Introduction to Field Epidemiology and Outbreak Response

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Preface

The handbook evolved after my experience during the International Field Epidemiology program conducted during June 2024 in Lima and Tumbes, Peru.

Disclaimer

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Notice

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1 Introduction

During an outbreak, the key mission is two-fold– save as many lives as possible and learn enough to stop the outbreak. Zoonoses are growing (Woolhouse and Gowtage-Sequeria 2005).

2 Before you go

One of the worst things to happen to a team investigating an outbreak is for a teammate to come down with an illness during the investigation. In the best case, everyone on the team has been vaccinated against the likely infections known for the region in which the outbreak occurs. Similarly, you may need to take prophylaxis for different pathogens before, during, and after your visit. It may also be good to have some common drugs in case a member of the team comes down with an illness. The best way to prepare for this is to visit a travel medicine clinic.

2.1 Travel medicine clinic

Travel medicine clinics are typically staffed by infectious disease physicians who can recommend different vaccines, prophylaxis, and counseling on what to do in case of emergencies. Visits to a travel medicine provider are typically covered by your insurance.

These providers will examine things like the Centers for Disease Control and Prevention (CDC)'s yellow book. Based on the ongoing disease dynamics within the country, your will see three different categories for vaccination:

- Recommended
- Generally not recommended
- Not recommended

We can look at the CDC recommendations for Peru.

Table 2.1: Recommended vaccines for travelers to Peru retrieved from https://wwwnc.cdc.gov/travel/destinations/traveler/none/peru on 2024-07-04

Vaccines for disease	Recommendations
Routine vaccines	Make sure you are up-to-date on all routine vaccines before every trip. Some of these v
COVID-19	All eligible travelers should be up to date with their COVID-19 vaccines. Please see Yo
Chikungunya	There has been evidence of chikungunya virus transmission in Peru within the last 5 ye
Hepatitis A	Recommended for unvaccinated travelers one year old or older going to Peru. Infants 6
Hepatitis B	Recommended for unvaccinated travelers younger than 60 years old traveling to Peru.
Malaria	CDC recommends that travelers going to certain areas of Peru take prescription medici
Measles	Cases of measles are on the rise worldwide. Travelers are at risk of measles if they have
Rabies	Dogs infected with rabies are sometimes found in Peru. Rabies is also commonly found
Typhoid	Recommended for most travelers, especially those staying with friends or relatives or vi
Yellow Fever	Recommended for travelers 9 months old going to areas <2,300 m (7,550 ft) elevation

Part I

Human epidemiology

Human epidemiology.

3 Defining a case

One of the key aspects of an outbreak investigation is establishing the case definition.

4 Bioethics during an outbreak

Ethical considerations are vital during an outbreak in order to preserve the trust of the community

Part II

After action

5 Reporting

5.1 Situation Reports

5.2 After Action Reports

Part III

Conclusion

6 Conclusion

Importantly, field epidemiology requires a diverse team from a variety of skillsets in order to be sucessful.

References

Woolhouse, Mark E. J., and Sonya Gowtage-Sequeria. 2005. "Host Range and Emerging and Reemerging Pathogens." *Emerging Infectious Diseases* 11 (12). https://doi.org/10.3201/eid1112.050997.

A PPE

Personal protective equipment (PPE) is vital to protecting your staff and yourself during an outbreak investigation. Loss of personel to sickness and quarantine can disrupt ongoing outbreak response actions. Importantly, while supplies allow and until testing indicates otherwise, you should operate at higher levels of PPE. This may include the use of N-95 respirators with facial shields and gloves (i.e., mask, gowns, and glasses/goggles). Depending on the pathogen suspected and the transmission modality, higher levels of PPE may be required. For instance during outbreaks of Marburg and Ebola, higher levels of PPE are required including full protective suits, gloves, and PAPRs.