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Hepatitis A Educational Program in Food Service Workers

by

Katherine Barker

Paper submitted in partial fulfillment of the
requirements for the degree of

Doctor of Nursing Practice

School of Nursing, University of Louisville

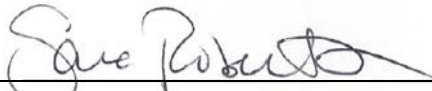
July 29, 2020



Signature DNP Project Chair

7/29/2020

Date



Signature DNP Project Committee Member

7/29/2020

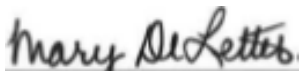
Date



Signature Program Director

8/6/2020

Date



Signature Associate Dean for Academic Affairs

8/6/2020

Date

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Abstract

Louisville, KY was affected by a significant outbreak of Hepatitis A in 2017-2018. Kentucky consisted of one-third of the national deaths. The outbreak influenced not only human mortality but had an economic impact on the food service industry. Many restaurants were affected, and some were forced to close due to Hepatitis A outbreaks. To address this issues, a two-step educational process was designed for management to gain understanding of hepatitis A content. The first step was to survey staff (kitchen staff, waiters/waitress, busier, etc.) to determine the compliance rate and variables that influence the compliance rate for vaccination of Hepatitis A. Next, I developed an educational program that was designed after surveying staff and management regarding Hepatitis A knowledge reinforcing the importance of appropriate cleaning, symptom identification and vaccination. A paired t-test was performed on the pre- and post-knowledge scores of management of hepatitis A content that was covered during the educational program. The results show that knowledge scores increased after the educational program was completed. Compliance of multiple series vaccination was also assessed and showed a several barriers to prohibiting the completion of the vaccination series. Completion of the educational program of staff was approximately 50%, while management completion was approximately 27%.

Keywords: education, Hepatitis A, vaccinations

Hepatitis A Educational Program in Food Service Workers

A major hepatitis outbreak occurred during 2017-2018, and Kentucky was one of the states that was most heavily affected. From 2017 to January of 2020, there was a total of 44,996 cases of hepatitis A in Kentucky (Kentucky Cabinet for Health and Family Services, 2020). Of all of those cases 2,407 people were hospitalized and resulted in 61 deaths (Kentucky Cabinet for Health and Family Services, 2020). Kentucky accounted for one third of deaths nationally. During this outbreak in Kentucky, many restaurants in Louisville were forced to close due to multiple cases being traced back to their operations. A regional BBQ restaurant was one of the businesses that was significantly affected by the outbreak, resulting in a significant loss in revenue. As a result, the restaurant established a policy requiring employees to receive their first dose of the hepatitis A vaccination series. Less than a year later, the policy was revoked. This restaurant was chosen because it was affected by the outbreak.

During the outbreak, a mass immunization effort was completed by the Louisville Metro Department of Public Health and Wellness and the University of Louisville Division of Infectious Disease to immunization food service workers. The organizations provided free vaccinations for all food service employees through pop up clinics at restaurants and pop-up vaccination clinics. Carrico et al. (2019) reported that approximately 87% of food service workers who received the first dose of the hepatitis A vaccine did not return for the second dose. The Carrico et al. study did not assess why people were not returning to complete the series; however, risk factors for Hepatitis A were reported in the study. The self-reported risk factors included housing insecurity, active or former drug user, direct contact with anyone who has risk factors, and men who have sex with men (Carrico, 2019). The majority of survey respondents

were high school graduates or had some college education. O'Neil (2018) states that within four weeks of the first dose a person develops more than 95% protective antibodies, but after the second dose a person will develop nearly 100% of long term protective antibodies. Individuals who did not return for the second immunization leave themselves at risk for future infection due partial immunity.

There are multiple methods to shown to increase vaccination compliance. In 2014 Larious et al determined motivationally-enhanced education and counseling interventions improved vaccine compliance knowledge in a methadone clinic population. The researchers obtained baseline scores, scores after educational sessions and then again at 3 months to determine knowledge retention. The findings were significant at the level of ($p < .001$). Johnson et al., found that a patient reminder/recall system was the strongest way to increase immunizations in a community. Meanwhile Kimmel et al, purposed education through community outreach programs, web sites, and provider recommendations.

