

Master of Public Health  
Applied Practice Experience

by

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Submitted in partial fulfillment of the requirements for the degree

MASTER OF PUBLIC HEALTH

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## Chapter 1 - Portfolio Products

I completed my Applied Practice Experience (APE) with the Wyandotte County Public Health Department, Kansas. The Wyandotte County Public Health Department provides tuberculosis (TB) testing and treatment, community health, and wellness services for the residents. These services are for the residents of Wyandotte County; however, the underserved communities benefit more in the service provided, such as immigrants, older people, and low-income earners. Services provided to enhance individual health at an affordable cost include immunization and wellness clinics. The staff also engages in outreach programs within the community as needed.

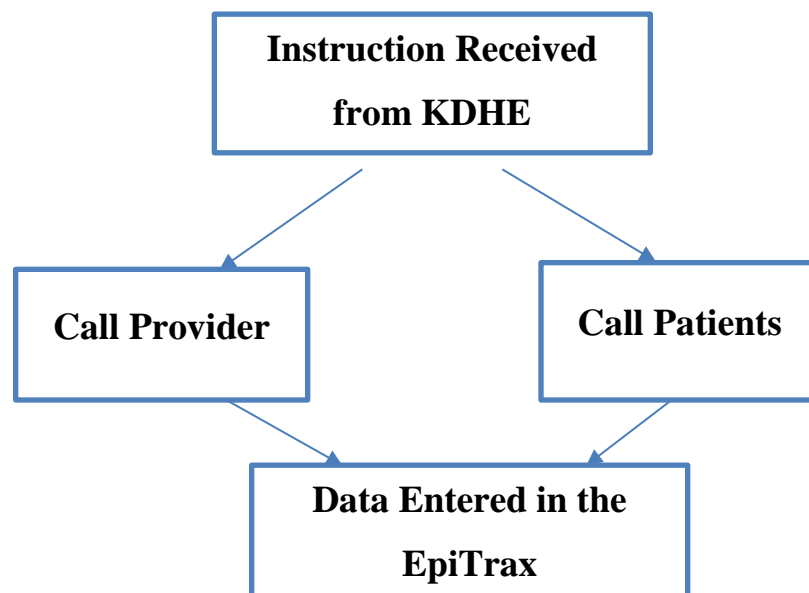
During my APE, my primary duty was using EpiTrax to identify hepatitis cases and obtain patient information on exposure factors, signs, and symptoms of chronic hepatitis C and perinatal hepatitis B. I created awareness follow-up letters for patients whose hepatitis C results were recorded as positive in EpiTrax. I attended clinical meetings with the team once a week to be conversant with the challenges and improvement of the TB patients. Also, I produced flyers and placed posters in the waiting room for *Mycobacterium tuberculosis* education.

EpiTrax is an electronic disease surveillance system used by the Kansas Department of Health and Environment (KDHE) and other local, state, and national health departments. EpiTrax enhances electronic laboratory reporting and provides analyses, visualization, and reporting contact information. Decreased reporting time, anomaly detection, and quality assurance improve overall effectiveness in preventing morbidity and mortality. EpiTrax improves overall effectiveness through early detection of diseases that prompt the investigator to contact and link patients to their provider for proper intervention. However, I signed a user agreement form before I started working with the information provided in the EpiTrax. The essence of signing the user agreement form was to protect patients' privacy and maintain information confidentiality.

## **Hepatitis B**

I received specific instructions for each perinatal hepatitis B case from Sarah Chicchelly, an Epidemiologist and perinatal hepatitis B prevention program (PHBPP) coordinator at KDHE. I contacted perinatal hepatitis B patients and providers for hepatitis B test results and recommended rescheduling the infants who missed their testing and vaccination (see Figure 1.1). I entered these data received from the patients and providers into the EpiTrax.

