NACCHO
National Association of County & City Health Officials

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

2019 Model Practices

Applicant Information

Full Name: Brittany Bell

Company:

Title:

Email: brittanyn.bell@ky.gov

Phone: (502)955-7837

City: Shepherdsville

State: KY

Zip: 40165-6143

Size

Select a size: *

☐ Small (0-50,000) ☑ Medium (50,000-499,999) ☐ Large (500,000+)

Application Information

Local Health Department/Organization Name: *

Bullitt County Health Department

Title of Practice: *

Hepatitis A Vaccination in Correctional Facilities

Submitter Name: *

Brittany Bell

Submitter Title: *

Senior Epidemiologist

Submitter Email: *

BrittanyN.Bell@ky.gov

Submitter Phone Number: *

502-543-2415

City : *

Shepherdsville

State : *

Kentucky

Zip Code: *

40165

Size

Select a size::

- [ ] Small (0-50,000)
- [x] Medium (50,000-499,999)
- [ ] Large (500,000+)

Practice Categories

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

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

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.

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

Located 15 miles south of Louisville, Kentucky, Bullitt County's 2017 population was 80,246, with most identifying as white (96.5%). In 2015, 5% of residents under 65 were uninsured.1,2 The Bullitt County Health Department provides public health services with a mission to promote healthy lifestyles through prevention and protection. More information on our services is available online (www.bullittcountyhealthdept.org).

Hepatitis A virus (HAV) is a vaccine-preventable liver infection usually transmitted person-to-person through the fecal-oral route or consumption of contaminated food or water. In November 2017, the Kentucky Department for Public Health (KDPH) identified an outbreak of HAV. Similar to HAV outbreaks in other states, the primary risk factors were illicit drug use and homelessness. A contaminated food source has not been identified and transmission is believed to be occurring through person-to-person contact.3 Bullitt County's first confirmed case was diagnosed in November 2017; the last previously confirmed case was in 2012. Additional spread of HAV can be prevented with administration of post-exposure prophylaxis (PEP) within 14 days of exposure (PEP window).

On February 19th, 2018, the LHD recognized the need to increase our response efforts to the expanding statewide HAV outbreak, when our fifth case became ill while incarcerated in the local correctional facility (BCDC). Congregate settings such as correctional facilities are at higher risk for transmission of HAV, due to close proximity and poor hand hygiene. Over the course of this outbreak, the number of cases associated with BCDC increased significantly. As of October 31, 2018, 15 of 64 (23.4%) confirmed cases were incarcerated at BCDC while infectious, requiring site visits to provide PEP to close contacts at risk of infection.

The overarching goal of this project was to develop a streamlined process for contact investigation and administration of hepatitis A PEP in our local correctional facility (BCDC) within the 14-day PEP window to prevent further spread. This was achieved through four objectives:

1. Establish a good working relationship with BCDC by identifying a point of contact for current and future responses;
2. Educate jail staff on HAV transmission and disinfection procedures;
3. Identify and isolate inmates acutely infected with HAV during their infectious period;
4. Administer vaccine to those at risk to prevent further spread within the facility.

An internal HAV team (director, nurse administrator, epidemiologists, clinic staff, environmental and preparedness staff) was assembled when the first case at BCDC was confirmed. The team was responsible for organizing the response in terms of the four objectives.

When the case was reported to the LHD, the jailer became the initial contact. As time progressed, medical and operational staff at the jail became the main points of contact for ongoing efforts. Documents discussing transmission of HAV and disinfection procedures were provided early in the response to be implemented immediately. Protocols were established, including isolation of infectious inmates and identification of high-risk contacts. A line list of contacts was created and provided to the LHD. Available vaccination records were reviewed to identify those in need of vaccine. A final vaccination roster was completed. LHD staff traveled to BCDC to administer vaccine and collected appropriate consent forms (VIS/HIPAA). LHD staff then entered administration records into a statewide voluntary electronic immunization system. A facility-wide inspection was also conducted by the LHD to discuss disinfection and prevention of disease spread. Following multiple clinics at BCDC, the LHD coordinated a mass vaccination clinic for all inmates.

The LHD made 13 trips to BCDC to administer vaccines, including one mass vaccination clinic for all inmates in August 2018. A total of 248 inmates were investigated as close contacts; 107 received post-exposure vaccinations. An additional 195 vaccinations were given during the mass vaccination clinic as pre-exposure prophylaxis, leading to 302 vaccines administered between February and October 2018.

