



MPH Integrated Learning Experience Report

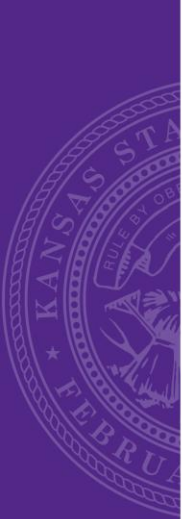
Disease Investigation on Hepatitis B and C and Tuberculosis Awareness

Temitope Sufianu

Master of Public Health Candidate

Infectious Diseases and Zoonoses

October 30th, 2023



Outline

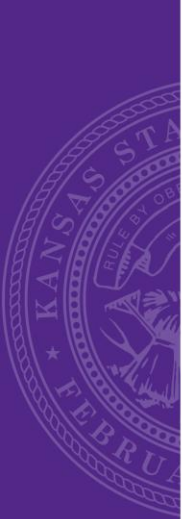
- Introduction
- Background
- Applied Practical Experience
- Projects and Products
- MPH Competencies
- Emphasis: Infectious Diseases and Zoonoses competencies
- Conclusion
- Acknowledgements

Wyandotte County, KS

- North of Johnson County, Kansas
- West of Kansas City, Missouri
- 151 square miles and 167,046 population



Map of Wyandotte County, Kansas. (2022). Where is Located, Cities, Population, Highways & Facts (whereig.com).



Introduction

- Bachelor of Science in Nursing with five years of work experience
- Completed hours with Wyandotte County Public Health Department
- Disease Investigator Intern
- Field Experience, April 12-July 28, 2023
- Project Focus
 - Hepatitis B
 - Hepatitis C
 - Tuberculosis Awareness

Hepatitis B

- Double-stranded DNA virus, a species of the genus Orthohepadnavirus and a member of the family of Hepadnaviridae viruses
- Potentially life-threatening liver infection transmitted via body fluids, including blood, semen, and vaginal secretions
- 0.42 per 100,000 deaths in the US in 2021 (CDC, 2021)
- WHO goal: Eliminate 95% of HBV worldwide by 2030

Hepatitis C

- Single-stranded RNA from the family of Flaviviridae
- Transmitted through blood exposure from unsafe injection practices, improper instrument sterilization, unscreened blood transfusions, injection drug use, and sexual practices
- 3.45 deaths per 100,000 people in the US in 2021 (CDC, 2021)
- WHO goal: Reduce hepatitis C incidence by 90% and a 65% reduction in mortality by 2030

Tuberculosis (TB)

- Infectious disease that most often affects the lungs and is caused by *Mycobacterium tuberculosis*
- An essential infectious preventable disease worldwide
 - Latent TB infection can progress to active disease if left untreated.
- Active TB incidence rate in the US in 2022 was reported to be 2.5 per 100,000 (Schildknecht *et al.*, 2022)
- WHO targets for 2030:
 - 90% reduction in TB deaths
 - 80% reduction in the TB incidence rate

Applied Practical Experience

**APE SITE: Wyandotte County
Public Health Department**



Mission: To deliver high-quality, efficient services and be a resource to our residents. We are innovative, inspired public servants focused on our community's wants and needs.

Preceptor: Elizabeth Groenweghe, MPH

The seal of the State of Kansas is visible on the left side of the slide. It features a circular design with the words "KANSAS STATE" at the top and "FEBRUARY 29, 1862" at the bottom. The center of the seal depicts a landscape with a sun, a plow, and a sheaf of wheat.