There are multiple barriers for people to receive two to three dose series immunizations. Reasons include financial concerns, fear of side effects and lack of knowledge (Johnson et al; Bohmer et al. & Holman et al.). Johnson et al., conducted telephone interviews to determine why adults failed to receive immunizations. Eighty-six percent of patients cited lack of knowledge/ recommendations from the provider. Seventy-nine to eighty-five percent of patients who were interviewed stated they would have received vaccinations if they were offered by the health care provider. The providers also demonstrated poor adherence to routinely following recommended immunization practices for adults. Only 60% of physicians and 56% of PA/NP/RN stated that official guidelines were their personal source of information about adult immunizations. The providers also stated perceived barriers to immunizations for patients included lack of knowledge

and fear of adverse effects ($p < 0.05$). Additionally, more than 50% of providers stated that they do not always inform patient about consequences of not receiving the recommended vaccinations (Johnson et al., 2008). It is important for both patient and providers to stay informed on current practice.

The documented fear of side effects of the vaccine may be a result of a lack of a well-reported lack of knowledge regarding side effects. In multiple articles, researchers found that a lack of understanding about immunizations have caused people to not complete or start vaccination series. Bohmer et al. (2012) conducted a study observing the barriers to influenza vaccination in Germany and the United States. The study gathered data from the German Health Update who conducted telephone surveys ($n=22,050$) and follow up surveys ($n=2,493$). These represented the general population of Germany who were greater than or equal to 18. Overall on 8.8% of the adult population in Germany received their influenza vaccination. There most cited reason for rejecting the vaccination was 'fear of side effects'. A systemic review by Holman et al. (2015) examined the barriers to the Human Papillomavirus vaccination in US adolescents. Many parents listed concerns about the effects of the vaccine on their sons' sexual behavior. Parents were mistaken in the notion that the vaccine would make their children sexually active when they previously had not been. There was a lack of communication and education with the parents on the benefits to the vaccinations. Many parents and health care professionals in the study were cited with concerns to poor insurance coverage or reimbursement and cost to the parents for reasons for not receiving the vaccinations.

Theoretical Framework

The conceptual framework used to facilitate this project is the *Transtheoretical Model* by Prochaska and DiClemente (1983). This framework provides the steps that will be needed to

guide management through a change process. In this framework there are five stages of change. The first step is precontemplation. In this step, a person is not willing to change. Management at the restaurant could lack information about hepatitis A needed to make an appropriate decision about vaccinations. The next step is contemplation, a person is more aware of the benefits of change, but also be hesitant due to real or perceived risk. In this step management will be weighing the benefit of their employees receiving the second dose of the hepatitis A vaccine. The third step is preparation; a person is ready to take the next step. It is theorized that management will be open to learning more about the disease. The next stage is action, actually doing the task at hand. The employees will be learning from the educational program that will be delivered at the meeting. The last stage is maintenance. Management will discuss the best approach to allow for maintenance of the educational program and continued recommendations of the hepatitis A vaccine.

Setting and Organizational Assessment

The site for this evidence-based project was at a local bar-b-que restaurant that has several stores around the Louisville area. The restaurant was impacted by the hepatitis A outbreak in 2017-2018, forcing a closure of their restaurants. A regional manager gave permission to survey staff and management about hepatitis A content. The regional manager was the key stakeholder in this project. She was willing to consider policy change related to vaccination compliance. She was seeking a hepatitis A educational program as a way to keep hepatitis A information current. Content included symptom identification, proper cleaning techniques and vaccinations.

Known barriers to change are the mindsets of employees related to vaccination compliance and the lack of concern for completing the series per employees at the restaurant. A

study of food service workers and compliance with completing the vaccine series was conducted by Ruth Carrico. The study revealed that of all the food service workers who were received the first dose of hepatitis A series during the outbreak, only thirteen percent returned for the second dose (Carrico, 2018).