**Figure 1.1 Process of Hepatitis B Investigation**

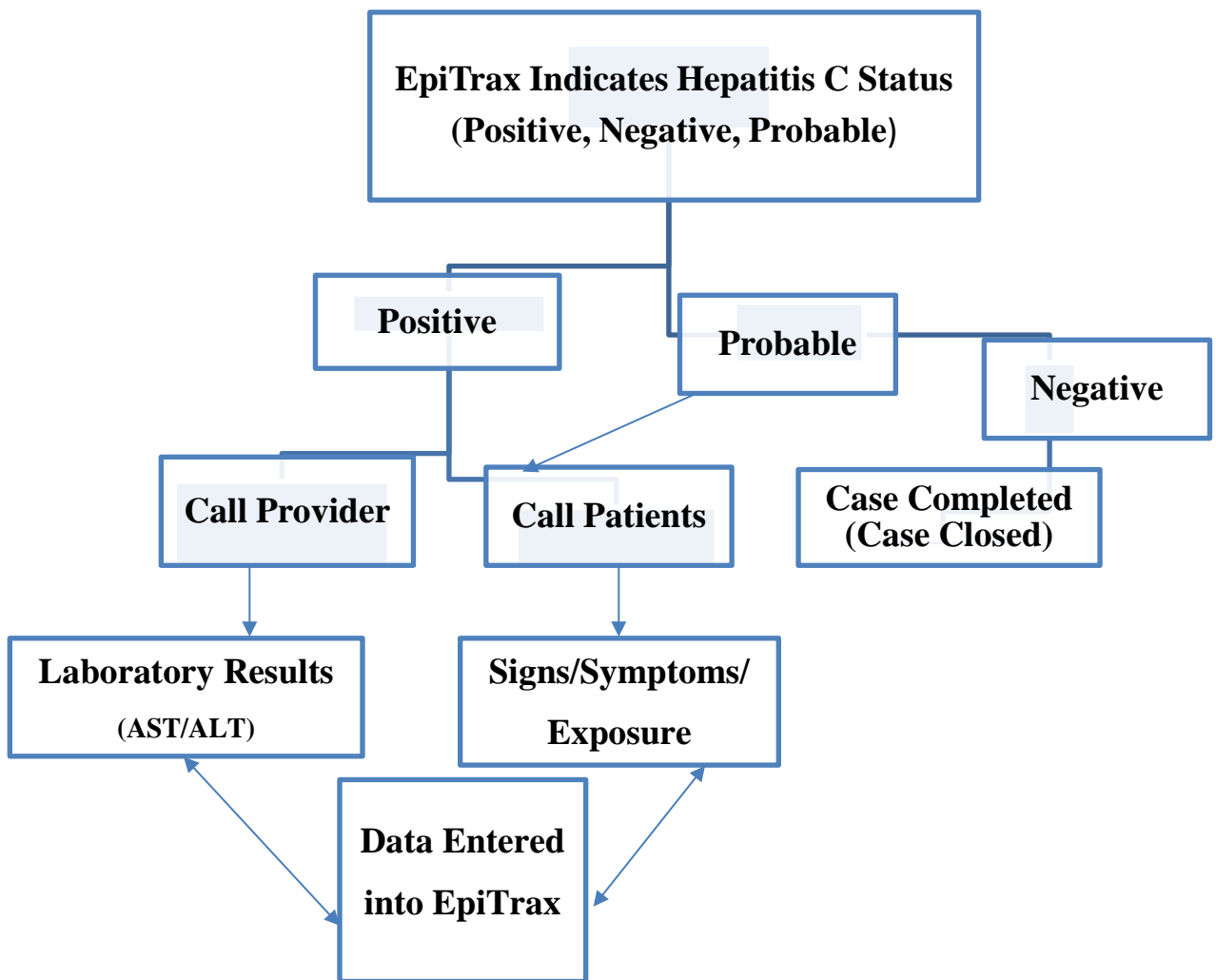


## **Hepatitis C**

The positive and probable hepatitis C test results were the focus of my investigation. I asked patients questions based on exposure factors, such as the number of sexual contacts, blood transfusion, illegal substance use, body piercing, tattoos, and location of the tattoo procedure. The essence of asking these questions was to identify how HCV transmission occurs from one person to another. Continuing with the interview, I inquired about the signs and symptoms of hepatitis C,

which include abdominal pain, jaundice, fatigue, and weight loss. In addition, I contacted the provider regarding hepatitis C laboratory results, specifically the liver enzymes, aspartate aminotransferase (AST), and alanine aminotransferase (ALT), which are blood tests most frequently used for infectious and non-infectious liver diseases. The HCV causes elevation of both AST and ALT, enzymes found mainly in the liver and other tissues, such as muscles. Enzymes are a part of the normal metabolic processes in the liver and act as catalysts to speed up chemical reactions. The process of these investigation steps can be seen in a flow diagram below (see Figure 1.2).

**Figure 1.2 Process of Hepatitis C Investigation**



## **Tuberculosis**

I attended a clinical meeting on active and latent tuberculosis with the TB doctor, the chief epidemiologist, the public health deputy director, and other TB nurses. Patients' conditions and other barriers, such as patients' attitudes toward treatment, were discussed in the meeting. Some perceived barriers are general lifestyle, nutrition, and language. Research conducted on screening immigrants for TB in Sweden stated that seventy percent of individuals in an interview requested TB information in their mother tongues. Consequently, language and literacy are substantial barriers to appropriate access and provision of healthcare services to immigrants (Nkulu et al., 2010). Low knowledge of tuberculosis with inadequate health information literacy can lead to poorer treatment outcomes (Olayemi, 2022). One of the communication challenges was to determine how TB patients perceive information. Research conducted among parents and school staff in Italy measures the impact of communication implementation during the TB outbreak. The outcome stated that the implemented communication initiatives that involve face-to-face interaction were less effective in individuals with a lower education level (Gentili D. et al., 2020).