All four objectives were met as a result of this project. Appropriate points of contact have been established with BCDC. BCDC received education on HAV transmission and disinfection. Medical staff at BCDC have improved identification and isolation protocols. Finally, there have been no known secondary cases of HAV at BCDC.

The implementation of this project led to no secondary spread of HAV within the facility. This was an opportunity to reach a population at high-risk for infection and barriers to medical care and preventive services.

The internal HAV team consisted of key staff with infectious disease training and expertise that greatly contributed to the overall success of the project, including excellent communication efforts that created a collaborative approach to combating the HAV outbreak between LHD and BCDC staff.

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?
    - 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.)

Please state the Responsiveness and Innovation of your practice : *

Hepatitis A virus (HAV) is a vaccine-preventable liver infection usually transmitted person-to-person through the fecal-oral route or through consumption of contaminated food or water. In November 2017, DPH identified an outbreak of acute HAV. As identified in other states, the primary risk factors for HAV included IDU and homelessness. HAV transmission was believed to be occurring through person-to-person contact.1 A contaminated food source was not identified.1 Bullitt County's first confirmed outbreak case was diagnosed in November 2017; the last previously confirmed case occurred in 2012. Symptoms of an acute HAV infection include fever, fatigue, nausea, vomiting, abdominal pain, dark urine, diarrhea, clay-colored stool and jaundice. Jaundice is present in >70% of adults infected with HAV. The incubation period is 15-50 days (average 28 days), making case and contact tracking difficult. Prompt administration of PEP provided within 14 days of exposure to an acute case (PEP window) can prevent further spread of HAV.

PEP is an effective approach to reduce the spread of infection during HAV outbreaks. A retrospective cohort study of contacts of cases involved in outbreaks in Catalonia between January 2006 and December 2012 found PEP to be highly effective at preventing secondary cases.4 Records for 3550 exposed persons were studied; 2381 received one dose of HAV vaccine, 190 received immunoglobulin, and 611 received no PEP. The effectiveness of PEP was 97.6% for HAV vaccine and 98.3% for immunoglobulin (the differences were not statistically significant). The elevated effectiveness of HAV vaccination for PEP in HAV outbreaks, similar to that of IG, and the long-term protection of active immunizations, supports the preferential use of vaccination to avoid secondary cases.4

Traditional risk factors for HAV infection include persons in direct contact with those infected; travelers to countries with high rates of infection; men who have sex with men; use of injection and non-injection drugs; persons with clotting factor disorders; and those in contact with adoptive children arriving from countries with high rates of infection. The statewide outbreak in Kentucky has primarily affected IDUs, the homeless, the recently incarcerated and close contacts of cases.

On February 19th, 2018, the LHD recognized a need to increase HAV response efforts when the fifth positive case was reported of an individual becoming ill while incarcerated in the local correctional facility (BCDC). Congregate settings such as correctional facilities and substance abuse treatment facilities are at higher risk for transmission of HAV, due to close proximity, the sharing of personal items, and poor hand hygiene. During the course of this outbreak, the number of cases associated with BCDC increased significantly. As of October 31, 2018, 15 of 64 (23.4%) confirmed cases of HAV were incarcerated at BCDC while infectious, requiring site visits to provide PEP to all close contacts at risk of infection.

The incarcerated population at BCDC averages 300-350 inmates on a daily basis. Inmates are frequently transferred into and out of the detention center (usually relocated to other detention centers). Often short term stays of less than 1 week occur. Short term individuals were particularly difficult to follow up with as they rarely provided correct and/or complete contact information upon their entry to BCDC. The majority of those released did not contact the LHD and therefore did not receive PEP (9.5% of those contacted received PEP from the LHD). Many inmates within correctional facilities have a history of IDU and/or homelessness. Nine percent of US adult state and federal prison inmates reported an episode of homelessness in the year prior to arrest, 4-6 times the estimated rate in the general US adult population after allowing for age, race/ethnicity, and gender.5 Recent homelessness is also more common among the incarcerated than the general population.6

Since 2006, the CDC has recommended children receive the HAV vaccine series. In Kentucky, changes went into effect beginning July 1, 2018 which requires all children to have a current immunization certificate on file and that all Kentucky students in kindergarten through 12th grade receive two doses of the HAV vaccine to attend school. The majority of incarcerated individuals and others at risk have never received this two-dose series since it was not recommended until 2006 and not required for school entry until 2018.