Purpose

The purpose of this project was to increase hepatitis A education of food service workers at a local BBQ restaurant in Louisville, KY with the focus of increasing the rate of food service workers completing the hepatitis A vaccine series. This meets the aims of the regional manager by educating staff about hepatitis A and reinforcing the importance of appropriate cleaning, symptom identification and vaccination. The project encourages communication about hepatitis A vaccinations and policy development. It also allows for the staff to think about their safety and their need to complete the hepatitis A vaccination series.

Intervention

The intervention team included the DNP student, DNP chairs and the regional manager. The DNP student regularly communicated with regional manager to improve project aim alignment. The development of the educational program was a collaboration with the Louisville Metro Department of Public Health and Wellness. Educational program key components were developed with the assistance of the University of Louisville Division of Infectious Disease as well. The project was approved by University of Louisville Institutional Review Board as a non-human subjects quality improvement project.

Participants

The participants in this project were staff and management at a local BBQ restaurant. The regional manager selected the specific restaurants where the staff were surveyed. This was based

on staff cooperation and size of store. The staff participants were recruited over the course of a week at the restaurant. Peak days and times for the restaurant were avoided to allow staff time to focus on the survey. For the management portion of the project, management from all stores in the Louisville area were recruited. Inclusion criteria included staff and management at the restaurant. Exclusion criteria for educational intervention was less than 18 years of age, non-English speaking, and non-management position held at the restaurant. All participants gave verbal consent to be surveyed.

Data Collection

The staff data was collected by the DNP student from a specified store that was chosen by regional manager. Peak times were avoided per regional manager and manager request. The DNP student came to the restaurant throughout the week to have staff fill out the eight question survey, pens were supplied. The DNP student developed an 8 question instrument to determine demographic data including age, race, gender, and education level as well as compliance of the first and second dose of the Hepatitis A vaccines (Appendix A). The personnel surveyed included kitchen staff, servers, bussers, and the shift leader. The staff was surveyed before the first shift of the day and through that work day for 2 days. There were 22 employees who were surveyed in total.

The DNP student attended a management meeting to collect data from management. The meeting included 11 employees. This group included store owners, general managers, and the regional manager. The staff was given the pre-test instrument of 15 questions which included demographic data, vaccination compliance, and hepatitis related content (Appendix B). The educational program including content covered and evaluation tools were developed by the DNP student and approved by the regional manager. It was based on principles that the regional

manager felt there was a lack of within the restaurants. The educational program was to serve as a reminder for staff about hepatitis A related content. Content included up to date guidelines from the Centers for Disease control including cleaning techniques, transmission and vaccination practices. The educational program was modeled after the Louisville Metro Department of Public Health and Wellness hepatitis A program used to teach hepatitis a related content to food service workers. The pre-test was collected from the subjects before hepatitis A content was delivered to this management group. The hepatitis A oral presentation covered all test questions. Content discussed included transmission vectors, symptoms, vaccines, and disinfection methods. Then the post- test was given that contained the same questions as the pre-test. Education flyers were given to all members of the meeting after the post- test was collected. The educational flyers were from the Department of Public Health and Wellness from their hepatitis A program. The regional manager received electronic copies of the flyers (Appendix C) to distribute to staff before the DNP student was supposed to come back after 1 month to retest knowledge of management. Data was secured on password protected computer.

Measurement

Due to the specificity of this project, the instruments were developed by the researcher to survey staff and assess the knowledge of management. Permissions were given by the regional manager of the BBQ chain on the all tools that were developed in this project. Twenty- two restaurant employees were surveyed. The age range was 16 to 61, of which 55% were male. Seventeen of the employees had less than high school to some college. Eighteen of the 22 participants were Caucasian. There were eleven managers that were surveyed. Management included 11 females and a majority were Caucasian. Ages ranged from 30 to 60. Nine of the

eleven people had some college or a bachelor degree (Table 1). Outcomes were measured through assessing the results of vaccination compliance and knowledge scores.

