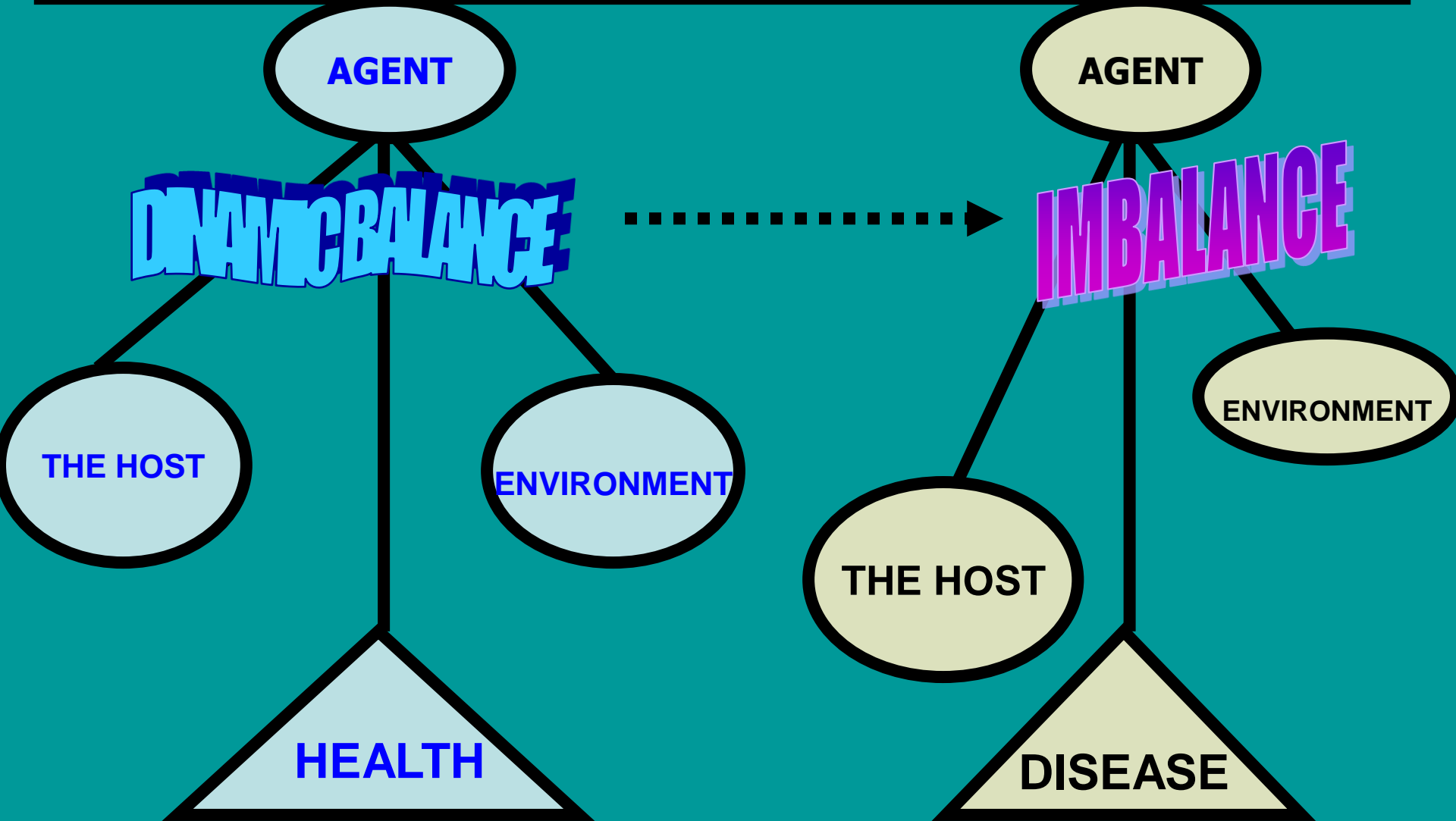


# DESCRIPTIVE EPIDEMIOLOGY



- The major role for the epidemiologist is the IDENTIFICATION & DESCRIPTION of the factors leading to the imbalance
- Like an ecologist, the epidemiologist is interested in THE RELATIONSHIP BETWEEN THE FACTORS (the host & the environment including the agent) & HOW THE RELATIONSHIP CHANGES
- The occurrence every disease is influenced by factors representing each of THE HOST, ENVIRONMENT & TIME CATEGORIES

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# DESCRIPTIVE EPIDEMIOLOGY

The factors of THE HOST, ENVIRONMENT & TIME that should be included when describing the epidemiology of disease

## HOST FACTORS

The major intrinsic host factors → age, sex & breed

\* species & physiologic state (e.g. pregnancy)



# 1. HOST FACTORS

## THE MAJOR INTRINSIC HOST FACTORS →

**AGE, SEX & BREED**

**species & physiologic state (e.g. pregnancy)**

## HUMAN →

**AGE, SEX, ethnic group, social condition,  
marriage state, family size, family condition,  
parturity**

The occurrence of disease at different levels of those factors is best described using →