The recently incarcerated population also tends to be more transient and hesitant to interact with the LHD and other governmental agencies. This, in combination with other outbreak risk characteristics, presented a challenge. IDUs, in particular, do not seek preventive care as frequently as the general public and implementing vaccination programs among IDUs is difficult (Vong et. al). In our region of Kentucky, 8.7% of individuals 12 years and older reported using an illicit drug (including marijuana) in the last month (2010-2012).7 We believe this percentage has increased greatly since 2012, given the increasing impact of the opioid epidemic in our area.

Prior to this outbreak, preventive care was not implemented at BCDC. There had been no documented outbreak of vaccine-preventable

illness at a correctional facility in our area prior to this outbreak of HAV. Vong et al. explored the county jail as a possible vaccination venue in Florida in their 2005 article. In Polk County, FL, 403 cases of HAV were reported between January 2001 and July 2002, where 48% were drug users and 80% of the drug users were recently in jail. 280 inmates in Polk County were interviewed and a serologic survey was also conducted. 81% reported a history of IDU and previous HAV infection was identified in 33% of the inmates interviewed. In communities with IDU at risk for HAV who are frequently jailed, vaccination programs in jails could be an important component of a community-based strategy to control HAV outbreak among IDUs.8

This process to administer PEP to exposed contacts within the BCDC was an improvement over current practice. Prior to this outbreak, no preventive care was provided to inmates at BCDC. Fear of secondary spread within the facility spurred the LHD and BCDC into action. There was also concern that a contact within the facility would be released and spread the illness into the community. Vaccination rates for HAV within incarcerated persons, IDUs and the homeless is low, making spread of the virus likely if this intervention was not implemented.

Some larger communities, such as Los Angeles county, have implemented preventive hepatitis A/hepatitis B combination vaccine programs.9 San Diego health officials implemented a similar strategy to deal with their recent outbreak of HAV, but had low uptake up PEP by contacts.10,11 When the outbreak began, our LHD did not have the funding or vaccine available to implement this type of large-scale program. Sporadic, on demand PEP clinics suited the LHD and BCDC's needs initially in early 2018. As the situation evolved, the LHD found that PEP clinics were needed nearly weekly. At this point, other vaccination options were explored. The LHD decided to coordinate one mass vaccination clinic of all unvaccinated inmates within BCDC, regardless of known contact with an acute case. Once this was completed, the LHD would transition future implementation of vaccinations during intake to BCDC medical staff. Other LHD's in Kentucky have also implemented similar procedures, where PEP for contacts at correctional facilities evolved into vaccination being offered to all inmates at intake. Our program is unique given the smaller size of our community and correctional facility, as well as financial constraints due to smaller budgets.

LHD and Community Collaboration

The LHD should have a role in the practice's development and/or implementation. Additionally, the practice should demonstrate broadbased 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.

Enter the LHD and Community Collaboration related to your practice : *

The overarching goal of this project was to develop a streamlined process for contact investigation and administration of hepatitis A PEP in our local correctional facility (BCDC) within the 14-day PEP window to prevent further spread. This was achieved through four objectives:

1. Establish a good working relationship with BCDC by identifying a point of contact for current and future responses;
2. Educate jail staff on HAV transmission and disinfection procedures;
3. Identify and isolate inmates acutely infected with HAV during their infectious period;
4. Administer vaccine to those at risk to prevent further spread within the facility.

While the first outbreak associated case of HAV was identified in our county in November 2017, the situation expanded rapidly in early 2018. On February 19th, 2018, the LHD recognized the need to increase our response efforts to the statewide outbreak when our fifth outbreak associated case became ill while incarcerated at BCDC. The LHD assembled an internal HAV response team, made up of our public health director, nurse administrator, epidemiologists, clinic staff, environmental and preparedness staff to organize the response in terms of the objectives above. This team of subject matter experts had received previous training from KDPH in outbreak investigation and response and was well equipped to address the arising situation at BCDC.

When outbreak case five was confirmed by the LHD epidemiologist, a contact was needed at BCDC to assist in coordinating the response. This was determined to be the county jailer, responsible for overseeing operations at BCDC. As time progressed, medical and operations staff became the main points of contact for ongoing vaccination efforts. Educational materials were quickly distributed to

the jailer and medical staff for swift isolation of potential cases and contact investigation via both electronic and physical means. These educational materials provided information on HAV case presentation, appropriate isolation of contagious cases, incubation and infectious periods, preventive strategies and proper disinfection guidelines for contaminated surfaces. Vaccinations were immediately recommended for all employees at BCDC.