Results

The employees surveyed included the wait staff, bussers, shift managers, and kitchen staff. All of the staff had received the first dose of the hepatitis A vaccination. However, almost half (45.5%) of the employees did not receive the second dose of the vaccination. The most common reasons listed for not receiving the vaccines included forgot and they were not told to receive the next dose. Two participants stated that their workplace paid for the first one and not the second.

The educational portion of this project was focused on management, which consisted of store owners, general managers, and the regional manager. All of management had received the first dose of the hepatitis A vaccine. Only three people had completed the second dose of the vaccination. Reasons that were stated for not completing the vaccination series included forgot and does not have the time.

A paired- samples t-test was conducted to compare the educational scores of management before and after the hepatitis A content was delivered. There was a significant difference in scores for the pre-test ($M=7$, $SD=1.732$) and post- test ($M=9.91$, $SD=.701$) conditions; $t(10) = -5.319$, $p=.000$. These results suggest that the educational intervention did affect post- test scores. The educational program increased management knowledge scores. The t is negative because the post test scores had a higher mean than the pre-test scores.

Not statically significantly different from normal distribution $sig=.200$ Kolmogorov-Smirnov= null hypothesis is accepted. Pre-test data is normally distributed because sigs are higher than .05 However, fail to reject the null on posttest because both Kolmogorov-Smirnov and Shapiro- Wilk are less than .05. Post data is not normally distributed.

Discussion

Interpretation

The post educational scores for management improved overall across the employees. Due to the COVID pandemic, the DNP student was unable to assess long term retention of managements knowledge that would have tested knowledge retention. This project can be replicated to demonstrate and increase in knowledge scores in food service workers. The most missed question on the post-test was “How long do symptoms of Hepatitis A last?”. In subsequent trials, there needs to be clearer instruction on how long the symptoms last or the question should be reworded.

Most of the staff, including the employees and management, did not see the importance of completing the hepatitis A vaccination series. Several employees stated that it was not mandated to receive the second dose and therefore did not complete the vaccination series. When a policy was in place for this organization there was a 100% compliance in receiving the first dose. But numbers drastically declined when the second dose was not required.

Limitations

When reviewing this project, there were several limitations to the study. The first limitation includes the global pandemic occurring preventing the researcher to go out and obtain the longitudinal education data which was intended to be collected. Another limitation to the study was the lack of emphasis on the communicable diseases that were food borne which the organization had recently changed their policy concerning before starting my project. Other limitation is the relatively small sample size in the study. Other factors needing more study concern the effect of lower socioeconomic status and lower education levels on vaccine

compliance. Several employees maintained that since the company was not going to pay for the vaccinations, they did not see the need to complete the series.

Conclusion

An educational Hepatitis A program was implemented in a local BBQ restaurant to determine if there would be an increase scores after an educational session. The project also assessed vaccination compliance in a multi-dose immunization series. The project was helpful in demonstrating that scores can increase after an educational program. It was also useful in identifying barriers to multi-dose vaccination series. The most common reasons included forgetting and not having time. This educational program can be replicated in other restaurants in the food service industry as a way to keep knowledge about hepatitis A relevant. Next steps would be to standardize the educational program and to meet with other management from different restaurants. Another next step would be to reinforce the importance of finishing a vaccination series as a way to ensure staff is protected. A policy may need to be put in place at restaurants to mandate vaccination compliance.

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Appendix A

Staff Survey

1. What gender do you identify as?
2. What is your age?
3. What is the highest degree or level of education you have completed?
 - a. Less than High School Degree
 - b. High School Degree
 - c. Technical School
 - d. Some College
 - e. Associate Degree
 - f. Bachelor Degree
 - g. Graduate Degree
4. What is your race?
5. Have you received the first dose of the Hepatitis A vaccine?

