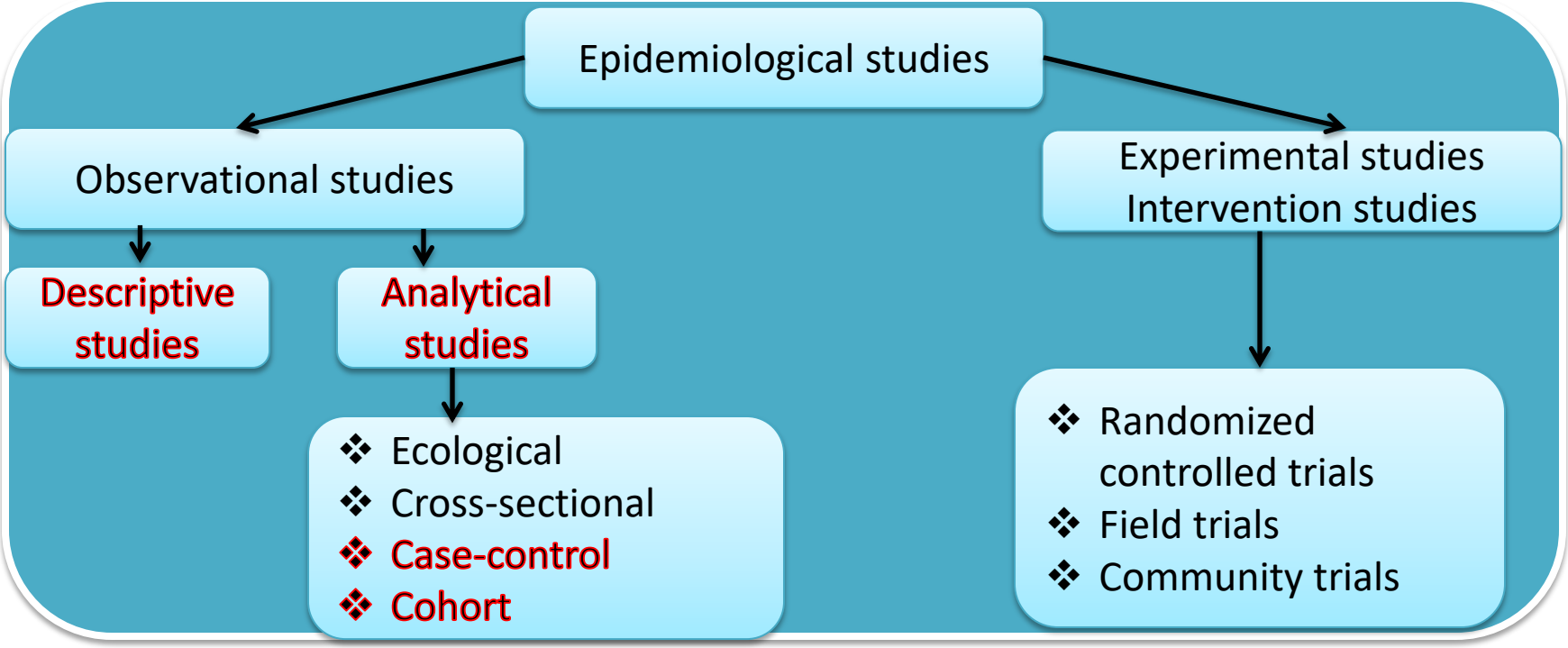
EPIDEMIOLOGIC METHODS



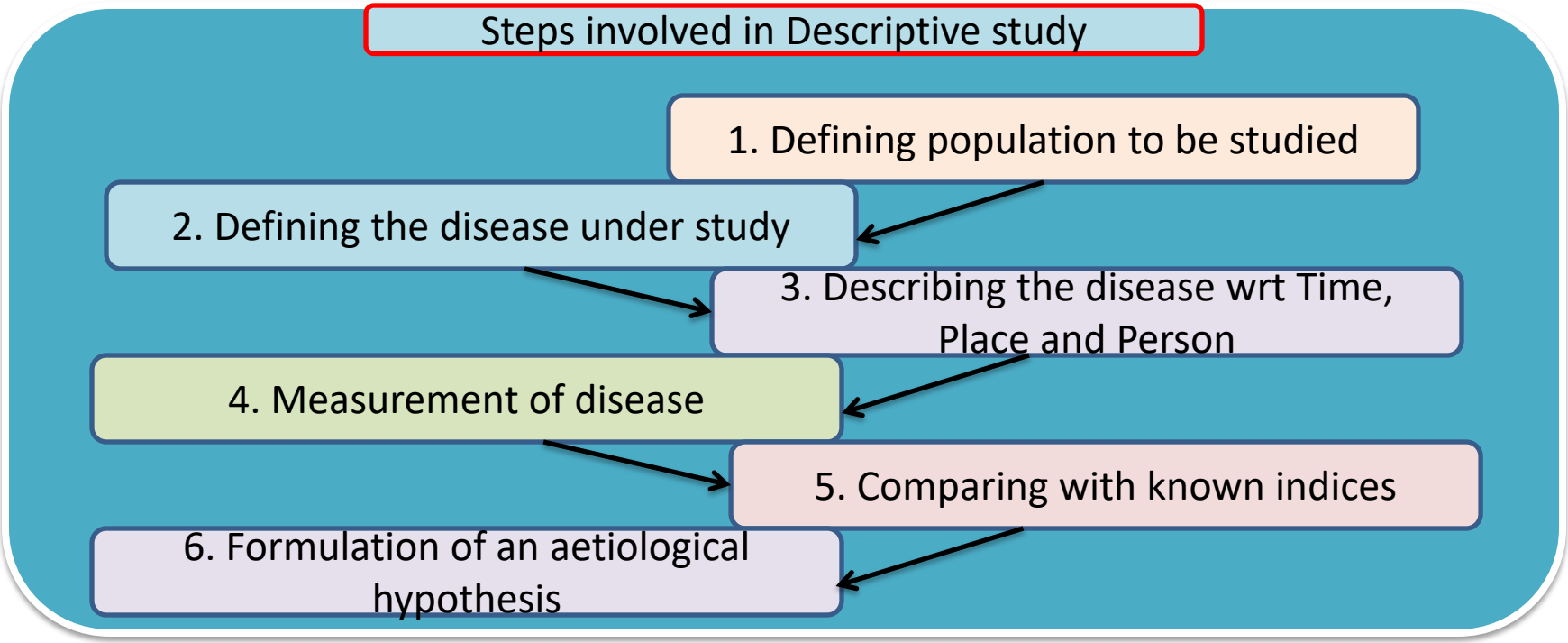
DESCRIPTIVE STUDY

First phase of epidemiological investigation

These studies are concerned with **observing the distribution of disease or health related characteristic in human population**.

Identifying characteristics with which the disease in question seems to be associated

DESCRIPTIVE STUDY



DESCRIPTIVE STUDY

Defining population to be studied

Descriptive study is the study of the population and not the individual

DESCRIPTIVE STUDY

Number

DESCRIPTIVE STUDY

Age

Sex

DESCRIPTIVE STUDY

Cultural characters

DESCRIPTIVE STUDY

Occupation

DESCRIPTIVE STUDY

Defined population can be a whole population from the geographical area or representative sample taken from

Defined population should not be large enough so that age sex and other specific rates are meaningful

Community chosen should be stable without migration in and out of the area

DESCRIPTIVE STUDY

The concept of defined population is crucial in epidemiological studies.