The TB nurse, Megan Harrigan, reported that in her experience, more than 50% of Wyandotte County Public Health Department TB patients have low literacy, which might affect the treatment prognosis (Sufianu T., personal communication, April 25, 2023). Therefore, I decided that a visual diagram would be helpful to confer information to TB patients with low literacy.

During the weekly TB meeting, I discovered a need for basic TB information on preventive strategies and nutrition to enhance treatment prognosis when discussing behavioral factors

influencing the success rate in the meeting. I designed flyers with basic TB information based on CDC recommendations (see Appendix 1); and preventive strategy posters to reduce the spread of TB, which entails using masks, opening windows, the correct method of covering the mouth when coughing, and timely use of TB medication to prevent resistance to treatment (see Appendix 2). The anti-tuberculosis treatment lasts six to twelve months (CDC, 2019). I also designed a food poster, which demonstrated appropriate nutrition for a patient while on anti-tuberculosis treatment, considering the drug interaction with food (see Appendix 3).

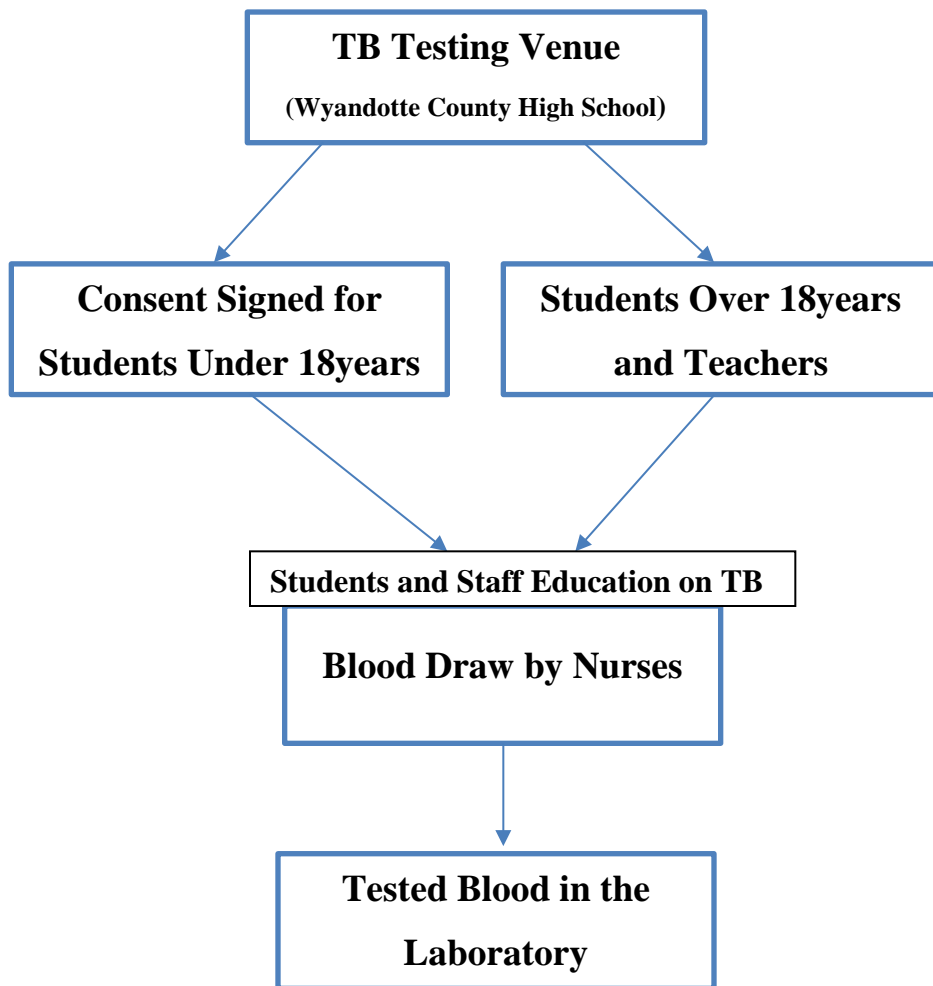
I participated twice in Wyandotte County High School outreach on TB testing. The outreach team comprises nurses, chief epidemiologist, laboratory technicians, and other administrative personnel. Students under 18 years old needed a consent form to be signed by their parents to be tested for TB. Teachers and other students above 18 years were mandated to sign the consent form before TB testing. My primary duty was to sort out the consent form in different languages, including English, Spanish, Arabic, and Swahili, for the pupils and school staff to sign. I directed staff and students after signing the TB form to the nurses for a blood draw at the Wyandotte County High School. The blood was delivered to the Wyandotte County Public Health Department laboratory for TB testing.