INCIDENCE RATE & PREVALENCE PROPORTION

# INCIDENCE RATES & PREVALENCE PROPORTION

Provide estimates of the risk (probability) of disease occurrence at different level of the host factor

e.g. males x females, intact x castrated, old x young, Jerseys x Holsteins

Case counts are influenced by the risk of disease & the number of animals in that host category

# UMUR

Umur variabel terpenting dari faktor host, karena mempengaruhi **IMMUNITAS & PERUBAHAN DAYA TAHAN TUBUH** → shg sangat mempengaruhi **TINGKAT KEJADIAN PENYAKIT & KEMATIAN**

1. Pengelompokan umur yg cocok
2. Jumlah yg sakit & yg mati menurut umur
3. Dirubah → "RATE" (per 100, 1000 dll) → "AGE SPECIFIC RATE"
4. Rate → histogram, tabel dll

## PENGELOMPOKAN UMUR

### MANUSIA MENURUT WHO

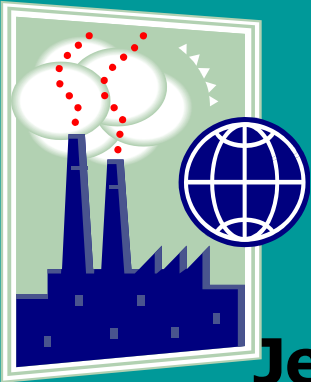
- a. Menurut tingkat kedewasaan:
  - 0 – 14 th : Bayi & anak-anak
  - 15 – 49 th: Muda & Dewasa
  - 50 th > : TUA
- b. Interval 5 tahunan →
  - 1 – 4, 5 – 9, 10 – 14 , ..... dst
- c . Utk mempelajari peny anak → 0 – 4 bln, 5 – 10 bln ....dst.

# JENIS KELAMIN

Di luar negeri (Eropa & Amerika) → WANITA : Angka kesakitan >  
PRIA : ANGKA KEMATIAN >

Di INDONESIA → ? ? ?

1. Pengelompokan umur yg cocok sesuai dg SEX
2. Jumlah yg sakit & yg mati menurut kelompok umur sesuai SEX
3. Dirubah → "RATE" (per 100, 1000 dll) → "AGE & SEX SPESIFIC RATE"
4. Histogram, diagram garis, tabel dr RATE → menampilkan penyebaran penyakit menurut UMUR & SEX



# JENIS PEKERJAAN



Jenis Pekerjaan dpt menjadi faktor timbulnya penyakit

1. **FAKTOR LINGKUNGAN** → Bhn kimia, radiasi, gas beracun
2. Pekerjaan penuh **STRESS** dpt menimbulkan → Hipertensi, sakit maag dsb
3. **“EXERCISE”** → kurang melakukan exercise dpt menyebabkan → Jantung Koroner
4. **Cacing tambang**





# FAKTOR HOST YANG LAIN

## 1. TINGKAT PENGHASILAN

Hubungan penghasilan dg pemanfaatan pelayanan kesehatan  
UANG - → OBAT -, TRANSPORT –

## 2. GOLONGAN ETNIK Berbeda → kebiasaan makan & gaya hidup. Lingkungan ikut mempengaruhi.

Misalnya kejadian kanker lambung → pada bangsa Jepang > Jepang-Amerika.

## 3. STATUS PERKAWINAN → Angka Kematian pada ORG TIDAK KAWIN > ORG YG KAWIN. Hal tsb krn perbedaan gaya hidup

## 4. BESARNYA KELUARGA → angka kesakitan dipengaruhi faktor Besarnya Keluarga & Tingkat Penghasilan. Keluarga besar → tanggungannya besar, gizi kurang, penularan penyakit > krn berdesak-desakan



## 2. TEMPAT

Berkaitan dengan “DISTRIBUSI GEOGRAFIS”, maka diperlukan :

- Perencanaan pelayanan kesehatan
- Etiologi Penyakit

BERDASARKAN :

- Kota & Desa
- Batas-batas alam (gunung, sungai, laut dsb)
- Regional
- Negara



## BATAS ALAM →

temperatur,

kelembaban,

curah hujan,

ketinggian di atas permukaan laut,

keadaan tanah,

sumber air dsb



## PERBANDINGAN ANGKA KESAKITAN / KEMATIAN ANTAR TEMPAT, diperlukan data2 →

Data UMUR , SEX

**KUALITAS DATA → REPRESENTATIF**

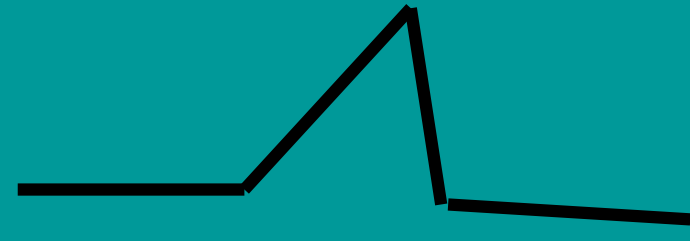
# 3. WAKTU

## ANGKA KESAKITAN →

1. JANGKA PENDEK → Jam, hari, minggu, bulan, tahun
2. SIKLIS → BERULANG-ULANG dalam interval mingguan, bulanan, tahunan, beberapa tahunan
3. SECULAR TRENDS → PERIODE WAKTU PANJANG bertahun-tahun, puluhan tahun