Provides denominator

↓

for calculating rates

↓

measure frequency of disease

↓

study its distribution and determinants

DESCRIPTIVE STUDY

Defining Disease to be studied

Clinicians and Epidemiologists

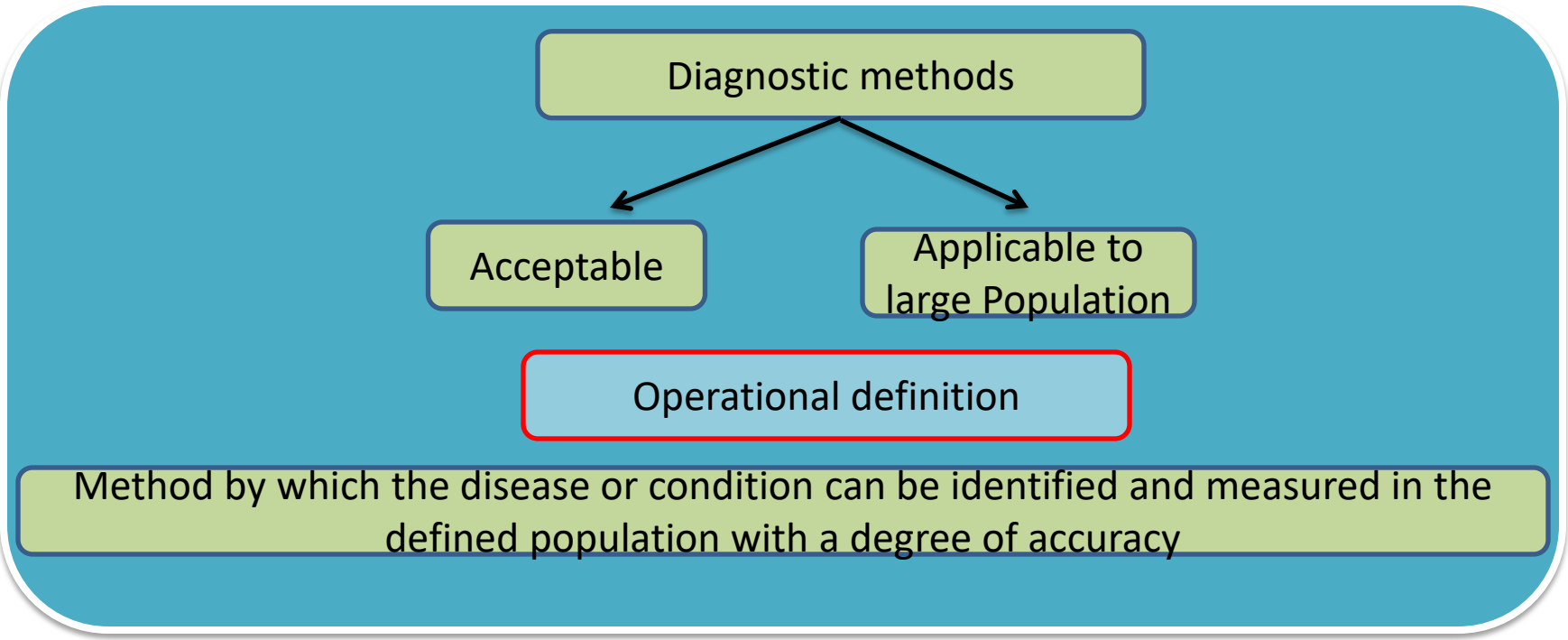
Treat the patients (individually)

Accurate estimate of disease in population

Defines disease that is precise and valid

To identify those who have disease and those who do not have

DESCRIPTIVE STUDY



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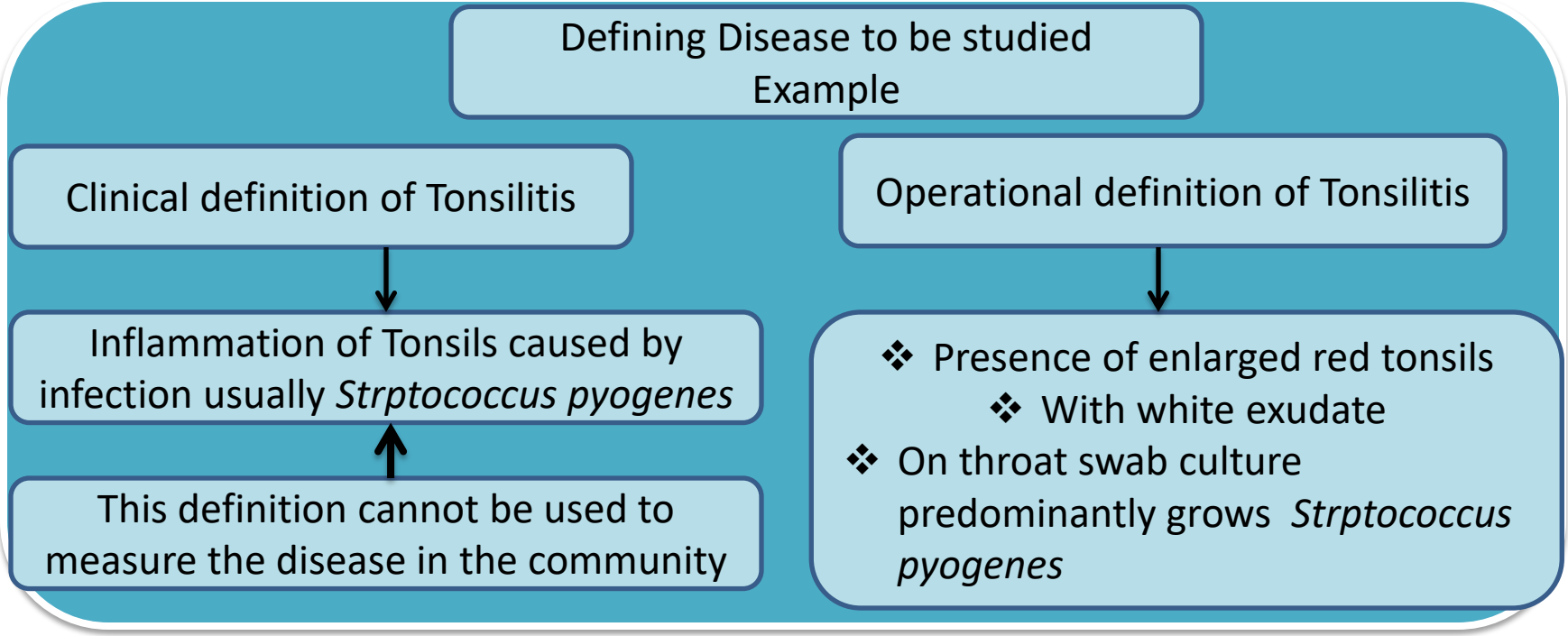


DESCRIPTIVE STUDY

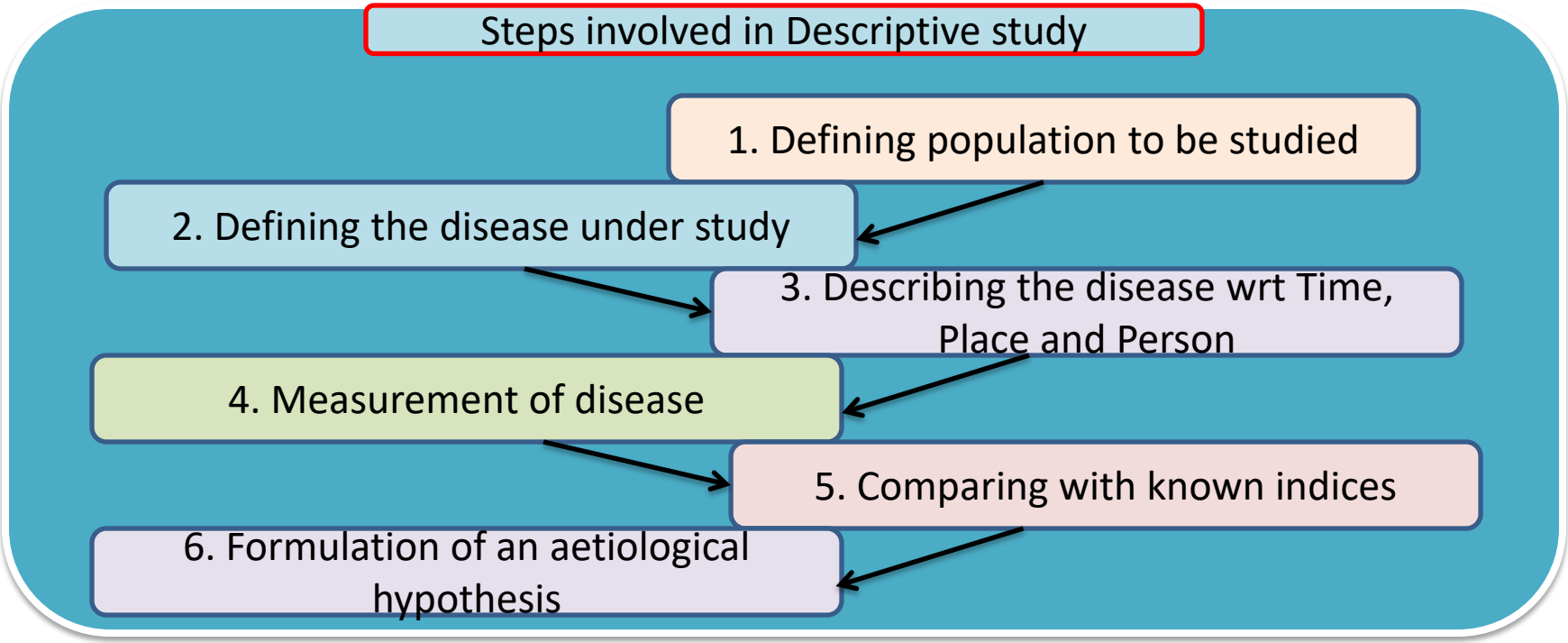
Neurological diseases

Often do not have pathognomonic signs and symptoms

Epidemiologist may frame his own definition keeping the objectives of the study in view and aiming at degree of accuracy

If the definition is invalid it will be a powerful source of error in presentation and comparability of measurements from different sources