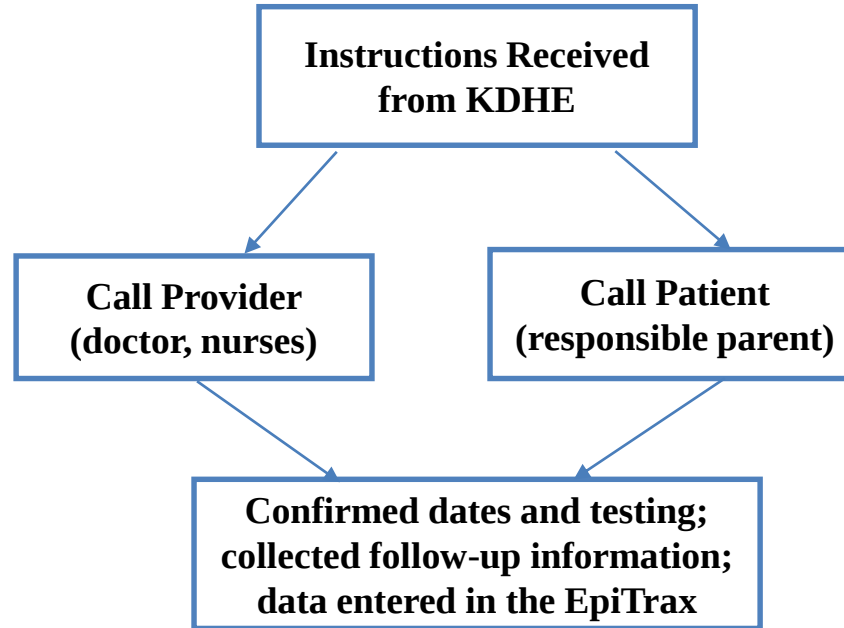
Learning objectives

- To establish the infection rate of hepatitis B and C in Wyandotte County based on the data of confirmed hepatitis B and C cases
- To enhance the understanding of all active TB patients with low literacy in Wyandotte County through visual posters of nutritional guides and TB preventive strategies throughout their anti-TB treatment period
- To inform Wyandotte County residents on hepatitis and TB tests by collaborating with the public information officer to educate through TB flyers, Instagram, and Facebook
- To develop a nutritional guide to optimize anti-TB treatments in the Wyandotte County Public Health Department