YES or NO
6. If no, why not?
 - a. Forgot

- b. No access to receive vaccine
 - c. Too expensive
 - d. Do not have time
 - e. Fear of side effects
 - f. Other: Please list reasons below
7. Have you received the second dose of the Hepatitis A vaccine?
- YES or NO
8. If no, why not?
- a. Forgot
 - b. No access to receive vaccine
 - c. Too expensive
 - d. Do not have time
 - e. No one told you to get the next vaccine
 - f. Fear of side effects
 - g. Other: Please list reasons below

Appendix B

Management Test:

1. What gender do you identify as?
2. What is your age?
3. What is your race?
4. What is the highest degree or level of education you have completed?
 - a. Less than High School Degree
 - b. High School Degree
 - c. Technical School
 - d. Some College
 - e. Associate Degree
 - f. Bachelor Degree
 - g. Graduate Degree
5. How is Hepatitis A spread?
 - a. Fecal-oral route
 - b. Sexual transmitted
 - c. Droplet
6. What is a symptom of Hepatitis A?
 - a. Fever
 - b. Muscle pain
 - c. Sore throat
7. What organ does Hepatitis A affect?
 - a. Liver
 - b. Lungs
 - c. Heart
8. How can you prevent the transmission of Hepatitis A virus?
 - a. Vaccines
 - b. Employees failing to wash hands
 - c. Coming to work sick

9. What methods can be used to disinfect surfaces for Hepatitis A exposure?
 - a. Chlorine Bleach Sanitizers
 - b. Clorox wipes
 - c. Soap and water

10. What is the effectiveness of the second vaccine for Hepatitis A?
 - a. 80%
 - b. 95%
 - c. Over 99%

11. How long until symptoms show from Hepatitis A exposure?
 - a. 8 weeks
 - b. 4 weeks
 - c. 2 weeks

12. How long do symptoms of Hepatitis A last?
 - a. 1 month
 - b. 2 months
 - c. 3 months

13. How long does a person need to wait before obtaining the second dose of the hepatitis A vaccine?
 - a. 4 weeks
 - b. 3 months
 - c. 6 months

14. How long can the Hepatitis A virus survive outside of the body?
 - a. Weeks
 - b. Months
 - c. Years

15. Where can you receive your vaccinations?
 - a. Pharmacy
 - b. Doctor office
 - c. Both A and B

Appendix C

FIGHT HEPATITIS A

It starts with you

Hepatitis A is a contagious liver infection. The virus is found in the stool of people with the infection and is usually spread by consuming food or water contaminated with the virus.



Get Vaccinated



Stay home if you are sick



Wash your hands



Been in contact with someone who has Hepatitis A?



Watch for symptoms

Symptoms of HEPATITIS A infection

- Fever
- Fatigue
- Headache/body ache
- Loss of appetite
- Nausea
- Stomach pain
- Vomiting
- Diarrhea
- Yellow skin and eyes
- Dark colored urine
- Pale colored stools

WHO IS AT RISK FOR HEP A?

- The homeless
- Travelers to countries where Hep A is common
- Those that live with a person already infected
- Men who have sexual contact with other men
- Individuals who use illegal drugs, whether injected or not
- If you've had sexual contact with someone who has Hep A

TALK TO YOUR DOCTOR OR HEALTH CARE PROVIDER RIGHT AWAY



For more information call (502) 574-6650

For more information on Hepatitis A or to report individuals with vomiting, diarrhea or fever associated with food consumption, contact:

Phone: (502) 574-6675

HEPATITIS A DISINFECTION GUIDELINES

Hepatitis A is a liver infection caused by the Hepatitis A virus. Highly contagious, the Hepatitis A virus is usually transmitted by the fecal-oral route, either through person-to-person contact or consumption of contaminated food or water. Contamination can occur when infected persons do not wash their hands properly after going to the bathroom and then touch other objects or food items. Surfaces that are frequently touched should be cleaned and sanitized often.