DESCRIPTIVE STUDY



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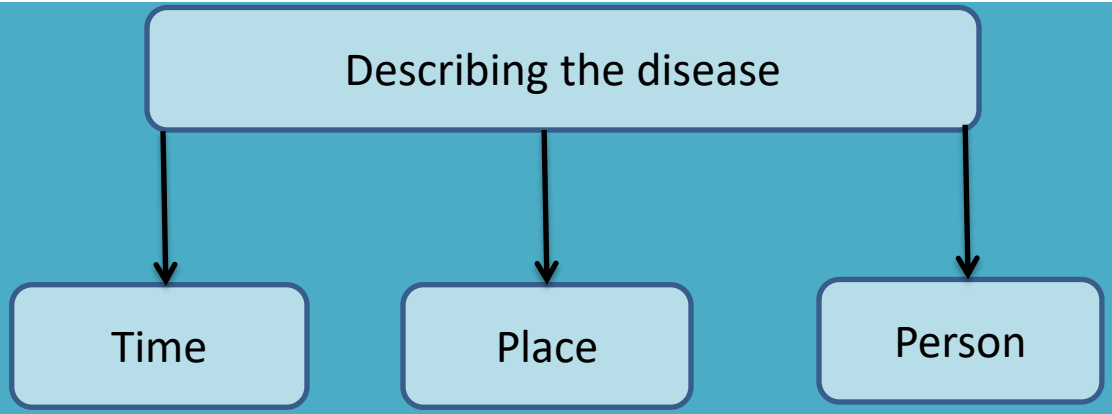

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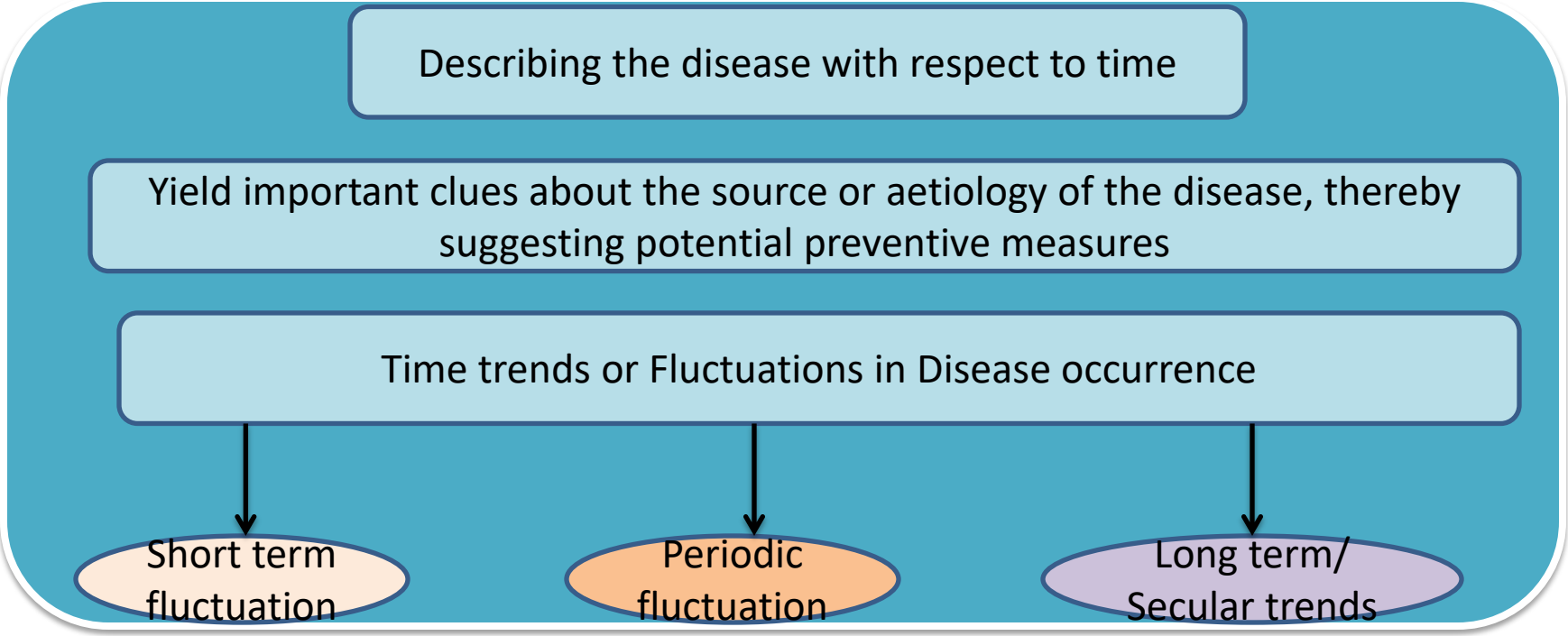

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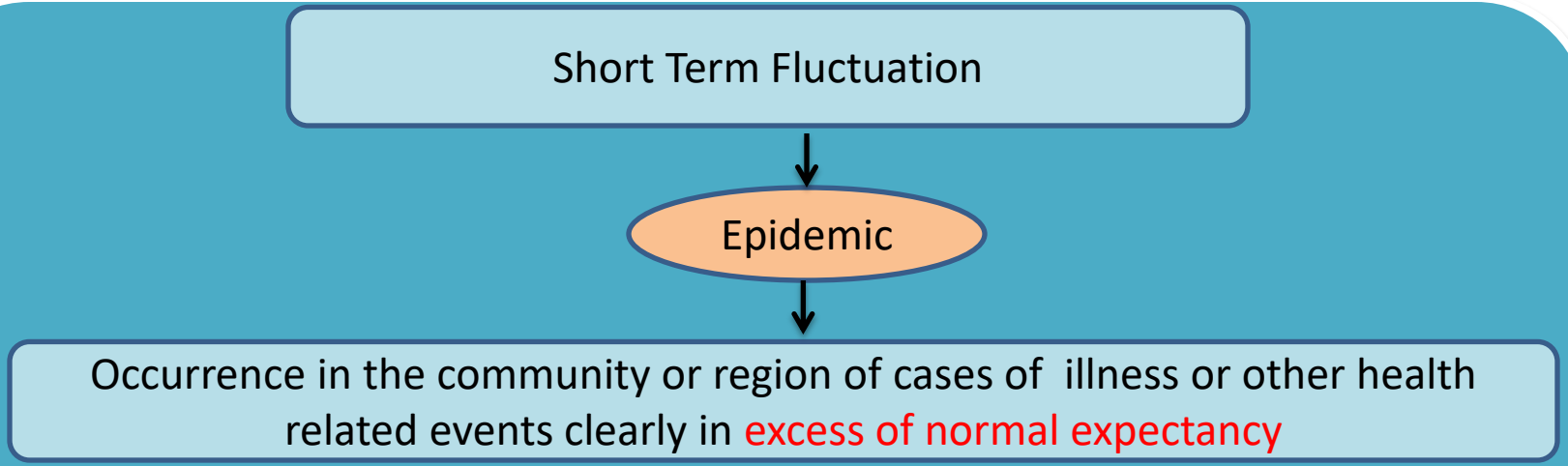

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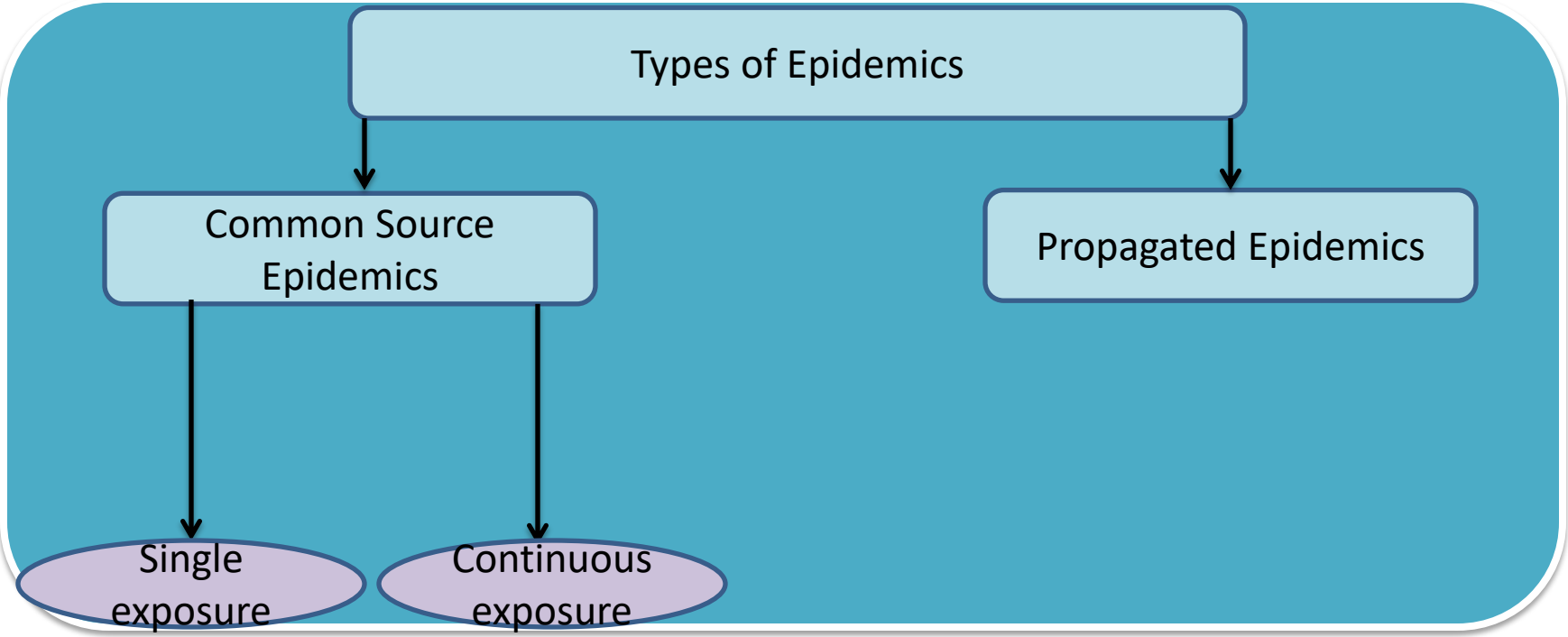