Furthermore, I educated students on TB, and all related questions from students were answered orally, as I led them individually to the blood draw cubicles. The pupils learned that TB is transmitted through airborne droplets when an infected person coughs, sneezes, sings, or talks, and a healthy person contacts the bacteria when they breathe. The process of these investigation steps can be seen in a flow diagram below (see Figure 1.3).

As a result of the knowledge gap on TB during the outreach, I saw a need to use Canvas to create a flyer for TB awareness for Wyandotte County residents. The TB flyers show voluntary

tuberculosis testing, indicating infection ratio with the four cardinal signs and symptoms (see Appendix 1). The infection ratio is 1:15, meaning one infected individual can infect 15 people yearly (WHO, 2023).

**Figure 1.3 TB Testing Process at the Wyandotte County Public Health Department**



**Table 1.1 Summary of Portfolio Products**

Portfolio Product	Description
EpiTrax Analysis (Set of flowcharts)	Disease investigation on hepatitis C and B



	TB Flyers	Creating tuberculosis awareness for Wyandotte County residents
	TB Food Poster Packet	Food choice diagram for the active TB patient on treatment
	TB Preventive strategies	Diagram showing mask use, opening window, and timely medication use

**Table 1.2 Portfolio Products and Competency Addressed**

Portfolio Product		Number and Competency Addressed	
	EpiTrax analysis (Set of flowcharts), TB flyers, TB food posters, TB preventive strategies	4	Interpret the result of data analysis for public health research, policy, or practices.
	TB flyers, TB food posters, TB preventive strategies	7	Access Population needs, assets, and capacities that affect community health
	TB flyers, TB food posters, TB preventive Strategies	9	Design a population-based policy, program, project, or intervention
	TB flyers, TB food posters, TB preventive strategies	18	Select communication strategies for different audiences and sectors
	TB flyers, TB food posters, TB preventive strategies	21	Perform effectively on interprofessional teams

## Chapter 2 - Competencies

This chapter details how specific competencies were achieved in the overall field experience with the chief epidemiologist, Elizabeth Groenweghe (EpiTrax). This chapter first reviews overall MPH competencies numbers 4, 7, 9, 18, and 21.

### **Competency #4: Interpret results of data analyses.**

Competency 4 is a competency from evidence-based approaches to public health—the interpretation of results of data analysis for public health research, policy, or practices. This project was based on public health research. I learned how to collate and analyze data using spreadsheets to generate tables and graphs in the MPH 701 Fundamental of Biostatistics course. For this competency, data from hepatitis cases was collected from EpiTrax and analyzed using Microsoft Excel®—this involved categorizing information into numerical or categorical variables for statistical analyses. To assist in interpreting the results, the distribution and summary of measures of hepatitis B and C cases were represented in the form of tables, pie charts, and bar charts that were further detailed by the number of probable, confirmed, and negative case statuses.

### **Competency #7: To assess population needs, assets, and capacities that affect communities' health.**

Competency 7 is a competency from planning and management to promote health—to assess population needs, assets, and capacities that affect communities' health. One of the core courses was MPH 802 Environmental Health, which reviewed how environmental factors, including infectious diseases, impact public health. Tuberculosis (TB) is an airborne disease transmitted when an infected person coughs, sneezes, talks, and sings, and a healthy person inhales the bacteria. At the TB clinical meetings, the chief epidemiologist and other public health officials determined that there was an increase in positive cases of TB, including an outbreak in the first quarter of 2022 (Wyandotte County Public Health Department. (2023, April 12- July 28). TB

Clinical Meeting. Wyandotte County, Kansas). Therefore, during the TB testing outreach activities related to this project, I communicated with the Wyandotte County residents on how TB can be prevented as they departed from the testing center, I distributed flyers to the testers to disseminate the information after the TB test (see Appendix 1). Also, I created posters for the active TB patients on treatment. The posters provided information on preventive measures to reduce TB transmission from the patients to their household members. I included on the poster the correct use of masks, opening windows, timely medication use, and covering the mouth with clothes or flexed elbow when coughing (see Appendix 2).

