusion very effectively. Without these relationships in place, it would have been very difficult to implement exclusion. Unfortunately, the outbreak was damaging to some child cares—especially those who had many children excluded. We have heard that many of the owners are being much more strict with documentation of immunization from the parents and strongly encouraging parents to get their kids up to date.

Progress in working with child care centers has accelerated since the outbreak. Since the outbreak, many child care owners have become ambassadors for immunizations. Several have chosen not to accept children with exemptions in their child care center as a business decision. Additionally, there has been a very high demand for MDH Somali outreach staff to provide training to parents and staff at the child care centers. MDH staff have completed three trainings and have a waitlist. These trainings are in addition to the regular child care outreach described above.

Account Budget and Expenditures

Description	Budget	Encumbered	Expended	Available
Measles	**100,445**	**73,430**	**27,015**	**0**
Communications		0	73	
Full-time Salary		73,354	10,179	
Part-time Salary		0	7,645	
Supplies		76	9,118	
Syphilis	**288,503**	**162,417**	**24,077**	**102,009**
Aid to Sovereign Entity		80,000	0	
Centralized IT Services		0	2,121	
Full-time Salary		74,895	13,358	
Printing and Advertising		7,500	111	
Supplies		22	8,454	
Travel In-State			33	
Tuberculosis	**213,885**	**134,465**	**30,271**	**49,149**
Centralized IT Services		99	69	
Full-time Salary		134,366	29,519	
Other Operating Expenses			300	
Travel In-State			383	
Total	**602,833**	**370,312**	**81,364**	**151,158**

Notes:

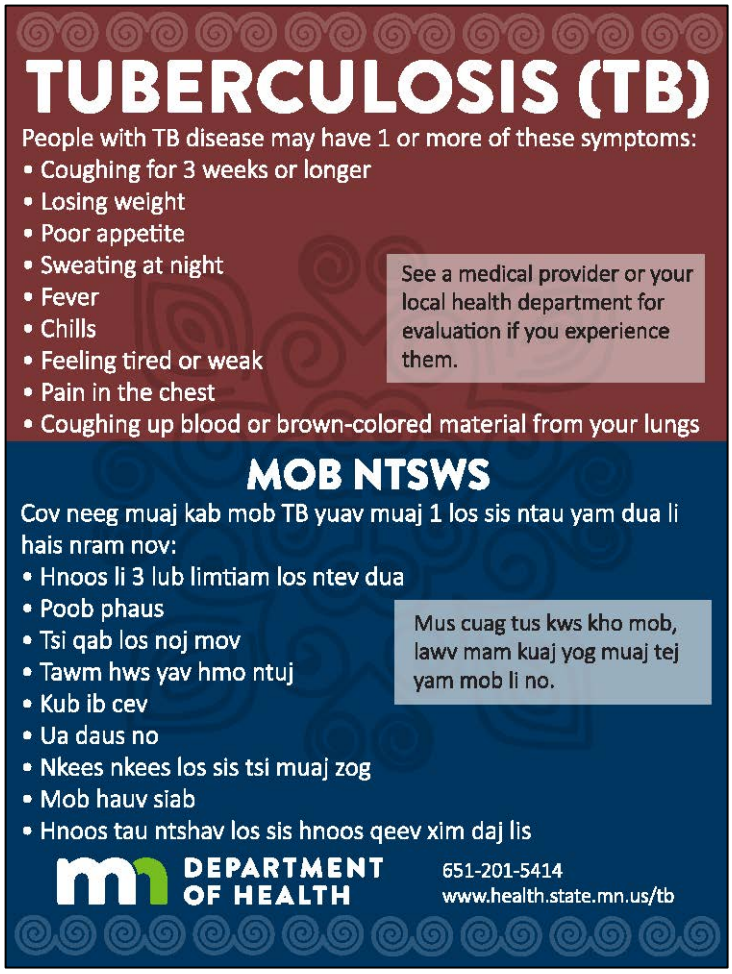
Financial data is as of January 8, 2018.

The Minnesota Department of Health received initial approval of $224,635 for the tuberculosis response.

Following the Fall 20-day Legislative Advisory Commission order, the department transferred $10,750 of the tuberculosis funds back to the reserve for the public health response account.

Appendix A

TB Magnet



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