DESCRIPTIVE STUDY

Common Source Epidemics

Frequently but not always occurs due to exposure of infectious agents

Contamination of Environment

Air, water, food, soil

Industrial pollutants /chemicals

Bhopal gas tragedy
Minamata disease

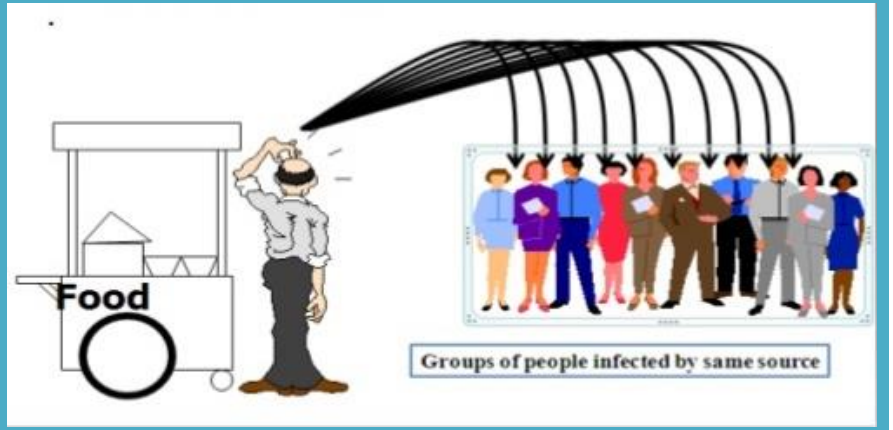
DESCRIPTIVE STUDY

Single exposure Epidemics

Point source epidemics

Exposure of disease agent is brief and simultaneous, the resultant cases all develop within one incubation period

DESCRIPTIVE STUDY



Point source epidemics → Continuous source epidemics

DESCRIPTIVE STUDY

Continuous Exposure Epidemic

Multiple Exposure Epidemic

Exposure from same source but prolonged, continuous, repeated or intermittent not necessarily at the same time or place

Resultant epidemic tend to be more extended and irregular

DESCRIPTIVE STUDY

"TYPHOID MARY"

The Extraordinary Predicament of Mary Mallon, a Prisoner on New York's Quar

IT is probable that Mary Mallon is a prisoner for life—and yet she has committed no crime, has never been accused of an immoral or wicked act, and has never been a prisoner in any court, nor has she been sentenced to imprisonment by any judge.

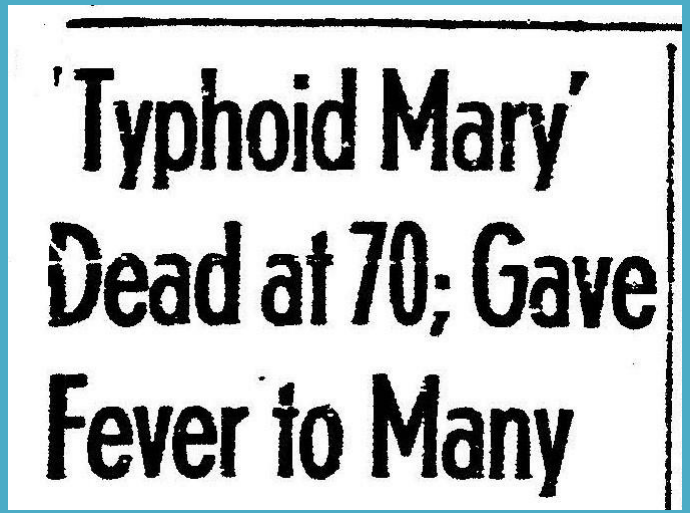
Mary Mallon is a cook by profession. She has served in the kitchens of many New York millionaires with entire satisfaction for many years.

Mary Mallon for more than two years has been a prisoner on New York's quarantine island, along with the unfortunates who are from time to time removed to this isolated spot because they are suffering from smallpox, scarlet fever or other contagious diseases.

But while Mary sees these unfortunate vict... ous diseases come on the hospital boat and, l... return to their homes and friends—Mary stays...

There is probably in the whole wide world ... that can furnish a parallel to the extreme ... which has brought Mary Mallon to North Bro... Through no fault of hers, Mary Mallon is a livi... incubator of typhoid fever germs. Every d... years the officials of the New York Board of H... examined Mary, and they have been discoura... a bountiful supply of new typhoid fever ba...

By Dr. Wm. H. Park..., New York Board of Health.



'Typhoid Mary' Dead at 70; Gave Fever to Many

DESCRIPTIVE STUDY

Propagated epidemics

Infectious origin

Person to person transmission

Epidemic shows gradual rise and tails off over a much longer period of time

Transmission continues until the number of susceptibles are depleted
Or susceptible individuals are no longer exposed to infected persons

DESCRIPTIVE STUDY

Propagated epidemics

The speed of spread depends upon the herd immunity, opportunites for contact and secondary attack rate.

Propogated epidemics are more likely to occur where large number of susceptible are aggregated or where there is regular supply of new susceptible individuals

DESCRIPTIVE STUDY

Periodic fluctuations

Seasonal trend

- Environmental condition:
Temperature, Humidity, Rainfall
Overcrowding, Life cycle of vector
- Infectious diseases
- Non-infectious diseases

Cyclic trend

- Some diseases occur in cycles spread over short period of time– days, weeks, months or years

Measles---2-3 years
Rubella—6-9 years

- Naturally occurring variations in herd immunity
- Non infectious diseases

DESCRIPTIVE STUDY

Long-term or Secular trends

Changes in the occurrence of the disease (progressive increase or decrease) over a long period of time, generally several years or decades.

Example:

- Coronary heart disease, Lung cancer and Diabetes consistent upward trend in last 50 years.
- Tuberculosis, Typhoid, Diphteria, Polio ---- decline

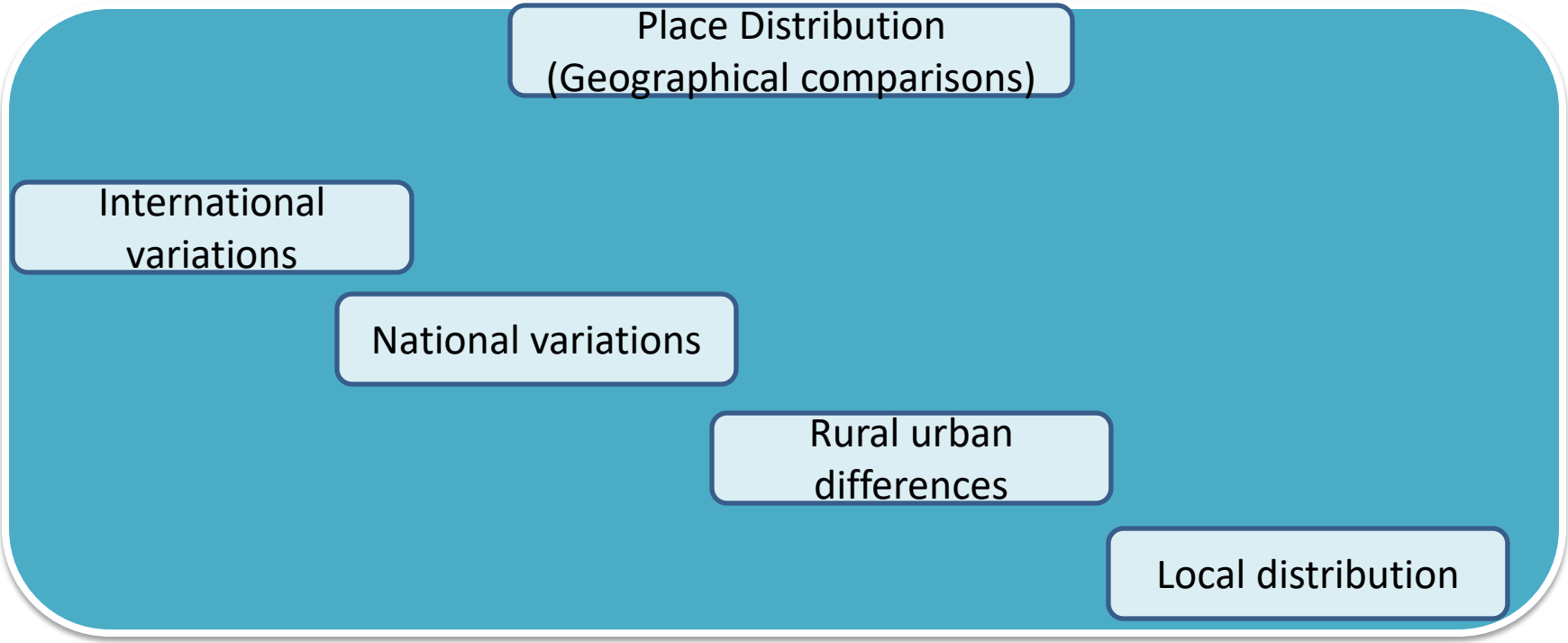
DESCRIPTIVE STUDY

Interpretation of Time trends

By surveillance or monitoring of time trends the epidemiologists finds out:

- ✓ Which diseases are increasing?
- ✓ Which diseases are decreasing?
- ✓ Which are the emerging health problems?
- ✓ Tries to formulate aetiological hypotheses

DESCRIPTIVE STUDY



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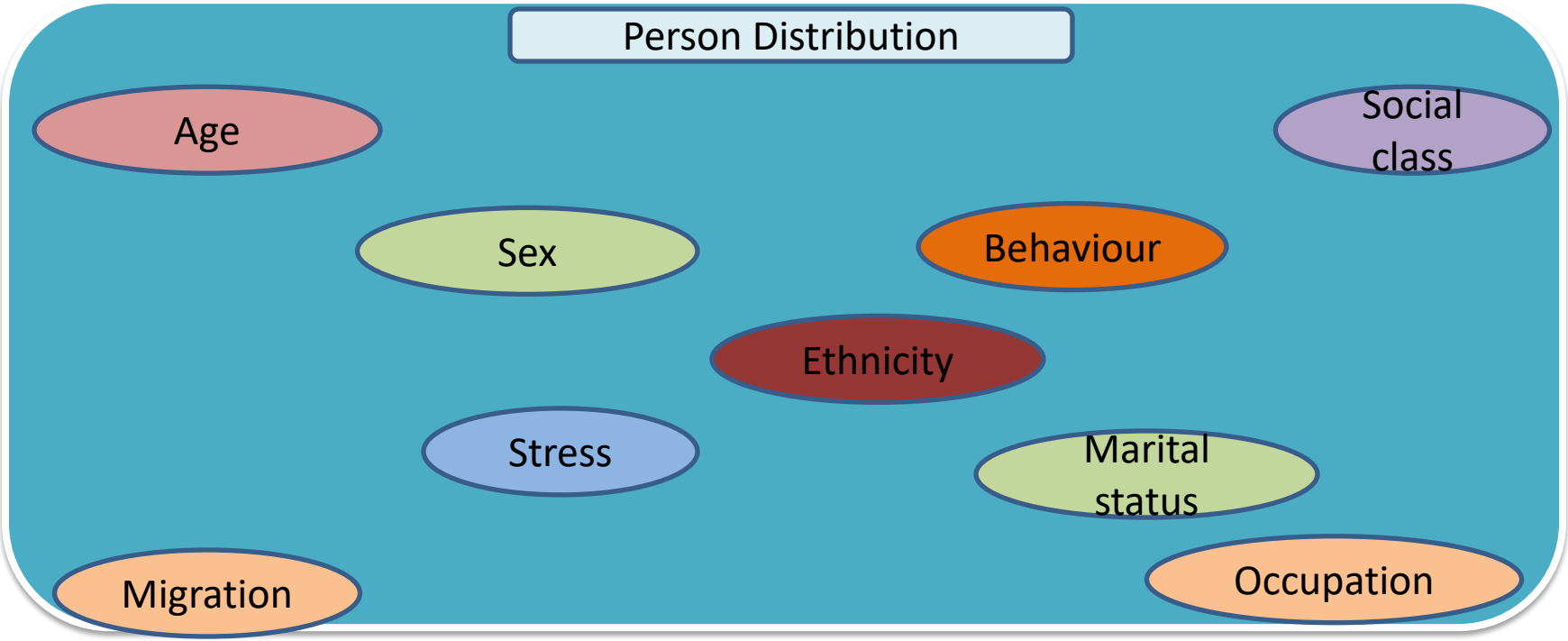

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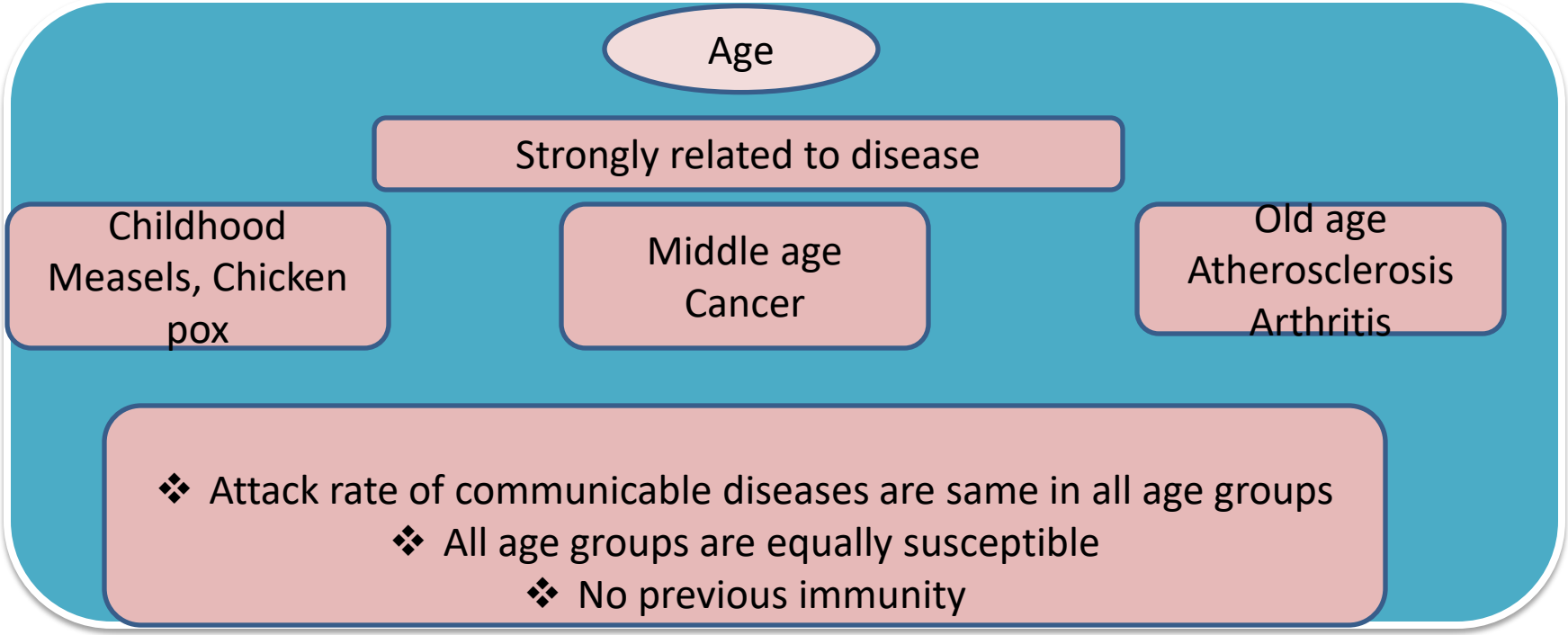