Upon identification of a suspect acute HAV case, isolation protocols were immediately implemented within the facility. If the inmate was currently hospitalized off site, no immediate isolation was implemented. Upon their return to the facility, they were isolated within the medical unit in a single cell. This single cell did not share restroom facilities with any other inmates. This was first implemented with the index case at BCDC. The isolation period was defined as 7 days after the onset of jaundice (if present) or 14 days after onset of symptoms if jaundice was not present.

While in isolation, BCDC operations staff began collecting a list of at-risk contacts at the facility. An at-risk contact was defined as an individual sharing a communal space with the acute case (being housed in the same holding cell or room, sharing a restroom) during the contagious period, a laundry worker who may have come in contact with the dirty laundry of the acute case, and inmates who were food workers in the facility. This definition of at-risk contacts was created by the LHD in consultation with KDPH and neighboring LHDs.

Once a line list of at-risk contacts was compiled, operations staff began determining where those contacts were currently located. Inmates were classified as currently on-site, transferred to another facility, or released. This information was then provided to the LHD. Upon receipt of the line list, every contact was entered into an internal tracking database. This allowed the LHD to monitor which inmates were exposed to which cases, or if some inmates were being exposed multiple times. The epidemiologist at the LHD then began the process of pulling available vaccination records to see which inmates were in need in vaccination. In Kentucky, there is an online vaccination registry which many providers and pharmacies voluntarily submit records to. Metro Corrections in Louisville, a neighboring county where many inmates were transferred from, had also begun administering vaccinations to inmates and tracking them in the registry. This allowed the LHD to eliminate many contacts from the line list. If an inmate had a record in the registry demonstrating receipt of two single-antigen hepatitis A vaccines or three TwinRix vaccines, they were determined not to need additional vaccine. If they had started but not completed one of these regimens, they were candidates for vaccine if the correct time frame had passed since their last dose (based on current CDC vaccination schedule). A final list of vaccine candidates was then created.

Inmates who had been transferred to other facilities or released to other counties had their information forwarded to KDPH for further follow-up. Inmates released in our county were contacted first by phone, if a phone number was available. The majority of inmates did not have a working phone number on file, so certified letters were sent to their last known address. If contact was made with these released inmates, the LHD epidemiologist counseled them on HAV risk, signs and symptoms to watch for, and the need for vaccination. If the contact desired vaccination, this was coordinated either through the LHD or their primary care provider.

Vaccine candidates still at BCDC were offered vaccine by LHD staff at the post-exposure vaccination clinics. This list of candidates was sent to BCDC operations staff prior to our arrival. This document was called the administration sheet, and it was essential in streamlining the administration process as it identified which inmates the LHD intended to vaccinate while on site. This form also allowed for quick reference as to why certain inmates were not eligible for vaccine (previous infection, up-to-date on HAV vaccine).

Adult single-antigen hepatitis A vaccine was ordered from the Centers for Disease Control and Prevention (CDC) with the assistance of the KDPH. Inmates met with LHD staff members and were counseled on HAV transmission, signs and symptoms of infection, and the benefits of vaccination. Informed consent was provided, as was a Vaccine Information Sheet (VIS) and HIPAA form, and a patient encounter form (PEF) was signed by the inmate prior to receiving the vaccine. This PEF was essential in collecting demographic information for entry into the immunization registry, documenting receipt of the VIS/HIPAA information, and tracking lot numbers and expiration dates of the vaccine. At the end of each clinic, these PEFs were used to enter vaccination administration records into the online registry by the LHD.

Inmates had to meet multiple criteria to receive HAV vaccine at the beginning of this response. They had to be identified as an at-risk contact, someone in close contact with a confirmed case, or as a working inmate at-risk of coming into contact with contaminated surfaces and spreading the infection to others. Additionally, the inmate had to be determined as “in need” of vaccination, meaning there was no evidence of previous vaccination or infection. Serologic surveys to determine history of vaccination/infection was not cost effective. Inmates who met these criteria and were released prior to the LHD’s vaccination events were eligible to receive the vaccine at the LHD on a walk-in basis.

The first post-exposure event at BCDC was on February 22, 2018. Multiple additional post-exposure events took place over the spring and summer of 2018, leading up to a facility-wide pre-exposure event on August 23, 2018. At this facility wide event, every inmate was offered a vaccine, as incarceration was identified as a possible risk factor in the outbreak. At this time, the only criteria that an inmate had to meet to receive a vaccine was to be currently incarcerated with no known history of previous vaccination or infection.