- Toilet Room Surfaces
- Kitchen Surfaces
- Doorknobs
- Recreation Equipment
- Light Switch Plates
- Phones
- Computer Keyboards
- Railings
- High Chairs
- Tables and Chairs
- Wheelchairs and Walkers
- Remote Controls

Effective Disinfection for Surfaces Exposed to Hepatitis A

Chlorine Bleach: Mix and use the chlorine solution promptly. Allow 1 minute of contact time and then rinse with water.

- **5000 ppm:** 1 and 2/3 cups bleach in 1 gallon water. Use for stainless steel, food/mouth contact items, tile floors, nonporous surfaces, counters, sinks and toilets.

Other Disinfectants:

To determine if a product is effective against Hepatitis A, review the product label or product specification sheet and ensure it states "effective against Hepatitis A" or "effective against Feline Calicivirus". You may also search the product name in the Environmental Protection Agency's registered product database at:

<https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1>

Steps to Clean Spills of Vomit or Feces

- Put on personal protective equipment, including two sets of gloves, masks and gowns.
- Block-off area immediately.
- Clean up visible debris using disposable absorbent material (paper towels or other type of disposable cloths) and minimize aerosols.
- Discard soiled items carefully in an impervious plastic bag.
- Thoroughly clean affected area
- Disinfect area and objects surrounding the contamination with an appropriate disinfectant effective against Hepatitis A. See box to the left "Effective Disinfectants" for 5000 ppm sanitizing solution.
- Take off outer set of gloves, gown and mask, in that order, and discard before exiting contaminated clean-up area.
- Place discarded PPE in an impervious plastic bag.
- Wearing the inner set of gloves, transport bag to a secure trash container; do not allow the bag to come into contact with clothing.
- Always wash your hands after handling any contaminated material, trash or waste.

Specific Cleaning Methods

Wear Gloves and Protect Your Clothing

Hard Surfaces

Disinfect surface with bleach, or other approved disinfectant, ensuring the correct contact time is being met. If the surface is in a food preparation area, make sure to rinse with water after. For surfaces that are corroded or damaged by bleach, use another product that is effective against Hepatitis A.



Proper Handling

- Use chemicals in well-ventilated areas.
- Avoid contact between incompatible chemicals.
- Prevent chemical contact with food during cleaning.
- Handle contaminated material as little as possible and with minimal agitation to reduce aerosols.
- Manage waste safely and dispose in a secure trash container.

Preventing the Spread of Illness

- ✓ All food employees must practice diligent handwashing and good personal hygiene (see below for handwashing procedures).
- ✓ Use utensils or gloves to eliminate bare hand contact with ready- to-eat food.
- ✓ Thoroughly and continuously disinfect the facility and food areas using the guidelines at the reverse of this document.

Handwashing

- ✓ Food employees shall thoroughly wash their hands and arms with soap and warm water for at least 20 seconds; thoroughly rinse with clean running water and properly dry their hands and arms.
- ✓ Ensure handwashing signs are posted in the appropriate locations.

Employees shall wash their hands in all of the following instances:

- Immediately before engaging in food preparations, including working with non-prepackaged food, clean equipment and utensils, and unwrapped single-use food containers and utensils.
- After touching bare human body parts other than clean hands and clean, exposed portions of arms.
- After using the toilet room.
- After caring for, or handling any animal allowed in a food facility.
- After coughing, sneezing, using a handkerchief or disposable tissue, using tobacco, eating or drinking.
- After handling soiled equipment or utensils.
- Before putting on disposable gloves to start working with food.
- During food preparation, as often as necessary to remove dirt and contamination; and when changing tasks to prevent cross-contamination.
- When switching between working with raw food and working with ready-to-eat food.
- Before dispensing or serving food, or handling clean tableware and serving utensils in the food service area.
- After engaging in other activities that contaminate hands.

Table 1

		Staff Educational Level			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than High School	5	22.7	22.7	22.7
	High School	3	13.6	13.6	36.4
	Some College	9	40.9	40.9	77.3
	Associate	2	9.1	9.1	86.4
	Bachelor	2	9.1	9.1	95.5
	Graduate	1	4.5	4.5	100.0
	Total	22	100.0	100.0	