Projects and Products – Hepatitis B

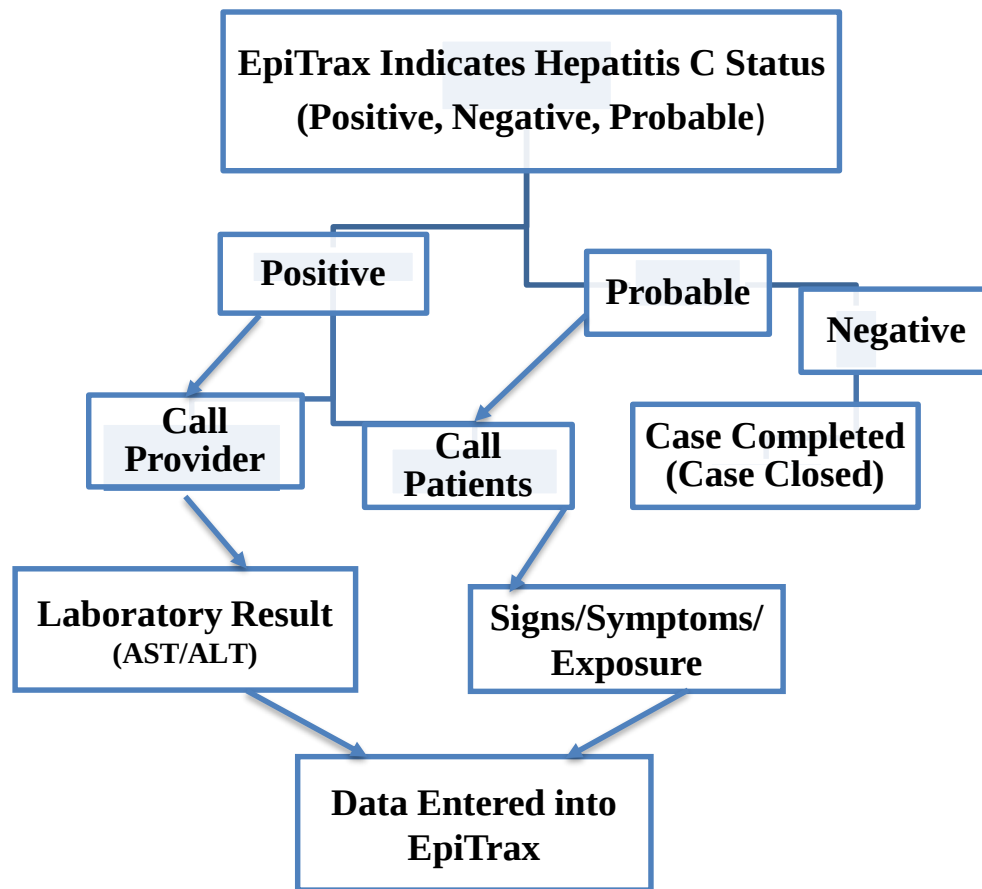
EpiTrax Analyses

Process of Hepatitis B Investigation



Projects and Products – Hepatitis C

Process of Hepatitis C Investigation

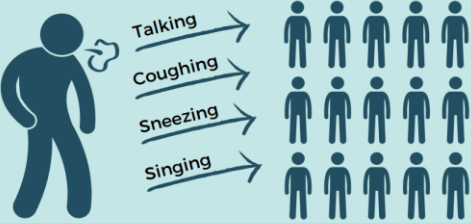


Projects and Products – TB

- TB flyers

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

Projects and Products – TB

Nutritional Poster

Nutrition tips during TB Treatment

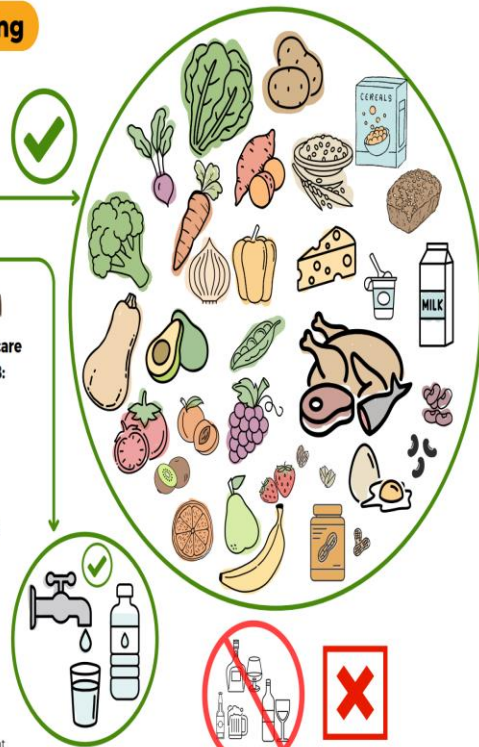


Eat a variety of foods to take care of your body and help fight TB:

- 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



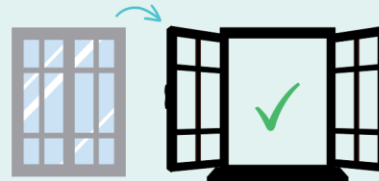
Preventive Strategy Poster



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



KANSAS STATE
UNIVERSITY



MPH Competencies

- Competency #4—the interpretation of results of data analysis for public health research, policy, or practices (Course reference: MPH 701)
- Data from hepatitis cases was collected from EpiTrax and analyzed using Microsoft Excel.

Hepatitis B project

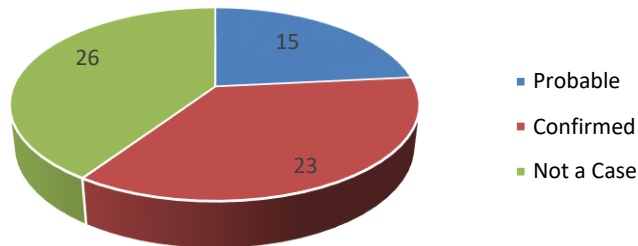
Investigation instructions from KDHE

- To follow up on initial hepatitis vaccination and post-vaccination serologic testing (PVST).
- Educate and encourage parents on immunization.
- Contact the provider for a hepatitis confirmatory test and schedule.