Throughout this outbreak, a strong working relationship between the LHD and BCDC was essential. This relationship ensured an effective response. Assistance from neighboring health departments, and the sharing of lessons learned to improve processes, was also beneficial in our response. KDPH also provided guidance on HAV transmission, high-risk contacts, and vaccinations. Additionally, KDPH assisted in coordinating the ordering of single-antigen vaccine from the CDC.

For this response, there were associated start-up costs. First and foremost was the cost of the vaccine. At the start of the outbreak, HAV vaccine was approximately $66.00 per dose. As the outbreak progressed, KDPH provided funding to counties in outbreak status to purchase vaccine. The LHD was able to obtain reduced cost vaccine through the MMCAP Pharmaceutical Distribution Program as a non-profit organization, lowering the cost to $37.66 per dose. The LHD will continue to utilize these funds to purchase future vaccine for intake vaccinations at BCDC.

In addition to the cost of the vaccines, staff time was spent on planning, identification of contacts and administration of vaccine. For each vaccination event, approximately 20 hours of staff time was required. The mass pre-exposure vaccination clinic in August 2018 required a substantial additional amount of staff time, given the higher number of inmates investigated and vaccinated.

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?

Please enter the evaluation results of your practice : *

The overarching goal of this project was to develop a streamlined process for contact investigation and administration of hepatitis A PEP in our local correctional facility (BCDC) within the 14-day PEP window to prevent further spread. This was achieved through four objectives:

1. Establish a good working relationship with BCDC by identifying a point of contact for current and future responses;
2. Educate jail staff on HAV transmission and disinfection procedures;
3. Identify and isolate inmates acutely infected with HAV during their infectious period;
4. Administer vaccine to those at risk to prevent further spread within the facility.

Prior to the first identified case of HAV at BCDC, the collaborative partnership between BCDC and the LHD was occasional. The BCDC had utilized the LHD for various clinical services such as family planning and/or lab testing, bringing inmates to the health department. No known outbreaks at BCDC had been reported to or investigated by the LHD prior to this outbreak. Therefore, this response was the first of its kind in our community. Upon consultation with our jailer, BCDC staff was accepting and appreciative of the LHDs recommendations regarding education on isolation and vaccination protocols in response to this outbreak.

The LHD was aware of the additional risks posed by infectious diseases in congregate settings and was immediately concerned about additional spread in the jail following the first confirmed case in February 2018. The inmate population at BCDC is highly transient; many inmates are transferred into and out of the facility per week (mostly to other correctional facilities) and a large number of inmates spend a short amount of time in the facility (less than two weeks). This turnover increased the likelihood of the illness being frequently reintroduced into the facility.

Educational materials were distributed to jailer and medical staff for swift isolation of potential cases and quick contact investigation via both electronic and physical means. These educational materials provided information on HAV case presentation, appropriate isolation of contagious cases, incubation and infectious periods, preventive strategies and proper disinfection guidelines for contaminated surfaces.

BCDC has no physician on staff and currently contracts with a medical service (MS). MS specifically works with corrections and is used by many facilities in the area. No preventive care was provided to inmates by MS; their duties consisted of monitoring inmates for cases of acute illness for referral to outside care and the monitoring and administration of prescription medication. Over the course of the outbreak, BCDC and MS began medical isolation for any inmate reporting jaundice, prior to any confirmed diagnosis, to prevent possible spread.

The LHD has no authority regarding the inspection of county correctional facilities, including food preparation areas. Disinfection of surfaces potentially harboring HAV is very difficult, as it is a hardy virus. Successful disinfection requires a high concentration of bleach or a cleaner that specifically identifies HAV as susceptible. A courtesy facility-wide inspection was provided by environmental health staff and epidemiologists to discuss disinfection and prevention of disease spread. High-risk areas of the facility were identified and many current practices were discouraged. Tables located in congregate areas frequently had inmates sitting on top of them and they would have their feet up on the table surface. This practice was discouraged, as well as a practice known as ‘making cake’. Inmates would collect items from commissary, such as honey buns and other sweets, and mash them up on the surface of the table with bare hands to share with other inmates. This was done to celebrate birthdays and other milestones. Hand hygiene during this practice was questionable at best, and the LHD recommended this practice cease.