# JANGKA PENDEK

- **Epidemi keracunan makanan (beberapa jam)**
- **Epidemi influenza (beberapa hari – minggu)**
- **Epidemi cacar (beberapa bulan)**



## CIRI-CIRI

- **Penyakit sama pd waktu yg sama**
- **Masa inkubasi penyakit pendek**

# SIKLIS



Berhubungan dg →

a. Transmisi penyakit oleh VEKTOR

b. KEPADATAN VEKTOR → tempat berkembang biakan vektor >>>>

PERUBAHAN →

Musim

Populasi hewan

Tanaman pembentuk  
*"microclimate" vector*

Perilaku manusia

# SECULAR TRENDS

→ Perubahan angka kesakitan / kematian dlm waktu yg panjang → berpuluh-puluh – ratusan tahun

Misal → Penyakit TBC, jantung, kanker, leukemia, hepatitis

**Penyakit bertambah ragamnya karena pengaruh dari →**

- 1. Mobilitas geografis tinggi → migrasi penduduk ke kota**
- 2. Transmigrasi spontan meningkat**
- 3. Transportasi maju → desa yg terisolir berkurang**
- 4. Gaya hidup masyarakat berubah**
- 5. Perubahan lingkungan hidup → pembangunan & industrialisasi**
- 6. Jumlah penduduk makin bertambah**
- 7. Meningkatnya umur harapan hidup**

# Measures

- **Morbidity:** Refers to the presence of disease in a population
- **Mortality:** Refers to the occurrence of death in a population



# Methods for Measuring

How do we determine disease frequency for a population?

- Rate = Frequency of defined events in specified population for given time period
- Rates allow comparisons between two or more populations of different sizes or of a population over time

# Compute Disease Rate

Number of persons at risk = 5,595,211

Number of persons with disease = 17,382

Rate =  $\frac{17,382 \text{ persons with heart disease}}{5,595,211 \text{ persons}}$

= .003107 heart disease / resident / year

# Rates

Rates are usually expressed as integers and decimals for populations at risk during specified periods to make comparisons easier.

$$.003107 \text{ heart disease / resident / year} \times 100,000$$

$$= \mathbf{310.7} \text{ heart disease / } 100,000 \text{ residents / year}$$

# Prevalence vs. Incidence

- Prevalence is the number of existing cases of disease in the population during a defined period.
- Incidence is the number of new cases of disease that develop in the population during a defined period.

# Incidence

- Incidence rate is a measure of the probability of the event among persons at risk.

# Incidence Rates

- Population denominator:

$$\text{IR} = \frac{\# \text{ new cases during time period}}{\text{specified population } \mathbf{at\ risk}} \times K$$

# Mortality Rates

- A special type of incidence rate
- Number of deaths occurring in a specified population in a given time period

# Use of Mortality rates

- Mortality rates are used to estimate disease frequency when...
  - **incidence data are not available,**
  - **case-fatality rates are high,**
  - **goal is to reduce mortality among screened or targeted populations**



# Mortality Rates: Examples

- **Crude mortality**: death rate in an entire population
  - Rates can also be calculated for sub-groups within the population
- **Cause-specific mortality**: rate at which deaths occur for a specific cause

# Mortality Rates: Examples

- **Case-fatality**: Rate at which deaths occur from a disease among those with the disease
- **Maternal mortality**: Ratio of death from childbearing for a given time period per number of live births during same time period

# Mortality Rates: Examples

- **Infant mortality**: Rate of death for children less than 1 year per number of live births
- **Neonatal mortality**: Rate of death for children less than 28 days of age per number of live births

# Prevalence

- Prevalence: Existing cases in a specified population during a specified time period (both new and ongoing cases)
- Prevalence is a measure of burden of disease or health problem in a population

# Prevalence

Prevalence: The number of existing cases in the population during a given time period.

$$PR = \frac{\text{\# existing cases during time period}}{\text{population at same point in time}}$$

Prevalence rates are often expressed as a percentage.

# Factors Influencing Prevalence

## Increased by:

- Longer duration of the disease
- Prolongation of life of patients without cure
- Increase in new cases  
(increase in incidence)
- In-migration of cases
- Out-migration of healthy people
- In-migration of susceptible people
- Improved diagnostic facilities

## Decreased by:

- Shorter duration of disease
- High case-fatality rate from disease
- Decrease in new cases (decrease in incidence)
- In-migration of healthy people
- Out-migration of cases
- Improved cure rate of cases

# Terima Kasih

