Public Health Merit Badge

1.a. What is Public Health?

Public health promotes and protects the health of people and the communities where they live, learn, work and play.

While a doctor treats people who are sick, those of us working in public health try to prevent people from getting sick or injured in the first place. We also promote wellness by encouraging healthy behaviors.

From conducting scientific research to educating about health, people in the field of public health work to assure the conditions in which people can be healthy. That can mean vaccinating children and adults to prevent the spread of disease. Or educating people about the risks of alcohol and tobacco. Public health sets safety standards to protect workers and develops school nutrition programs to ensure kids have access to healthy food.

Public health works to track disease outbreaks, prevent injuries and shed light on why some of us are more likely to suffer from poor health than others. The many facets of public health include speaking out for laws that promote smoke-free indoor air and seatbelts, spreading the word about ways to stay healthy and giving science-based solutions to problems.

Some examples of public health jobs (reference this list to complete Requirement 8):

* First responders
* Restaurant inspectors
* Health educators
* Scientists and researchers
* Nutritionists
* Epidemiologists
* Public health physicians/nurses/laboratorians
* Occupational health and safety professionals
* Public policymakers

**Bacteria**: Single-celled microorganisms that can exist either as independent (free-living) organisms or as parasites (dependent on another organism for life). These organisms can live in soil, the ocean and inside the human gut among other diverse environments.

Humans' relationship with bacteria is complex. Sometimes bacteria lend us a helping hand, such as by [curdling milk into yogurt](https://www.livescience.com/32236-is-yogurt-really-good-for-you.html) or helping with our digestion. In other cases, bacteria are destructive, causing diseases like pneumonia and methicillin-resistant *Staphylococcus aureus* (MRSA).

**Virus**: A microorganism that is smaller than a bacterium that cannot grow or reproduce apart from a living cell. A virus invades living cells and uses their chemical machinery to keep itself alive and to replicate itself.

Viruses cause many common human infections and are also responsible for a number of rare diseases. Examples of viral illnesses range from the [common cold](https://www.medicinenet.com/common_cold/article.htm), which can be caused by one of the rhinoviruses, to [AIDS](https://www.medicinenet.com/acquired_immunodeficiency_syndrome_aids/article.htm), which is caused by [HIV](https://www.medicinenet.com/human_immunodeficiency_virus_hiv/article.htm).

**Parasite**: A plant or an animal organism that lives in or on another and takes its nourishment from that other organism.

**Vector:** (or “why Mrs. O’Koniewski hates mosquitoes) Living organisms that can transmit infectious pathogens between humans (malaria), or from animals to humans (Bubonic Plague). Many of these vectors are bloodsucking insects, which ingest disease-producing microorganisms during a blood meal from an infected host (human or animal) and later transmit it into a new host.

**Contagious**: Spread from one person or organism to another by direct or indirect contact. Synonyms: infectious, communicable, transmissible. “The common cold is contagious.”

**Epidemic** refers to an increase, often sudden, in the number of cases of a disease above what is normally expected in that population in that area. ... **Pandemic** refers to an **epidemic** that has spread over several countries or continents, usually affecting a large number of people.

Every year the human population suffers influenza epidemics, usually concurrent with the cold weather months. Therefore, for instance, Australia and southern continents have their epidemic at a different time than northern countries and continents. The current outbreak of COVID-19 is not limited to specific weather patterns or geographic locations and is therefore considered a pandemic. (pan meaning all, in this case “affecting all geographic regions).

**Immunization:** Works by stimulating the immune system, the natural disease-fighting system of the body. The healthy immune system is able to recognize invading bacteria and [viruses](https://www.medicinenet.com/viral_infections_pictures_slideshow/article.htm) and produce substances (antibodies) to destroy or disable them.

Stimulation is either natural, such as exposure to the disease causing agent, or artifical, such as through vaccination.

**Vaccination**: Exposure to a killed microbe in order to stimulate the immune system against the microbe, thereby preventing disease.

**Herd Immunity**: or community immunity occurs when a high percentage of the community is immune to a disease (through vaccination and/or prior illness), making the spread of this disease from person to person unlikely. Herd [immunity](https://www.webmd.com/diet/ss/slideshow-strengthen-immunity) protects people who can't get vaccinated because their immune system is weak and vaccines might make them sick. This includes babies, people with vaccine allergies, and anyone with an immune-suppressing disease like HIV or cancer.