Kiosks and phones were also located in the communal areas. These kiosks are touchscreen electronics, and allow inmates to order

items from commissary and research items in the library. The inspection by the LHD revealed these were rarely cleaned, and when cleaned, window cleaner was used because of fear of destroying the electronics. An alternative cleaning solution, used by restaurants for touchscreens, was recommended as it is known to kill HAV on these surfaces. Phones and surfaces in the visitation area were also identified as a possible source of contamination. Sleeping mats distributed to inmates, while cleaned between each inmate, were not cleaned using a disinfectant effective against HAV. Inmates were also observed sleeping on these mats without any type of sheet or covering on them. Effective cleaning of restroom facilities was also emphasized with operations staff, as this was a likely source of contamination. The cleaning of each restroom is the responsibility of inmates, so the LHD was concerned about the quality of cleaning. A bleach solution (5000 ppm) was recommended, as the current cleaner was not effective against HAV.

The identification and administration of HAV vaccine to at-risk contacts within the BCDC made up the majority of this response. Upon identification of a suspect acute HAV case, isolation protocols were immediately implemented within the facility. If the inmate was currently hospitalized off site, no immediate isolation was implemented. Upon their return to the facility, they were isolated within the medical unit of the BCDC in a single cell. This single cell did not share restroom facilities with any other inmates. The isolation period was defined as 7 days after the onset of jaundice (if present) or 14 days after onset of symptoms if jaundice was not present.

While in isolation, BCDC operations staff began collecting a list of at-risk contacts at the facility. An at-risk contact was defined as an individual sharing a communal space with the acute case (being housed in the same holding cell or room, sharing a restroom), a laundry worker who may have come in contact with the dirty laundry of the acute case, and inmates who were food workers in the facility. This definition of at-risk contacts was created by the LHD in consultation with the KDPH and neighboring LHDs.

Once a line list of at-risk contacts was compiled, operations staff began determining where those contacts were currently located. Inmates were classified as currently on-site, transferred to another facility, or released. This information was then provided to the LHD. Upon receipt of the line list, the epidemiologist at the LHD began the process of pulling available vaccination records to see which inmates were in need of vaccination. In Kentucky, there is an online vaccination registry which many providers and pharmacies voluntarily submit records to. Metro Corrections in Louisville, a neighboring county where many inmates were transferred from, had also begun administering vaccinations to inmates and tracking them in the registry. This allowed the LHD to eliminate many contacts from the list. If an inmate had a record in the registry demonstrating receipt of two single-antigen hepatitis A vaccines or three TwinRix vaccines, they were determined not to need additional vaccine. If they had started but not completed one of these regimens, they were candidates for vaccine if the correct amount of time had passed since their last dose (based on current CDC vaccination schedule). A final list of vaccine candidates was then created. Inmates who had been transferred to other facilities had their information forwarded to the KDPH for further follow-up, as well as inmates released to other counties. Inmates released in our county were contacted first by phone, if a phone number was available. The majority of inmates did not have a working phone number on file, so certified letters were sent to their last known address. If contact was made with these released inmates, the LHD epidemiologist counseled them on HAV risk, signs and symptoms to watch for, and the need for vaccination. If the contact desired vaccination, this was coordinated either through the LHD or their primary care provider.

Vaccine candidates still at BCDC were offered vaccine by LHD staff at one of our jail clinic events. This list of candidates was sent to BCDC operations staff prior to our arrival. Informed consent was provided and a PEF was signed. At the end of each clinic, these PEFs were used to enter vaccination administration records into the online registry by the LHD.

In terms of vaccination of contacts, the health department coordinated 13 events, including one large scale mass vaccination clinic for all inmates on August 23, 2018. A total of 248 inmates were investigated as close contacts of confirmed cases and 107 received vaccinations from the health department. An additional 195 vaccinations were given at a mass vaccination clinic to all inmates on August 23rd. A total of 302 vaccines were administered to inmates at BCDC between February and October 2018.

The majority of the data collection throughout this outbreak was done by the LHD epidemiologist with the assistance of the internal HAV team and BCDC operations staff. Initial case notifications came from either MS at BCDC or local hospitals upon lab confirmation. BCDC operations would begin collecting information on all possible contacts to create a line list for the LHD. This line list included inmate name, dates of exposure to the confirmed case, and current location (in facility, transferred to other facility, or released). This information was then reviewed by the LHD epidemiologist and compiled into an internal tracking document. This document allowed LHD staff to identify all inmates identified as contacts throughout the outbreak and assisted in determining who was in need of vaccination. After the vaccination clinics at BCDC, LHD epidemiologist calculated throughput for each event.

Throughput for each clinic clearly demonstrates how the process improved over the course of the outbreak. At the first vaccine event on February 22nd, 17 inmates were vaccinated over the course of 120 minutes (7.1 mins/inmate). The vaccination event on April 12th saw 15 inmates in 90 minutes (6.0 mins/inmate). The mass vaccination clinic on August 23rd had the best throughput, with 195 vaccines administered in 150 minutes (45 seconds/inmate).