In addition, this competency was fulfilled when investigating hepatitis C cases, in which feedback from the community provided information about how to assess a population regarding a sexually transmitted disease. I discovered that 26% of individuals with probable and positive results in Wyandotte County could not be reached via phone call or awareness letter (see Appendix 4). In addition, 9% of residents declined calls, because they believed the questions were private. For example, residents declined calls because they did not feel comfortable reporting the number of sexual contacts for the past six months. Also, 5% of residents could not be reached because there was no contact information on their records. With this information and in the future, Public Information Officer, Janell Friesen, may be able to create more awareness of the importance of hepatitis C testing at the Wyandotte County Public Health Department using other methods of communication, including the use of Facebook and Instagram, to help broaden communication and decrease reluctance to divulge private information.

**Competency #9: Design a population-based policy, program, project, or intervention.**

Competency 9 is a competency from planning and management to promote health—design a population-based policy, program, project, or intervention. This competency was achieved

through the course work MPH 754 Introduction to Epidemiology. My population-based intervention stems from attending the clinical meetings, noting the challenges, such as the language barrier, nutrition, and lifestyles of the TB patients, participating in outreach programs, and creating TB flyers and posters as a tool for population intervention.

I used the TB flyers as a tool for TB public health intervention, and printed flyers were given to each person who came to the TB test outreach event as they exited the testing venue (appendix 1). To impact TB transmission within Wyandotte County through education and awareness, I explained to residents the effective reproductive number ( $R_E$ ), which is the number of people in a population with whom an individual with TB can infect at any specific time. On the TB flyers, I indicated the possible number of people that TB can be transmitted to based on the information from WHO, which states that an infected individual can transmit TB disease on average to fifteen people annually (1:15).

Likewise, a packet that contains a TB flyer, posters on preventive strategies, and a nutritional guide were given to each active TB patient at the beginning of their treatments. This will support an effective treatment prognosis through the six to twelve months of treatment.

**Competency #18: Select communication strategies for different audiences and sectors.**

Competency 18 is a competency from communication—select communication strategies for different audiences and sectors. The DMP 815 Multidisciplinary Thought and Presentation course taught me to emphasize concise information that is tailored to a specific group. Since the TB Nurse, Megan Harrigan, confirmed that 50% of TB patients treated within the Wyandotte County Public Health Department have low literacy (Sufianu T., personal communication, April 25, 2023). Therefore, I created a visual image to communicate information on the appropriate nutritional intake during the six to twelve months of anti-TB treatment. For

example, I posted a pictorial diagram of different classes of food that should be eaten and would not interfere with anti-TB treatments (WHO, 2013; Annabel, 2022), such as protein-rich foods (meat, fish, eggs, beans, nuts, seeds), fruits (banana, avocado, strawberry), vegetables (broccoli), grains, dairy (cheese, milk, yogurt), and encouraging the intake of drinking water (see Appendix 3). In addition, avoiding drinking alcohol was also indicated. Alcohol is known to reduce the effectiveness of the TB treatment in the body. A weakened immune system increases the risk of infection and, consequently, liver damage, which is one of the side effects of anti-TB treatments. A healthy liver metabolizes drugs, while an impaired liver leads to drug toxicity in the body due to elevated drug serum levels (WHO, 2013; Annabel, 2022).

(WHO, 2013; Annabel, 2022).

**Competency #21: Integrate perspectives from other sectors and/or professionals to promote and advance population health.**

Competency 21 is a competency from interprofessional and/or intersectional practice—integrate perspectives from other sectors and/or professionals to promote and advance population health. The social and behavioral bases of public health from MPH 818 were crucial to my project. My supervisor, Elizabeth Groenghewe, assigned hepatitis C cases to me daily. I also received specific instruction on perinatal hepatitis B from Sarah Chicchelly, an epidemiologist and perinatal hepatitis B prevention program (PHBPP) coordinator at KDHE. I worked with the TB nurses at the Epi/TB department for basic information about the patient treatment prognoses and areas of challenge.

Also, attending weekly TB meetings with the individuals mentioned above and asking relevant questions enhanced my ability to meet organizational needs, such as developing impactful TB flyers. The information system analyst at the Wyandotte County Public Health Department,

Francis Asogwa, provided the hepatitis C, B, and TB data for analysis and evaluation. Janell Friesen, public information officer at the Wyandotte County Public Health Department, assisted with the perfection of the flyers and poster production in Canvas, an online graphic design platform. Interpersonal relationships with the outreach team exposed me to several environmental determinant factors, such as school systems and residence structure within Wyandotte County. As a result, I was able to tailor the information for the public awareness of hepatitis and TB effectively.