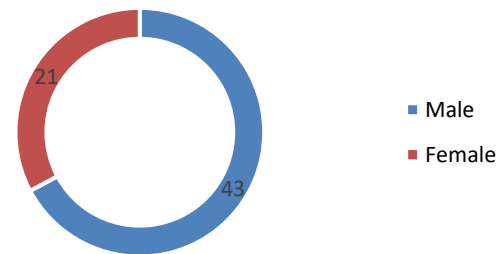
Competency 4:

Hepatitis C Patients Investigation, April 12-July 28, 2023

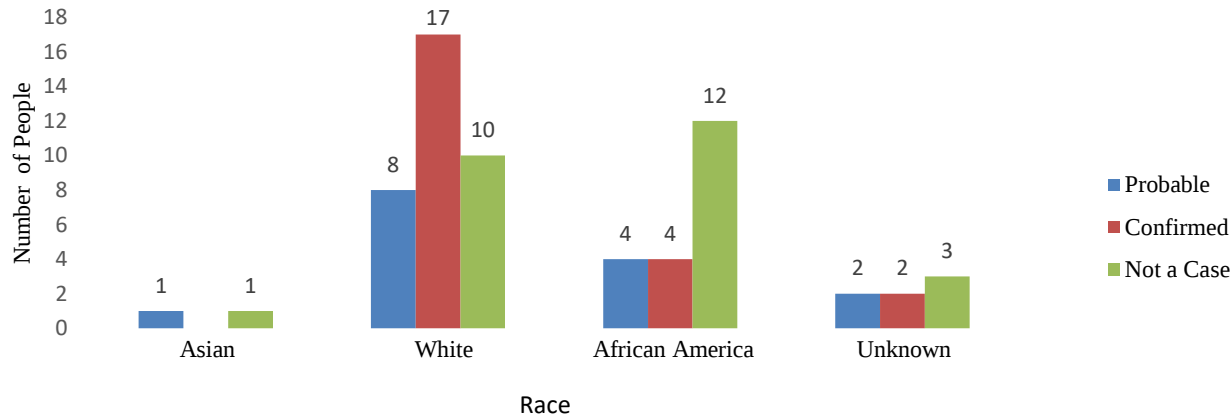
Case Status of Hepatitis C Patients



Gender of Hepatitis C Patients



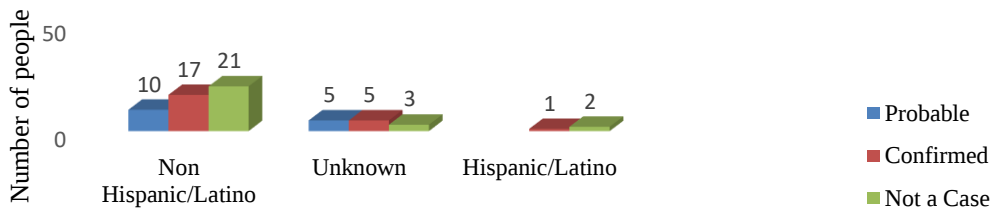
Race of Hepatitis C Patients



Competency 4:

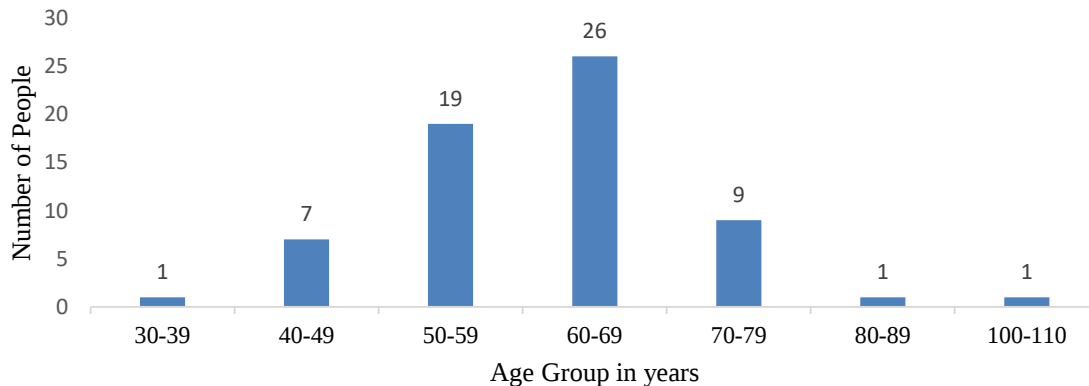
Hepatitis C Patients Investigation, April 12-July 28, 2023

