VIRGINIA DEPARTMENT OF HEALTH
INTERNSHIP ACADEMY

Project Title: Enteric Diseases Research and Mitigation

Intern: Mercy Amoakoaa Owusu, MPH(Cohort 2, 2024)
Supervisor: Ovidiu Cotea

Missouri State University

Rappahannock Area Health District (RAHD)

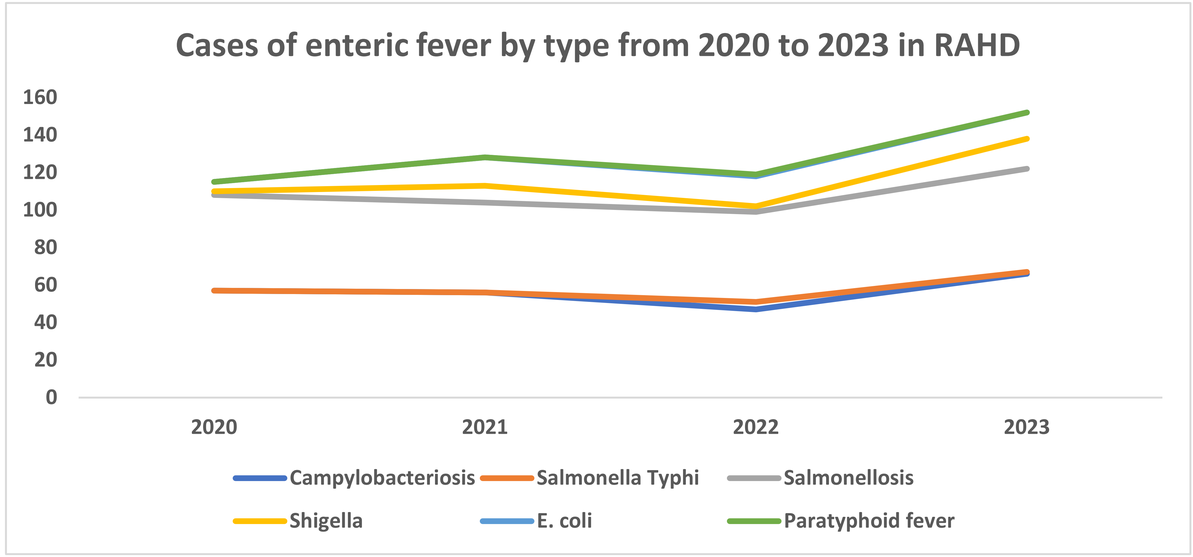
Background

- The Global Burden of Disease Study estimates between 12 million to 27 million cases of enteric diseases worldwide.
- Acute enteric disease is thought to cause 179 million illnesses in the United States (US) each year, with diarrhea and/or vomiting being its most prevalent symptoms (CDC).
- Between 2020 - 2023, RAHD, has recorded a worrying number of 260 and 238 Campylobacteriosis and Salmonellosis cases respectively.
- During 2021, CDC's Foodborne Diseases Active Surveillance Network (FoodNet) identified 22,019 infections, 5,359 hospitalizations, and 153 deaths as a result of enteric infections, the highest for Campylobacter (17.8 cases per 100,000 people) and Salmonella (14.2 cases per 100,000 people).
- Enteric illnesses are a group of diseases that are associated with the ingestion of food and/or water contaminated by microorganisms and microbial toxins that attack the gastrointestinal tract.
- Common symptoms include nausea, vomiting, diarrhea, abdominal cramps, fever, chills, and a loss of appetite and can appear 30 minutes to 10 days after contact. Common enteric diseases include: **Campylobacteriosis-** one of the most prevalent intestinal bacterial infections in the US is campylobacteriosis. Caused by the bacterium Campylobacter, the illness is characterized by acute onset of diarrhea, vomiting, abdominal pain, fever, and malaise. **Salmonellosis-** caused by the bacterium Salmonella. The illness is characterized by acute abdominal pain, diarrhea, and often fever, which usually begins 6 hours to 6 days after exposure. **Shiga toxin-producing E. coli (STEC)-** the most notorious being E. coli O157, are among the most dreaded causes of infectious gastroenteritis in the US. **Giardiasis-** is a flagellated protozoan that can be found throughout the world. The pathogen exists in two forms during its lifecycle: an extremely hardy cyst that can survive in the environment for months and a trophozoite form that can only survive while inside the host.

Project Purpose

- Investigate reported cases of enteric diseases with RAHD.
- Participate in site/field visits to have firsthand experience of existing protocols on enteric diseases.
- Analyze the data to help appreciate the scope and dynamics of the issue.
- Make findings which will offer the basis for administrative guidance and evaluation of ongoing disease control programs, enabling evidence-based decision-making, and supporting the validation of scientific hypothesis.

Outcomes



Disease	2020	2021	2022	2023
Campylobacteriosis	57	56	47	66
Salmonella Typhi	0	0	4	1
Salmonellosis	51	48	48	55
Shigella	2	9	3	16
E. coli	5	15	16	14
Paratyphoid fever	0	0	1	0

Year	Campylobacteriosis	Salmonella Typhi	Salmonellosis	Shigella	E. coli	Paratyphoid fever
2020	57	0	51	2	5	0
2021	56	0	48	9	15	0
2022	47	4	48	3	16	1
2023	66	1	55	16	14	0

Reseacrch Conclusions

- Per the figures and the statistics, recorded cases of Salmonella Typhi in RAHD even though small in number, 5, is significantly high in percentage, 8.62% vis-à-vis the state number. Closely followed by Salmonellosis, 4.55%.
- Rappahannock has a population of 405, 152. The State of Virginia has a population of 8,715,698. Rappahannock's population represents only 4.65% of the total state population. Therefore, reported case of any form of enteric disease within RAHD which hovers above 4.65%, in relation to the state percentage, within a specific period, represents a dire public health picture for RAHD.
- High-risk groups include children, adults, persons with poor immune system.
- Special attention and mitigating public health strategies should be employed. More education and sensitization should be carried out consistently and well-targeted.
- Frequent and thorough hand washing is recommended. Sanitizing kitchen floor and thorough cooking of meat, poultry is encouaged.

Experiences with RAHD

- Outbreak investigation
- Sample taking, packaging and transport
- Immunization clinic at SDH
- Family and STI clinic at SDH
- DIS STI clinic at Fredericksburg Dept Health
- Case investigation using the enteric case report form

Personal Development

- **Interpersonal Skills:** Interacting and coordinating with my supervisor and other colleagues has endeared me with excellent interpersonal skills.
- **Become ethical:** Accepting and obeying existing protocols and other corporate policies has shaped me to be very ethical and prepared for the job environment.
- **Broadened Knowledge:** Reading wide on the research topic and getting conversant with international health systems for comparison has offered me broadened knowledge on enteric diseases.

Lessons Learned

- Facts about enteric diseases and mitigation measures.
- Developed the attitude of achieving results in spite of challenges.
- Teamwork and respect for coordination and boundaries.
- MPH competencies: leadership, systems thinking, policy in public health, communication.

Challenges

- Duration of internship permitted few site visits.
- Very tight schedule: combining daily reporting, office work, field visits and project.

Acknowledgements

I thank God Almighty for his grace and mercy. Special thanks go to VDH Internship Academy, Olugbenga O. Obasanjo-MD, MPH, my internship supervisor Dr. Ovidiu Cotea, my school based supervisor, Missouri State University, the director and to the staff and management of RAHD, I appreciate the love, support and exposure. I acknowledge all authorities whose literature enriched this work.

VDH Virginia Department of Health
Protecting You and Your Environment
www.vdh.virginia.gov