**Table 2.1 Summary of MPH Foundational Competencies**

Number and Competency		Description
4	Interpret results of data analyses.	The hepatitis C disease investigation results were graphically represented in bar charts, pie charts, flowcharts, and tables. From this, there was an indication that 26% were lost to follow up on the bar chart, for example.
7	Assess population needs, assets, and capacities that affect communities' health.	Posters indicating different preventive strategies for the spread of tuberculosis were designed. For example, using masks, appropriate methods of covering the mouth when coughing, opening windows, and timely use of anti-TB treatment.
9	Design a population-based policy, program, project, or intervention	TB flyers were used as a public intervention to enlighten people on how TB is spread. That is, through coughing, talking, sneezing, and singing. Also, the TB flyers encouraged individuals to take the initiative for testing.
18	Select communication strategies for different audiences and sectors	A visual poster diagram on appropriate nutrient intake (protein, vegetables, grains, fruits, and water) while on anti-TB treatment was created for the active TB patients.
21	Integrate perspectives from other sectors and/or professionals to promote and advance population health.	Collaboration with different departments for hepatitis and tuberculosis awareness was undertaken during this project.

**Table 2.2 MPH Foundational Competencies Course Mapping**

<b>22 Public Health Foundational Competencies Course Mapping</b>	<b>MPH 701</b>	<b>MPH 720</b>	<b>MPH 754</b>	<b>MPH 802</b>	<b>MPH 818</b>
<b>Evidence-based Approaches to Public Health</b>					
1. Apply epidemiological methods to the breadth of settings and situations in public health practice	x		x		
2. Select quantitative and qualitative data collection methods appropriate for a given public health context	x	x	x		
3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate	x	x	x		
4. Interpret results of data analysis for public health research, policy or practice	x		x		

<b>Public Health and Health Care Systems</b>					
5. Compare the organization, structure, and function of health care, public health and regulatory systems across national and international settings		x			
6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels					X
<b>Planning and Management to Promote Health</b>					
7. Assess population needs, assets and capacities that affect communities' health		x		x	
8. Apply awareness of cultural values and practices to the design or implementation of public health policies or programs					X
9. Design a population-based policy, program, project or intervention			x		
10. Explain basic principles and tools of budget and resource management		x	x		
11. Select methods to evaluate public health programs	x	x	x		
<b>Policy in Public Health</b>					
12. Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence		x	x	x	
13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes		x		x	X
14. Advocate for political, social or economic policies and programs that will improve health in diverse populations		x			X
15. Evaluate policies for their impact on public health and health equity		x		x	
<b>Leadership</b>					
16. Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making		x			X
17. Apply negotiation and mediation skills to address organizational or community challenges		x			
<b>Communication</b>					
18. Select communication strategies for different audiences and sectors	DMP 815, FNDH 880 or KIN 796				
19. Communicate audience-appropriate public health content, both in writing and through oral presentation	DMP 815, FNDH 880 or KIN 796				
20. Describe the importance of cultural competence in communicating public health content		x			X
<b>Interprofessional and/or Intersectional Practice</b>					
21. Integrate perspectives from other sectors and/or professionals to promote and advance population health		x			X
<b>Systems Thinking</b>					
22. Apply systems thinking tools to a public health issue			x	x	

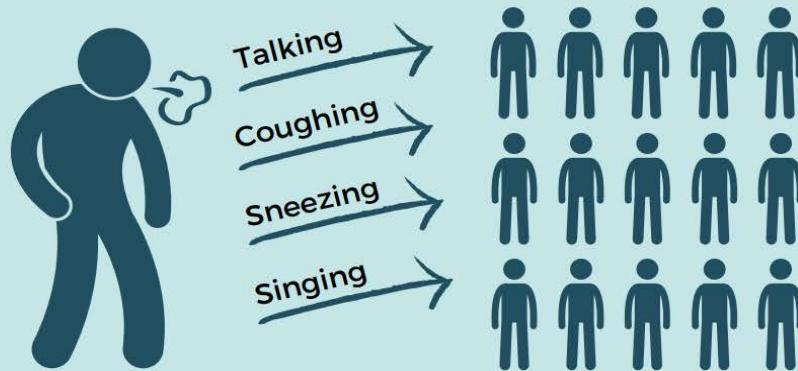


# Appendix

## Appendix 1 Tuberculosis Flyer

### TAKE INITIATIVE: Get tested for Tuberculosis (TB)

1 person with TB disease will typically spread TB to 10 - 15 more people.



#### Signs & Symptoms of TB Disease



Coughing up  
blood or mucus



Fever/chills



Night sweats



Weight loss

Other possible symptoms: a bad cough that lasts 3+ weeks, chest pain, weakness/fatigue, and loss of appetite



#### Prevent the spread of TB!

Get tested for TB by your health care provider or local health department.

