



- **What is the difference between endemic, epidemic and pandemic?**

- **Endemic:** a disease or a condition which is regularly found among particular people or in a certain area.
- **Epidemic (وباء):** a widespread occurrence of an infectious disease in a community at a particular time.
- **Pandemic (وباء عالمي):** it is a worldwide epidemic.

- **What is the purpose of epidemic investigation?**

- To stop the current outbreak from spreading.
- To prevent future similar outbreaks.
- To provide sufficient explanation of the event.
- To provide knowledge for the understanding of the disease process.
- To react to and calm public and political concerns.
- To train epidemiologists.

- **Epidemic (details):**

- **Description:** sudden and rapid rise in number of cases limited in people who share common exposure.

- **What are the criteria for an epidemic?**

- ✓ Greater number of cases or events than normally occurring at the same place when compared to the same duration in the past years (ملاحظتك لحالة تتزايد بين أفراد المجتمع بمعدل غير طبيعي مقارنة بالسنوات الماضية)
- ✓ A cluster of cases of the same disease occur which can be linked to the same exposure (مجموعة من الحالات التي تعكس إصابة الأفراد بالمرض نفسه نتيجة تعرضهم لنفس العامل المسبب)
- ✓ A single case of disease that has never occurred before and might have a significant implication for the public health (example: Avian flu H5N1 in Hong Kong, 1997) – (إكتشاف مرض أو حالة واحدة فقط لكنها لم يسبق أن حدثت بين أفراد المجتمع وقد تؤثر على الصحة العامة)

- **Epidemic as a threat (لماذا يشكل الوباء تهديد على المجتمع؟):**

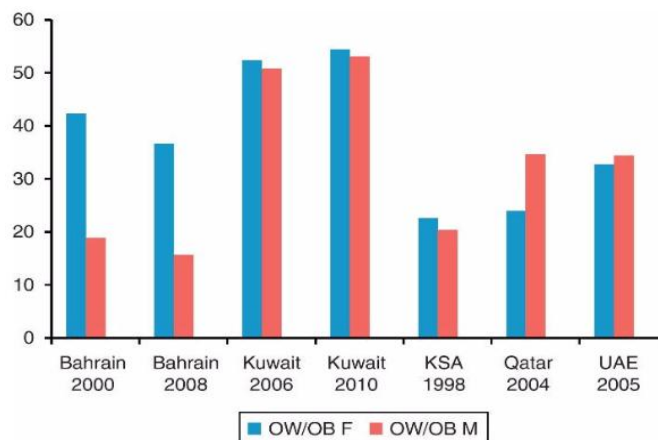
- ✓ Epidemics can happen anywhere.
- ✓ There is a challenge to detect epidemics and control them.
- ✓ People affected by epidemics will suffer and die.

- **Epidemic as an opportunity (كيف نستطيع الاستفادة من حصول الوباء؟):**

- ✓ To discover new etiological agents.
- ✓ To understand factors that promote the spread of the disease.
- ✓ To identify the weakness of existing prevention methods and health programs.
- ✓ To prevent similar future outbreaks.
- ✓ Epidemics are considered as a training opportunity for public health professionals

- **Notice that epidemics are not only related to communicable disease only (الأوبئة ليست مرتبطة بالأمراض المعدية فقط)**

- ✓ **Obesity epidemic in GCC countries:** highest in Kuwait (males and females); lowest in KSA (males); lowest in Bahrain (females).

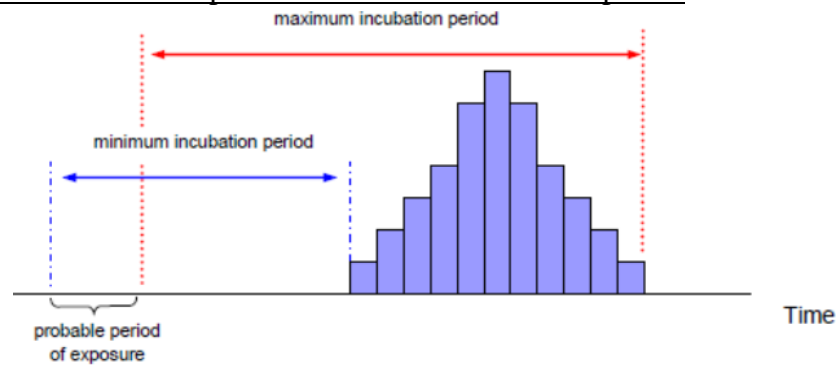




- **Some terms which are related to an outbreak:**
 - ✓ Primary case: it is the first case introduced into the population.
 - ✓ Index case: it is the first case coming in contact with health authorities.
 - ✓ Serial interval: it is the time interval between primary and secondary case. It is used as a proxy for incubation period.
 - ✓ Generation time: it is the time between infection and communicability (maximum infectivity).
- **Outbreak indicators:**
 - ✓ Attack rate (considered as a measure for infectivity):

$$\frac{\text{Number of people at risk in whom a certain disease develop in a specified time period}}{\text{Total number of people at risk}}$$
 - ✓ Secondary attack rate (measure of communicability):