The internal HAV team met weekly throughout the outbreak, beginning in February 2018. At these weekly meetings, the nurse administrator and epidemiologist would share lessons learned from recent vaccination events at BCDC and solicit feedback from members of the team. KDPH and neighboring LHDs also provided guidance and feedback throughout the outbreak response.

Conversations between BCDC operations and medical staff were ongoing and allowed for improvements to the process. For example, prior to the large-scale mass vaccination clinic, members of the internal HAV team suggested prefilling PEFs with relevant demographic information provided by BCDC, to cut down on the amount of time spent completing these forms on site. With these prefilled forms, inmates were only required to verify their correctness and sign the HIPAA/VIS statements. Following the first clinic in February, the LHD also identified an improvement that could be made to speed up the process once on site. The LHD would now send a final vaccination list to BCDC the day before the clinic, so those inmates in need of vaccination could be pulled and ready for LHD staff when they arrived.

Our four objectives for this program were all achieved. Objective one saw the establishment of a strong, working relationship with our

local correctional facility which will benefit the community during this outbreak and in future outbreaks. For objective two, the expertise and knowledge of the LHD was shared with BCDC staff in regards to HAV transmission and disinfection strategies to decrease the spread of HAV within the facility. BCDC staff are now aware of HAV isolation protocols, and this knowledge can easily be applied to other infectious diseases. Contact identification and the creation of a line list will also be beneficial if there is an additional outbreak at the facility and will lead to a speedier response by the LHD and BCDC. For the final objective, vaccine administration to inmates at BCDC has led to no documented secondary spread within the facility. Additionally, the number of cases currently or recently incarcerated at BCDC dropped significantly by late summer 2018.

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.

Please enter the sustainability of your practice : *

The outbreak of HAV revealed a gap within the local detention center regarding adequate plans in place to provide needed preventive vaccination measures within their facility. Establishing good communication between the BCDC Jailer, medical personnel, and other key staff was found to be critical for successful planning and execution of vaccination clinics and case management. This also led to important education provided to BCDC staff and/or inmates regarding proper hygiene, safe handling of foods, bed linens, and specific cleaning protocols in the facility. Having a supportive relationship between both parties allowed timely responses necessary to prevent spread of the infection.

With expert guidance from the local health department, appropriate procedures and protocols were created for utilization by BCDC during the ongoing outbreak. The earlier months of the outbreak saw frequent positive cases of HAV within BCDC being reported to the local health department, increasing staff time dedicated to this community health concern. Efforts became focused on transitioning the HAV management and response to the BCDC medical personnel in house, decreasing local health department staff time. The health department would plan to continue to consult with BCDC on isolation protocols and lead contact investigations, particularly for exposed inmates released from the facility. This transition would ease the burden of contact investigation within the BCDC, since the majority of inmates would have been offered the vaccine upon booking. Additional PEP events at the jail would not be the responsibility of the local health department, since medical personnel at the BCDC would have access to the needed vaccines and know who was unvaccinated based on declinations at booking.

The local health department will continue to provide HAV vaccine to BCDC, as well as a refrigerator to safely store the vaccine. Medical personnel will be responsible for providing informed consent to the inmates and documenting administration and refusal. The local health department will enter administration records into the statewide vaccination registry on behalf of BCDC.

Initially, the local health department received reports of individuals being admitted from the local emergency department when an incarcerated individual was sent to them for evaluation. This led to extremely high costs and a financial burden on BCDC. Funding for correctional facilities is primarily from state and local tax dollars. When comparing the costs of providing a preventive vaccine to actual medical care and/or treatment of a positive HAV case, there is a significant difference. Preventive measures are much more cost effective. The cost of staff time and vaccine is significantly less than that of continual spread within congregate facilities and to contacts outside the facility.

The local health department purchased a vaccine refrigerator to be housed in the BCDC with the intent to have a proper storage unit for HAV vaccine to be stored when the plans for BCDC contracted medical personnel to administer HAV vaccinations take effect. A Memorandum of Understanding (MOU) has been created between the local health department and the BCDC for the refrigerator and future needs. The refrigerator will also provide storage space for local health department vaccines that may need an alternate location in the event of a disaster.

A second MOU is under development between the BCDC contracted medical personnel and the local health department that would place the BCDC contracted medical personnel as responsible for coordinating and administering HAV vaccinations to individuals upon admission to the BCDC. The local health department would continue to support this effort through the ordering and provision of HAV vaccine as needed, and consultation regarding isolation protocols and lead contact investigations, particularly for inmates released from the facility since exposure.