Ethnicity Indicating Case Status of Hepatitis C Patients



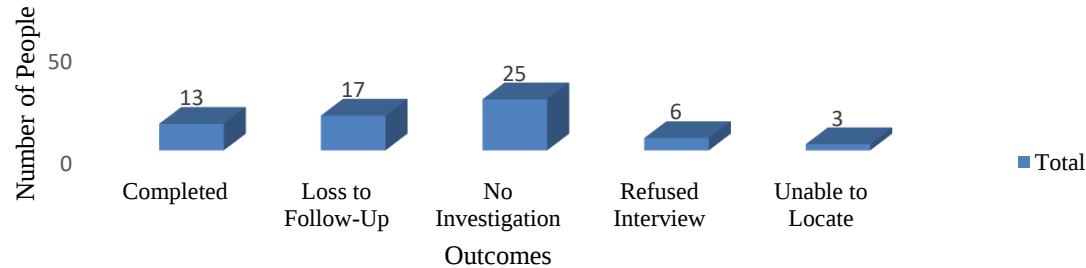
Ethnicity indicating status

Age Group of Hepatitis C Patients

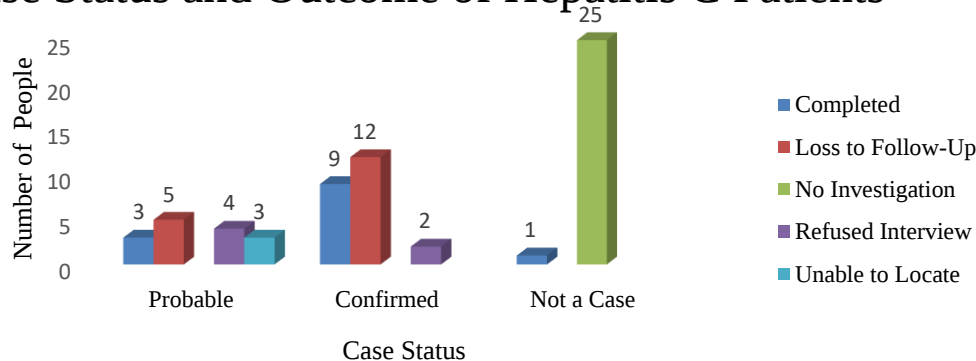


Competency 4: Hepatitis C Patients Investigation from April 12-July 28, 2023

Outcome of Investigated Hepatitis C Patients



Case Status and Outcome of Hepatitis C Patients

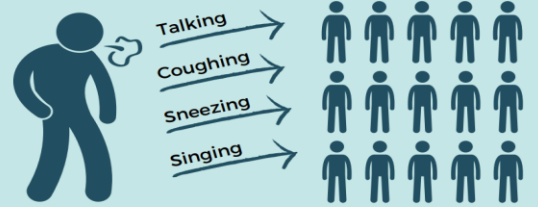


Competency #7—to assess population needs, assets, and capacities that affect communities' health (Course reference: MPH 802)

- Chief epidemiologist and other public health officials at the TB clinical meetings determined population need for TB awareness.
- Informational flyers were developed and distributed after the testing whether testers were TB positive or not.