TB testing and treatment are available at the **Wyandotte County Public Health Department**, 619 Ann Ave, Kansas City, KS 66101. Call (913) 573-8855



Updated June 23, 2023

Appendix 2 The Preventive Strategy Poster

  **HELP STOP THE SPREAD OF TB**  
Information for TB Patients | WYCO Public Health Department, July 2023

**Open windows for fresh air**



**Take medications as directed**



**Cover coughs and sneezes**



**Wear a mask when you are around other people**



# Appendix 3 The Nutritional Poster

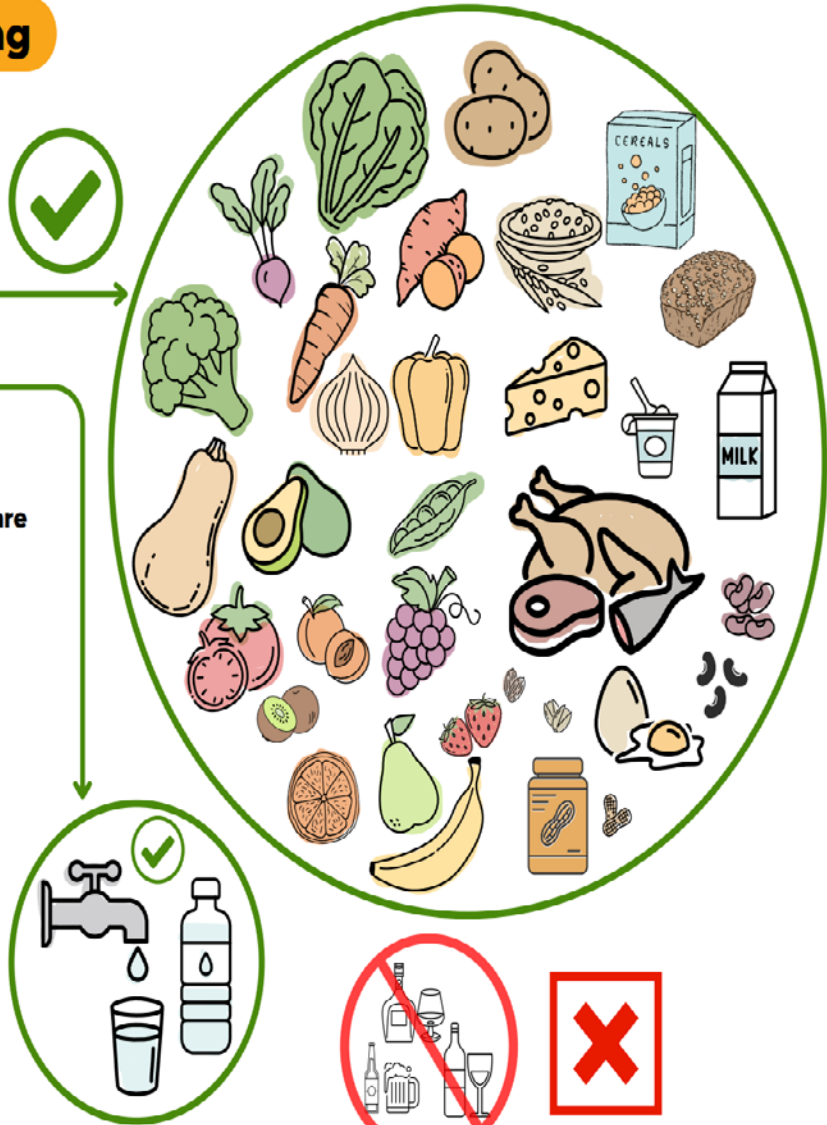
## Nutrition tips during TB Treatment



**Eat a variety of foods to take care of your body and help fight TB:**

- Vegetables
- Fruits
- Protein (meat, fish, eggs, beans, nuts, seeds)
- Grains
- Dairy (cheese, milk, yogurt)

