Calculate Risk:

|  |  |  |  |
| --- | --- | --- | --- |
|  | A  # ill | B  # not ill | C  Totals |
| # did eat |  |  |  |
| # did not eat |  |  |  |
| Totals |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Attack rate % = (A C) x 100 | | |
| did eat |  | | X |
| did not eat |  | | Y |
| Relative risk = (X Y) | | = |  |

* **Classical Epidemiology** – population oriented, studies community origins of health problems related to nutrition, environment, human behavior and physiological, social and spiritual state of a population. The event is more aimed towards this type of epidemiology
* **Clinical Epidemiology** – studies patients in health care settings in order to improve the diagnosis and treatment of various diseases and the prognosis for patients already affected by a disease:
  + Infectious Disease – heavily dependent on laboratory support
  + Chronic Disease – dependent on complex sampling and statistical methods
* **Cluster** – An aggregation of cases over a particular period closely grouped in time and space, regardless of whether the number is more than the expected number
* **Outbreak** – More cases of a particular disease than expected in a given area or among a specialized group of people over a particular period of time
* **Epidemic** – Large numbers of people over a wide geographical area are affected
* **Pandemic** – An epidemic occurring over several countries or continents and affecting a large proportion of the population
* **Surveillance** – The systematic and ongoing collection, analysis, interpretation, and dissemination of health data. The purpose of public health surveillance is to gain knowledge of the patterns of disease, injury, and other health problems in a community so that we can work towards that prevention and control
* **Plague** – A serious, potentially life threatening infectious disease that is usually transmiited to humans by the bites of rodent fleas. It was one of the scourge of our early history. There are three major forms of the disease – bubonic, septicemic and pneumonic
* **Vector** – An animal that transmit disease. For example a mosquito is a vector for malaria
* **Fomite** – A physical object that serves to transmit an infectious agent from person to person
* **Risk** – The probability that an individual will be affected by, or die from, an illness or injury within stated time or age span
* **Zoonosis** – An infectious disease that is transmissible from animals to humans
* **Incubation Period** – Time in between when a person comes into contact with a pathogen and when they first show symptoms of signs of disease
* **Endemic Disease** – Present at a continuous level throughout a population/geographic area; constant presence of an agent/health condition within a given geographic area/population; refers to the usual prevalence of an agent/condition

Hill’s Criteria for Causation

9 Criteria must be met to establish a cause-effect relationship:

1. Strength of Association – relationship is clear and risk estimate is high
2. Consistency – observationof association must be repeatable in different populations at different times
3. Specificity – a single cause produces a specific effect
4. Alternative Explanations – consideration of multiple hypotheses before making conflusions about whether an association is causal or not
5. Temporality – cause/exposure must precede the effect/outcome
6. Dose-Response Relationship – an increasing amount of exposure increases the risk
7. Biological Plausibility – the association agrees with currently accepted understanding of biological and pathological processes
8. Experimental Evidence – the condition can be altered, either prevented or accelerated by an appropriate experimental process
9. Coherence – the association should be compatible with existing theory and knowledge, including knowledge of past cases and epidemiological studies

Chain of Transmission Triad:

1. An External Agent
2. A vector or fomite that transmits the disease
3. A susceptible host for the disease

Epidmiological Triad:

Traditional model of infectious disease causation

1. An external agent
2. Susceptible host
3. An environment that brings the host and agent together, so that disease occurs

Ten Steps to Investigating an Outbreak

1. Prepare for Field Work
2. Establish the Existence of an Outbreak
3. Verify the Diagnosis
4. Define and Identify Cases
5. Describe and orient the Data in Terms of Person, Place, and Time
6. Develop Hypotheses
7. Evaluate Hypotheses
8. Refine Hypotheses and Carry Out Additional Studies
9. Implement Control and Prevention Measures
10. Communicate Findings

Modes of Disease Transmission

* Contact Transmission – include direct (person to person), indirect (fomite) or droplet
* Vehicle Transmission – transmission via a medium such as food, air, and liquid which are all routinely taken into the body and thus serve as vehicles into the body
  + Airborne – occurs via droplets
  + Food-bourne – pathogens found in food
  + Water-bourne – fecal contaminated water
* Vector transmission – no entry

Disease Prevention

* Primary prevention – early intervention to avoid initial exposure to agent of disease preventing the process from starting
* Secondary prevention – during the latent stage (when the disease has just begun), process of screening and instituting treatment may prevent progression to symptomatic disease
* Tertiary prevention – during the symptomatic stage (when the patient shows symptoms), intervention may arrest, slow, or reverse the progression of disease