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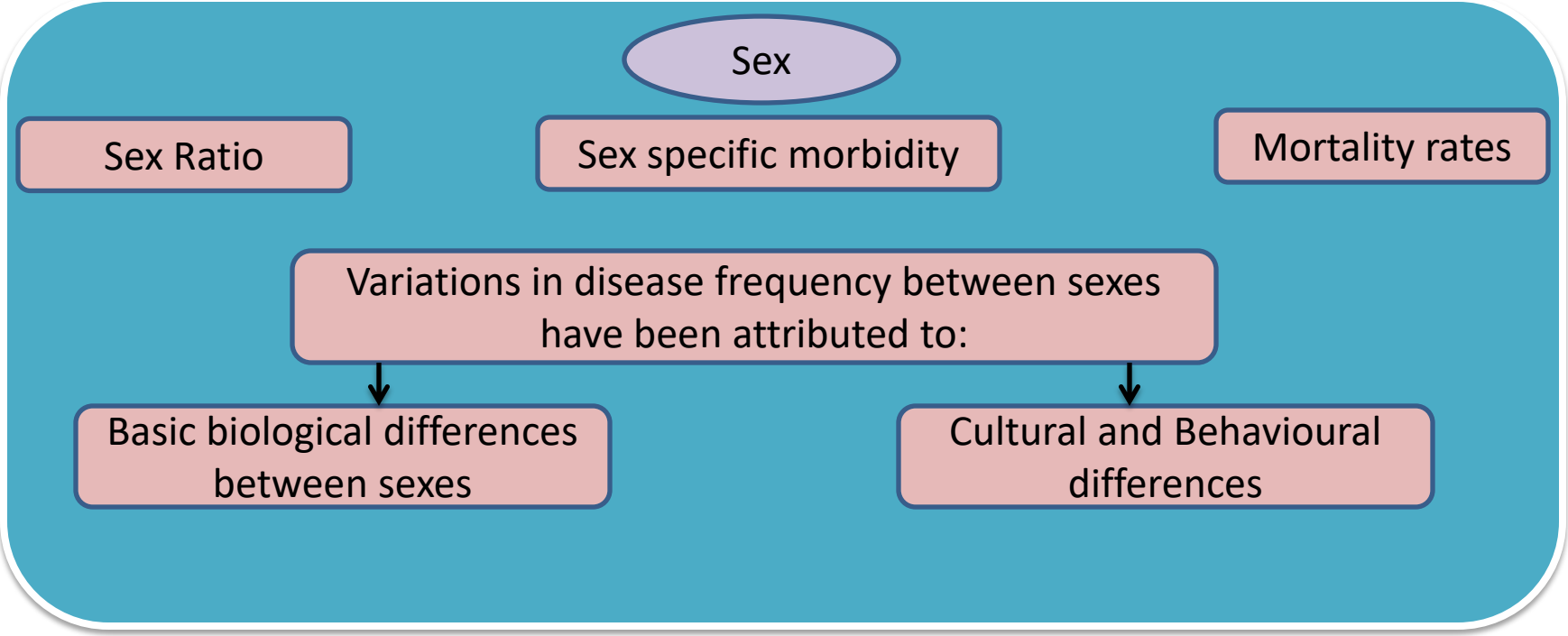
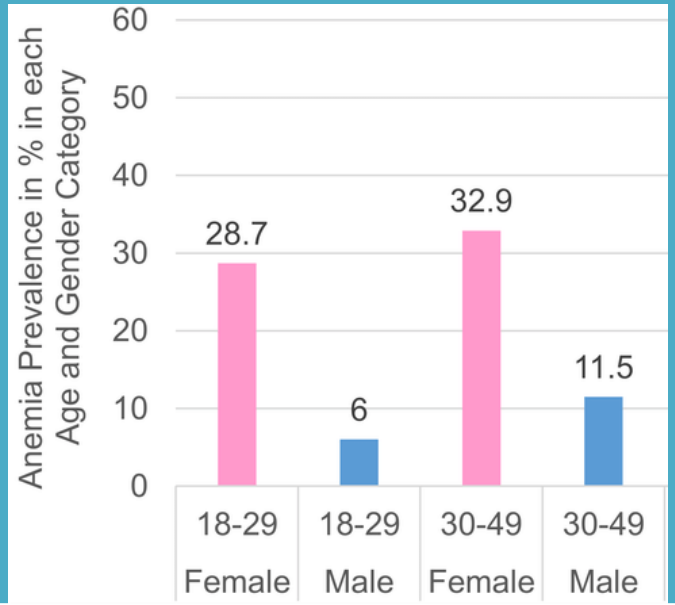


DESCRIPTIVE STUDY

Person Distribution



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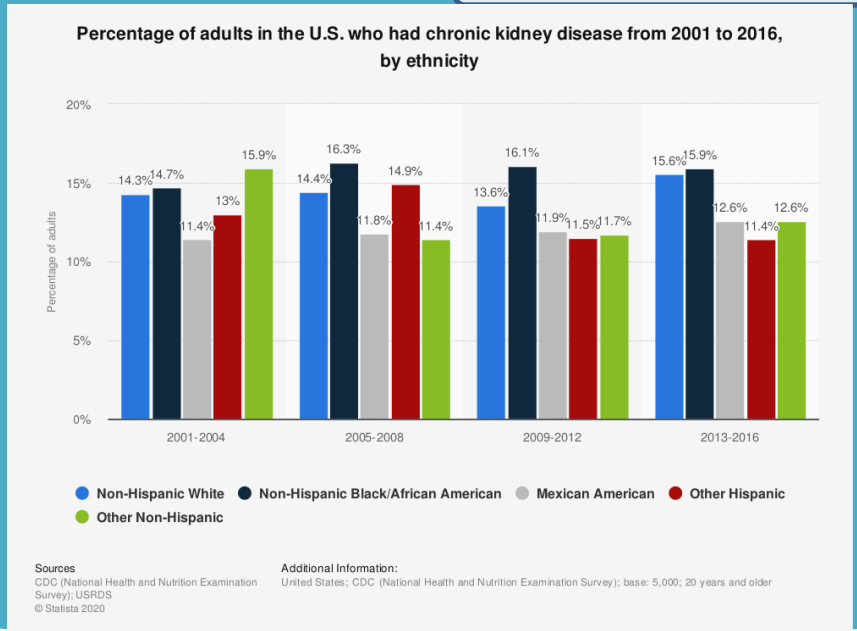
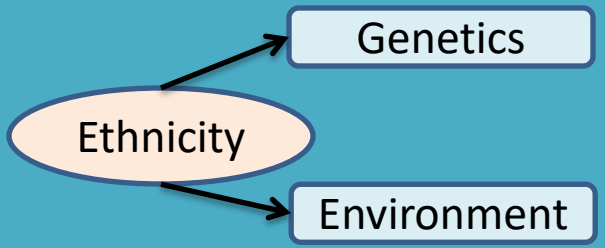




DESCRIPTIVE STUDY

Person Distribution

Marital status

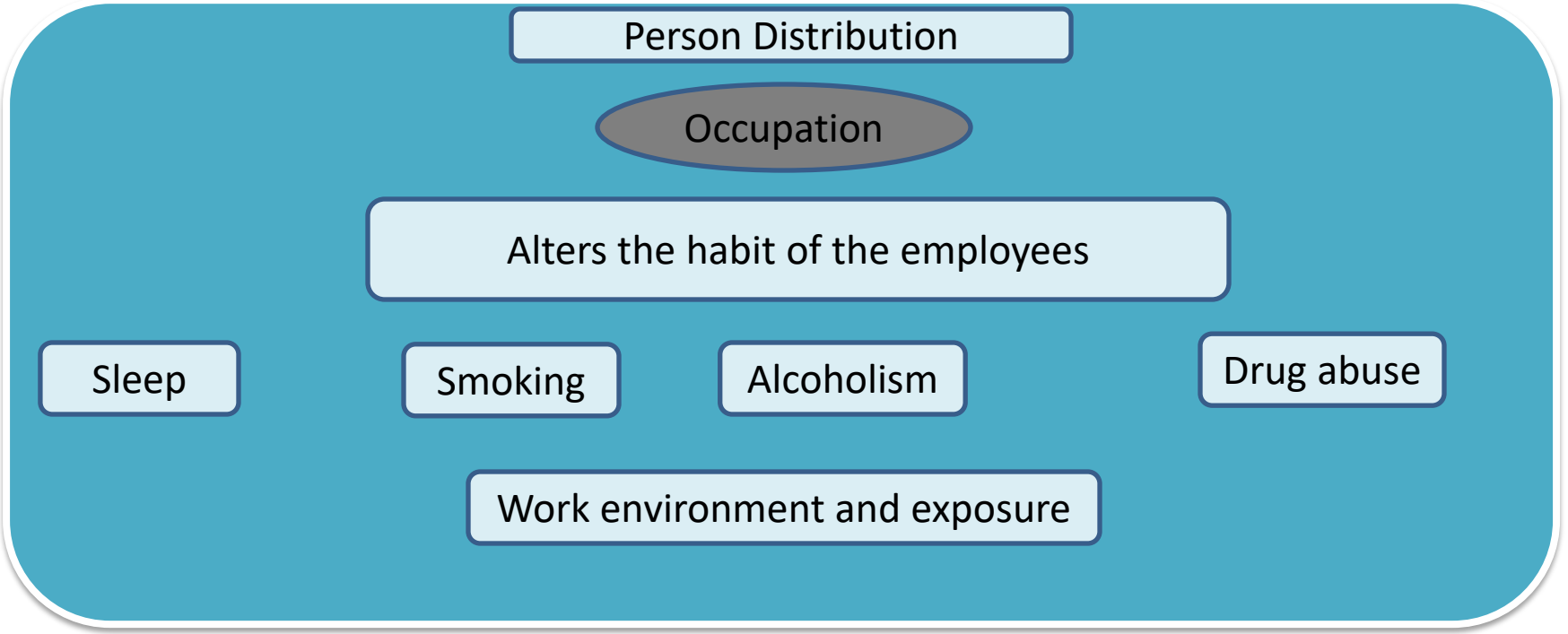
Mortality rates are lower for married males and females in comparison to unmarried males and females of same age group