A jailer is an elected position in our community, in the event of leadership change, it is important to have MOUs in place to establish the process. Similarly, the medical service within BCDC is contracted. Establishing this process would facilitate continuation of the project in the event of a new contracted provider. Our hope is that BCDC will continue to be supportive in this preventive strategy.

The most important benefit is the sustained relationship between the local health department and the local correctional facility. The

processes established during this HAV outbreak will also be beneficial in the future if there is another outbreak of vaccine-preventable illness with BCDC. The isolation period and administration timelines may change, but the general processes established may still be beneficial for a quick and effective response. The education provided to the medical personnel and operations staff at BCDC can also be implemented for other illnesses within the facility. The continued implementation of appropriate disinfection procedures may prevent the spread of other GI and respiratory illnesses. Familiarity with isolation procedures may also be beneficial. The focus on preventive care may save the BCDC money in the future and the understanding of the services offered by the local health department may benefit the inmates in unforeseen ways in the future.

Resources

1. QuickFacts: Bullitt County, Kentucky. U.S. Census Bureau (December 2018). Retrieved December 4, 2018, from https://www.census.gov/quickfacts/fact/table/bullittcountykentucky,ky/PST045217
2. Bullitt County, Kentucky, County Health Rankings and Roadmaps. (March 2018). Retrieved December 4, 2018, from http://www.countyhealthrankings.org/app/kentucky/2018/rankings/bullitt/county/outcomes/overall/snapshot
3. Hepatitis A Outbreak. Kentucky Department for Public Health (December 2018). Retried December 4, 2018 from https://chfs.ky.gov/agencies/dph/dehp/idb/Pages/Hepatitis%20A%20Outbreak.aspx
4. Parrón, I., Planas, C., Godoy, P., Manzanares-Laya, S., Martínez, A., Sala, M. R., . . . Domínguez, A. (2016). Effectiveness of hepatitis A vaccination as post-exposure prophylaxis. *Human Vaccines & Immunotherapeutics, 13*(2), 423-427. doi:10.1080/21645515.2017.1264798
5. Greenberg, G. A., & Rosenheck, R. A. (2008). Homelessness in the state and federal prison population. *Criminal Behaviour and Mental Health, 18*(2), 88-103. doi:10.1002/cbm.685
6. Homelessness and Incarceration Are Intimately Linked. New Federal Funding is Available to Reduce the Harm of Both. National Association to End Homelessness. (March 29, 2018). Retrieved from https://endhomelessness.org/homelessness-incarceration-intimately-linked-new-federal-funding-available-reduce-harm/
7. Kentucky Substate Estimates from the 2010-2012 NSDUHSs. Center for Behavioral Health Statistics. (2012). Retrieved from https://www.samhsa.gov/data/sites/default/files/substate2k12-StateTabs/NSDUHsubstateStateTabsKY2012.htm
8. Vong, S., Fiore, A. E., Haight, D. O., Li, J., Borgsmiller, N., Kuhnert, W., . . . Bell, B. P. (2005). Vaccination in the county jail as a strategy to reach high risk adults during a community-based hepatitis A outbreak among methamphetamine drug users. *Vaccine, 23*(8), 1021-1028. doi:10.1016/j.vaccine.2004.07.038
9. Costumbrado, J., Stirland, A., Cox, G., El-Amin, A. N., Miranda, A., Carter, A., & Malek, M. (2012). Implementation of a hepatitis A/B vaccination program using an accelerated schedule among high-risk inmates, Los Angeles County Jail, 2007–2010. *Vaccine, 30*(48), 6878-6882. doi:10.1016/j.vaccine.2012.09.006
10. Sisson, P. (March 8, 2018). Infected inmate spurs hepatitis A vaccination effort in county jails. *The San Diego Union-Tribune*. Retrieved from https://www.sandiegouniontribune.com/news/health/sd-no-hep-jails-20180308-story.html
11. *Hepatitis A Outbreak After Action Report* (2018). San Diego County, CA. Retrieved from https://www.sandiegocounty.gov/content/dam/sdc/cosd/SanDiegoHepatitisAOutbreak-2017-18-AfterActionReport.pdf

Additional Information

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

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

Have you applied for Model Practices before?: *

- [ ] No, this is my first time applying.
- [x] Yes, I have applied in the past.

If you answered yes to the question above, please let us know the year and award type. :

2017 Model Practice for Food Safe Bullitt County