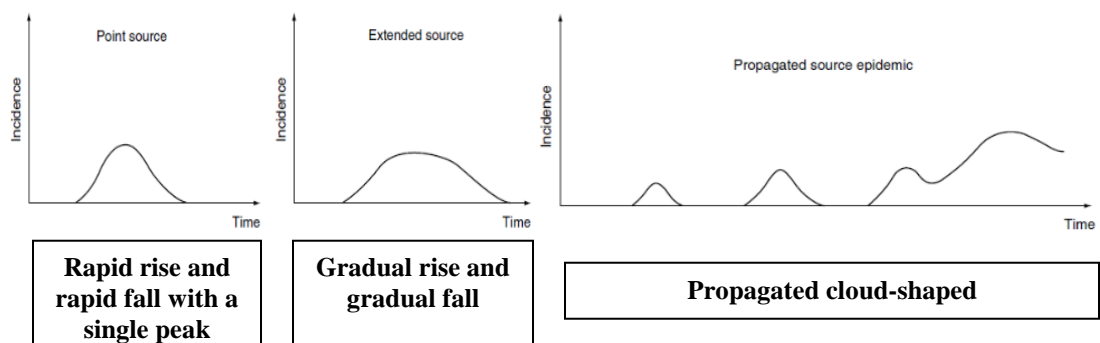
$$\frac{\text{Number of new cases in a group - index cases in a specified time period}}{\text{Number of susceptible individual in a group - index cases in a specified time period}}$$
- **A probable period of exposure in a point-source outbreak can be calculated by the following:**
 - ✓ Maximum incubation period – Minimum incubation period



- **Epidemic curve in an outbreak:**
 - ✓ Histogram: it is a visual display of the outbreak's magnitude and time trend:
 - ❖ *Y-axis*: represents the number of cases.
 - ❖ *X-axis*: represents the time of onset.
 - ✓ Information provided:
 - ❖ Type of the outbreak (time, trend and spread).
 - ❖ Severity.
 - ❖ Incubation period.

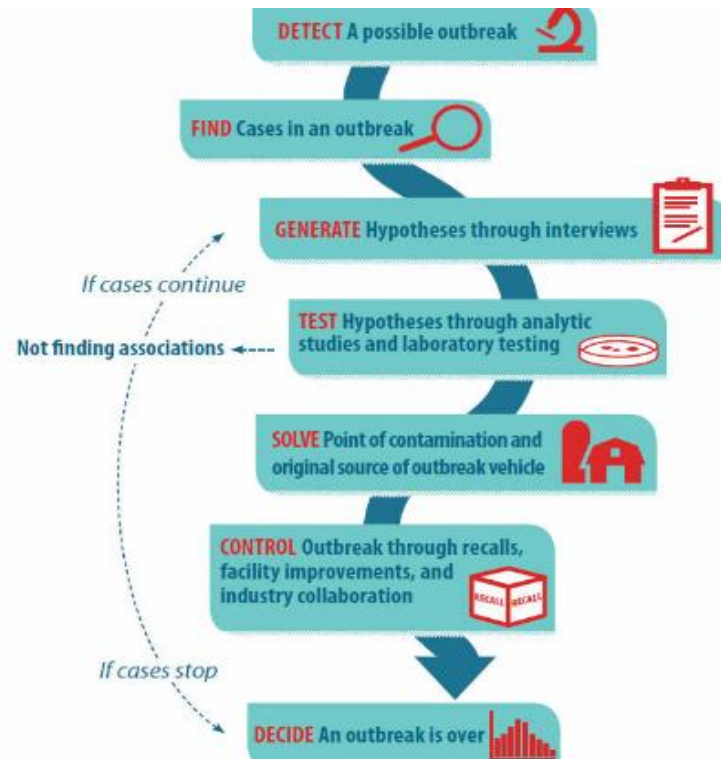
- **Types of epidemics:**

Common source	Point common source	Occurs when there is a one single source that exists for a very short time and all cases have a common exposure to it in that same particular period
	Continuous/sustained common source	Occurs when there is only a one source which provides continuous or intermittent exposure over a long period
Propagated	Transmission for person to person	





- **An outbreak investigation team includes:**
 - ✓ Investigator (public health specialist).
 - ✓ Field epidemiologist.
 - ✓ Disease control people.
 - ✓ Educators.
 - ✓ Laboratory technicians.
 - ✓ Specialist in particular area.
 - ✓ Public health administration.
 - ✓ Public relations person.
- **Epidemic investigation steps (according to CDC):**



- **Control of epidemics:**
 - ✓ Control of the source of pathogen.
 - ✓ Interrupt the transmission.
 - ✓ Control or modify the host response to exposure.
 - ✓ Treatment of the cases and contacts.
 - ✓ Surveillance.