Selective process

Secured and protected

Marriage can be a risk factor in some diseases– cervical cancer

DESCRIPTIVE STUDY



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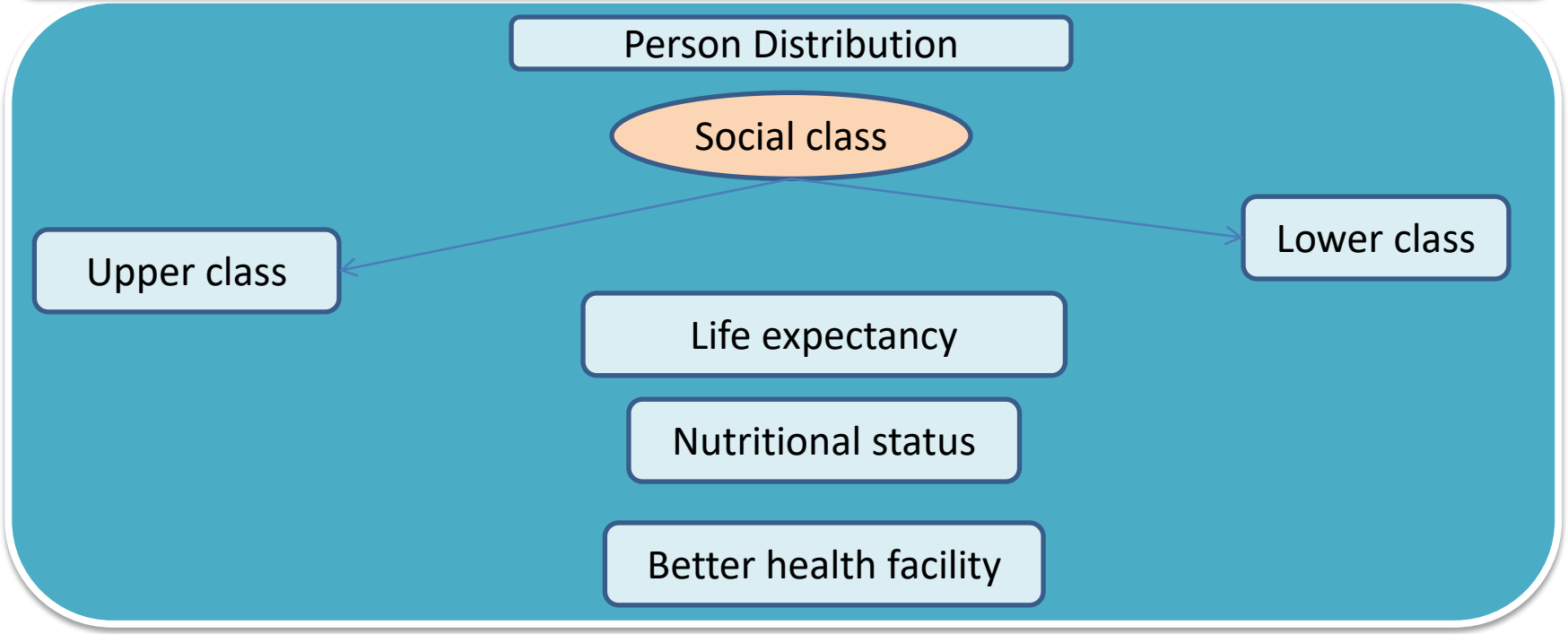

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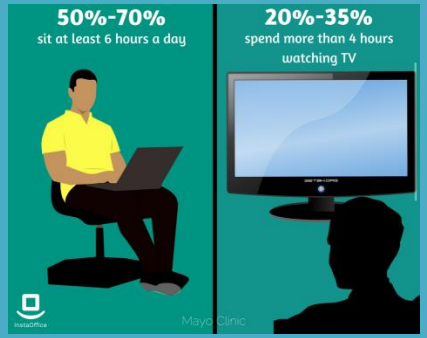
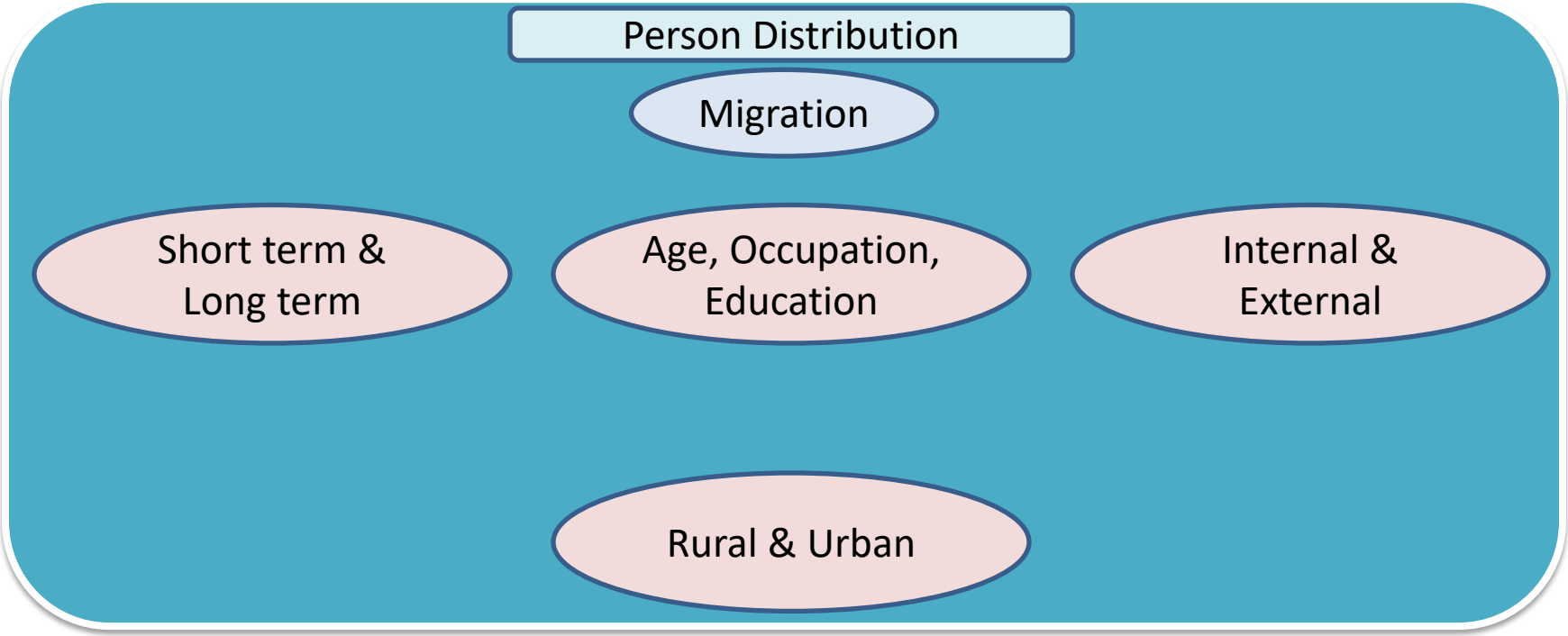