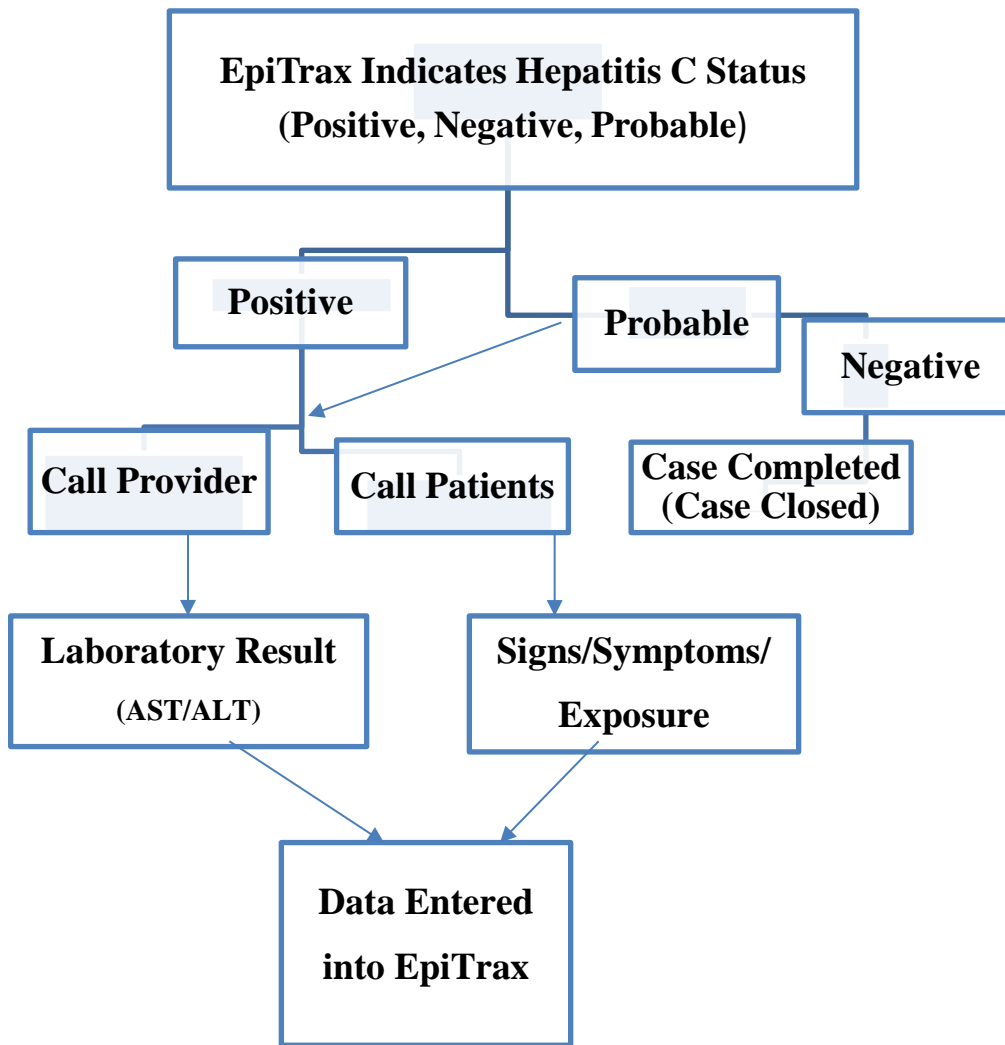
**Drink plenty of water**  
Avoid drinking alcohol



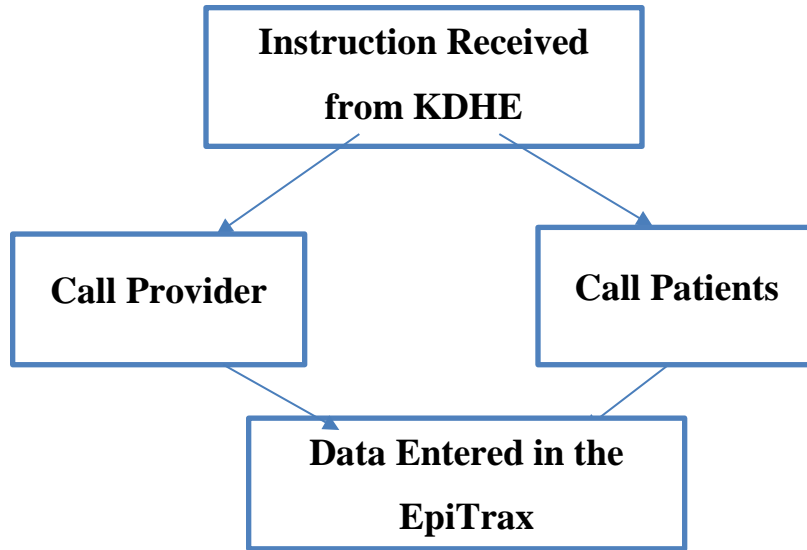
Wyandotte County Public Health Department  
Updated July 20, 2023

**Appendix 4 EpiTrax Analyses**

**Figure 1.1 Process of Hepatitis C Investigation**



**Figure 1.2 Process of Hepatitis B Investigation**



**Figure 1.3 TB Testing Process at the Wyandotte County Public Health Department**