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

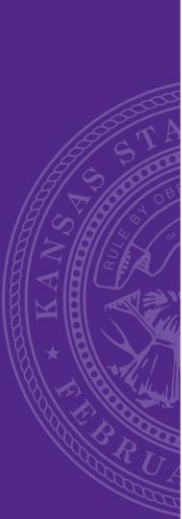
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Updated June 23, 2023



Competency #9—design a population-based policy, program, project, or intervention (Course reference: MPH 754)

My population-based work:

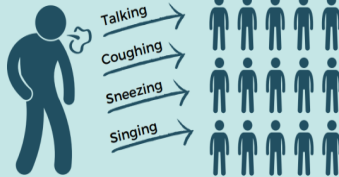
- Attending the clinical meetings, noting the challenges of TB patients, such as:
 - Language barrier
 - Nutritional deficiencies
 - Lifestyle choices
- Participated in outreach programs
- Created TB flyers and posters as a tool for population intervention.
- Educated residents on the effective reproductive number (R_E), the number of people in a population whom an individual with TB can infect at any specific time.
 - An infected individual can transmit TB disease to fifteen people annually (1:15).

Competency #9: TB population-based intervention

Packet with TB Flyers, prevention strategies, and nutritional posters for active TB patients.

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



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



Prevent the spread of TB!

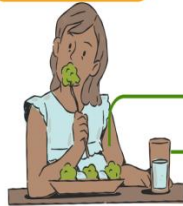
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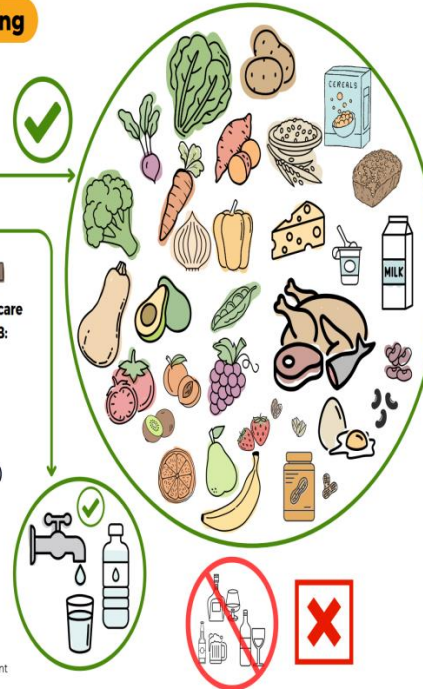
Nutrition tips during TB Treatment



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

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

Updated June 23, 2023

Competency #18—select communication strategies for different audiences and sectors (Course reference: DMP 815)

- Visual image to communicate information on the appropriate nutrition during the 6-12 months of anti-TB treatment.
 - Protein (meat, fish, eggs, beans, nuts, seeds), fruits (banana, avocado, strawberry), vegetables (broccoli), grains, dairy (cheese, milk, yogurt), and drinking plenty of water.
 - Avoiding alcohol was also indicated; alcohol will reduce the effectiveness of the TB treatment in the body.

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



Competency #21—Integrate perspectives from other sectors and/or professionals to promote and advance population health (MPH 818)

- My supervisor, Elizabeth Groenghewe, assigned hepatitis C cases
- Received specific instruction on perinatal hepatitis B from Sarah Chicchelly, an epidemiologist and perinatal hepatitis B prevention program (PHBPP) coordinator at KDHE.
- TB nurses at the Epi/TB department provided basic information about the treatment, prognoses, and areas of challenge.
- Janell Friesen, public information officer, assisted with flyers and poster production in Canvas

Competency #21:

- Interpersonal relationships with the outreach team exposed me to several environmental determinant factors, such as school systems and residence structure within Wyandotte County.
- Information system analyst Francis Asogwa provided the TB data for analysis and evaluation.