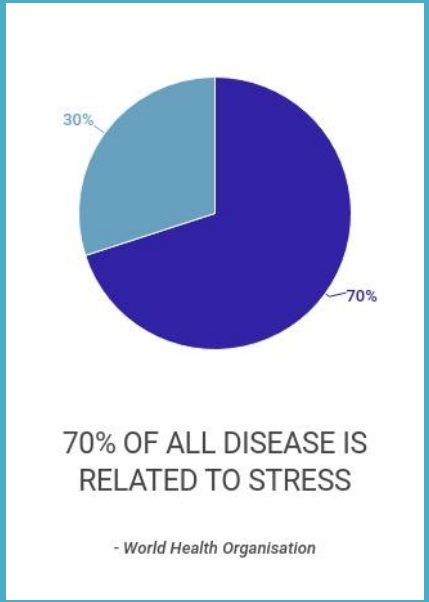
Behaviour

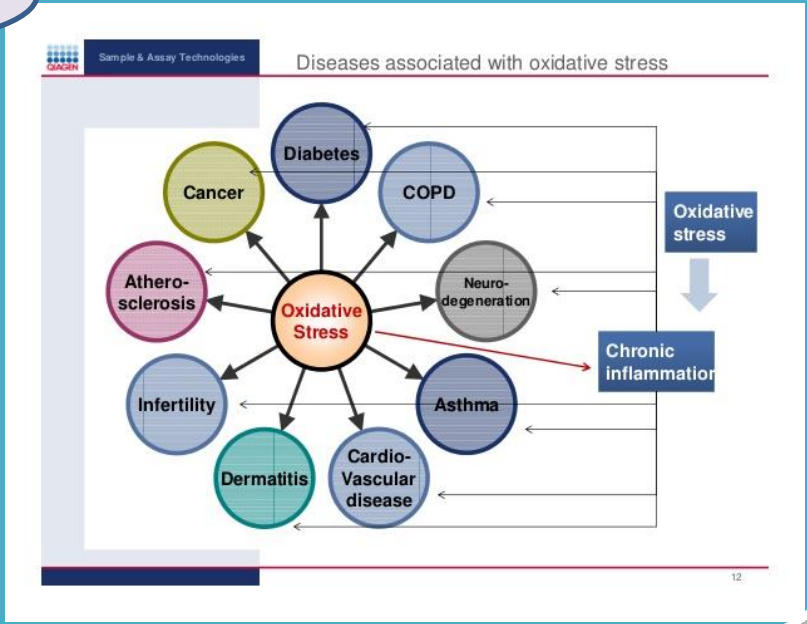
DESCRIPTIVE STUDY



DESCRIPTIVE STUDY

Stress





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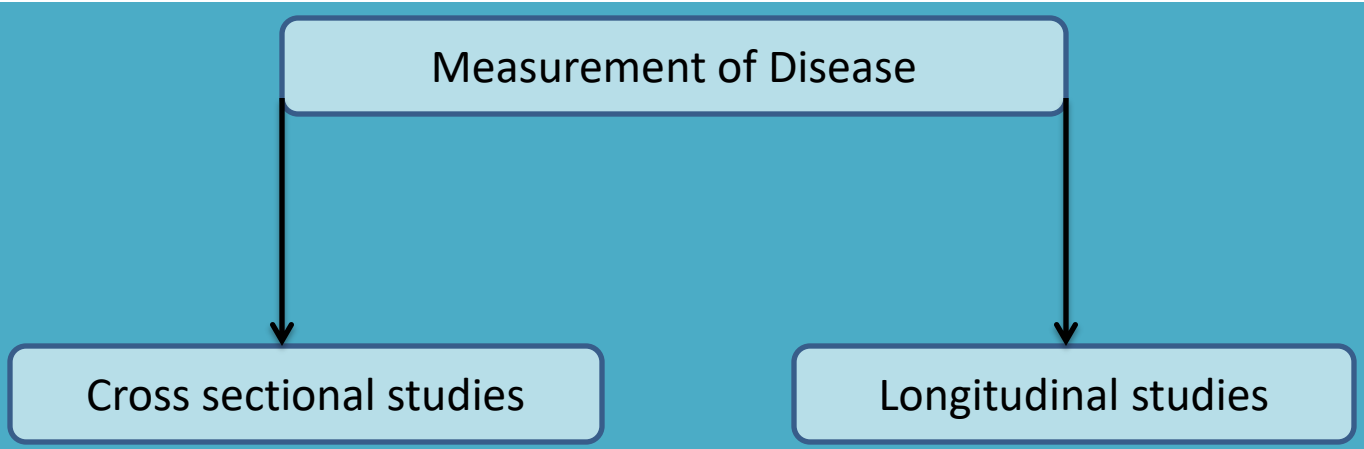


DESCRIPTIVE STUDY

Cross sectional studies

Prevalence study

Single examination of a cross section of population

At one point

Results of which can be projected on the whole population

DESCRIPTIVE STUDY

Longitudinal studies

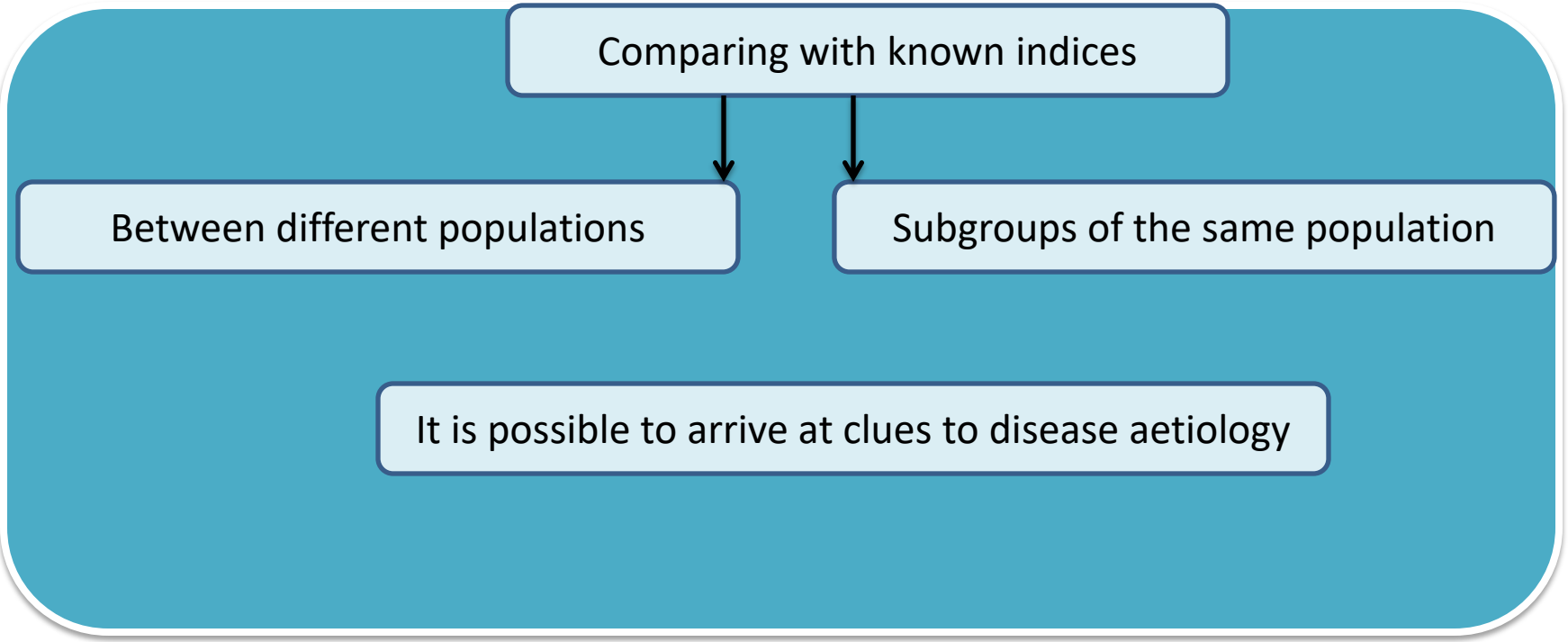
Observations are repeated in the same population over a prolonged period of time by means of follow up examinations

Longitudinal studies are useful:

- To study the natural history of the disease and its further outcome
- Identifying risk factors of disease
- For finding out incidence rate or rate of occurrence of new cases of disease in the community

Difficult to organise and More time consuming

DESCRIPTIVE STUDY



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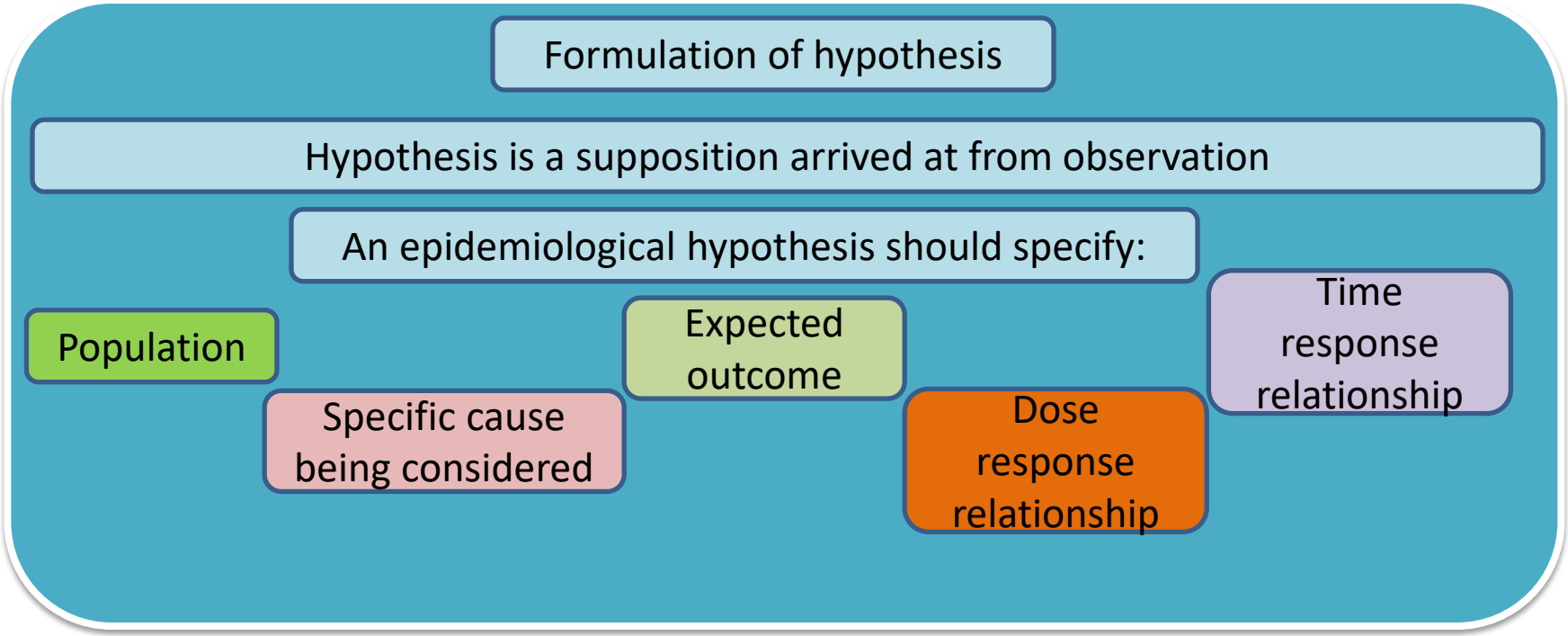

DESCRIPTIVE STUDY

Formulation of hypothesis

Example: Cigarette smoking causes lung cancer

Example: Smoking 30-40 cigarettes per day causes lung cancer in 10 percent of smokers after 20 years of exposure

DESCRIPTIVE STUDY

Uses of descriptive epidemiology

- Magnitude of disease load
- Types of disease problems in the community
- Clues to disease aetiology
- Formulation of an aetiological hypothesis
- Provide background data for planning organizing and evaluating preventive and curative services
- Contribute to research by describing variations in disease occurrence by time, place and person