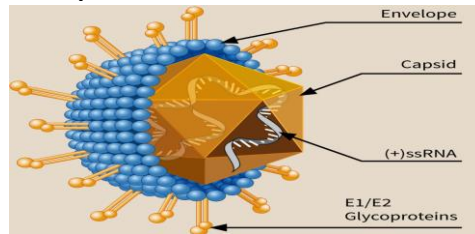
Evaluation TB Testing in the 1st and 2nd Quarter, 2023

YEAR OF TESTING	QUARTER (Q)	TOTAL NUMBER
2023	Q1	64
	Q2	138

Infectious Diseases and Zoonoses Competencies

- Competency no. 1 is pathogen/pathogenic mechanisms.
- AAI 795 Zoonotic Pathogens in the Food Chain
- HCV is transmitted by reusing unsterilized needles, syringes, or other medical equipment; transfusion with blood not screened for HCV
- Project investigation of HCV was based on the above risk factors to determine the extent of exposure.

Hepatitis C Virus



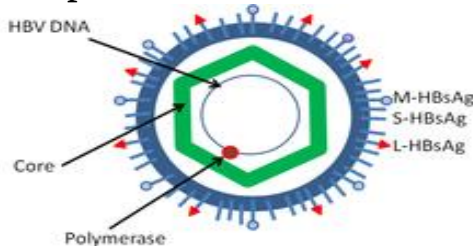
Hepatitis C Virus. (2023, October 18). In *Wikipedia*. https://en.wikipedia.org/wiki/Hepatitis_C

Competency no. 2 is based on a host response to pathogens/ immunology.

DMP 817 Principles of Immunology

- Immunity
 - As this relates to the project, results of immunological testing were discussed with parents of infected infants, and recommendations were made to contact the pediatrician when appropriate
 - Similarly, calls to healthcare facilities (University of Kansas Hospital, Heartland Clinic, Advent Hospital, and Children's Mercy Hospital) to ensure the provider performed the confirmatory test with the HBV surface antigen (HBsAg)

Hepatitis B Virus



Hepatitis B. (2023, September 12). In *Wikipedia*. https://en.wikipedia.org/wiki/Hepatitis_B

Competency no. 3 is based on environmental/ecological influence

- DMP 710 One Health
- Describe relationships between human, animal, and environmental health
- Tuberculosis
 - Airborne disease is contracted when the bacteria are viable in the air, usually in a cool environment, and a healthy person breathes in the bacteria
- Created posters with a diagram of different preventive strategies: proper mask usage, opening windows for ventilation, and appropriate methods of covering the mouth, reducing the transmission of infection

Mycobacterium Tuberculosis



Wikipedia Tuberculosis. (2023, October 20). In Wikipedia. <https://en.wikipedia.org/wiki/Tuberculosis>

Competency no. 4 is based on disease surveillance

- AAI 852 Vaccinology
- Science of developing vaccines to prevent infectious diseases, the use of vaccines, and their effects on the public
- Collected data related to hepatitis tests, vaccination, exposure, signs, and symptoms from the patients, nurses, and providers.
 - Information received was entered in the EpiTrax

Competency no. 5 is based on disease vector

- AAI 795 Zoonotic pathogen
 - Project was unrelated to any vector, such as mosquitoes and ticks

The seal of the University of Kansas is visible in the top left corner, featuring a circular design with the text "KANSAS STATE" and "FEBRUARY" around the perimeter, and a central emblem depicting a sun, a plow, and a sheaf of wheat.

Conclusions and Recommendation

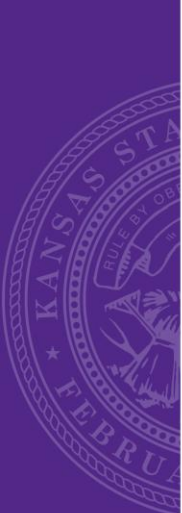
- Project was based on hepatitis B and C and tuberculosis awareness
- Process involved the integration of competencies in MPH and emphasis areas to reduce disease transmission within Wyandotte County
- Informational flyers and posters were created as tools for public health intervention
- Wyandotte County Public Health Department Outreach team performed TB testing for the residents to identify and place infected individuals on early treatment
- Recommendation: Essential to continue active monitoring of TB cases and hepatitis testing in Wyandotte County. This can be achieved by collaborating with other health agencies and public health students from various higher institutions.

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Acknowledgements

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