## Measures of Morbidity and Mortality

Prevalence: the number of people with the outcome at a specified time; Number of Prevalent cases/ Size of population Incidence: new cases during a time period of interest Incidence Proportion: New cases observed during a time period/ People at risk at the start of the time period -at risk meaning you can't already have the disease Incidence Rate: New cases observed during a time period/ Total Person-time AT RISK Case Fatality: Number of people who have died from a disease/ Number of people in the population at midyear with the disease Mortality Rate: Number of people who have died from all causes/ Number of people in the population at midyear

## Measures of Association

Odds Ratio: Prevalence ratio, prevalences odd ratio $O R=A / B / C / D$ - Prevalence is snapshot in time Interpretation: The odd of [disease] was [OR] times as likely in [exposed] compared to [unexposed] [over x days/months/years

Incidence proportion among whole sample: $A+C / A+B+C+D$ Incidence proportion among exposed: A / A+B Incidence proportion among unexposed: $\mathrm{C} / \mathrm{C}+\mathrm{D}$

## Risk Ratio: A/A+B / C/C+D

Ratio Ratio: Incidence rates using persontime A/ (person time E+) / C/(person time E) Interpretation: The rate of [disease] was [rate ratio] times as likely in [exposed] compared to [unexposed] over [x] days/ months/years

## Study Designs (cont)

| Case <br> Series- <br> Case <br> report <br> but <br> focused on | Strengths: <br> Cheap, <br> good first <br> step | Strengths: <br> Cheaper <br> than <br> cohort, <br> good for <br> rare <br> disease | Strengths: <br> temporality <br> can be <br> determined <br> prospe- <br> ctively | Good for initial investigation of association between a specific exposure and disease | Measure of Association : Reverse Odds Ratio (A/C)/(B/D) | Measure of Association: Risk/Rate Ratio |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| more <br> than <br> one <br> patient |  |  |  | Measure of Association : Odds Ratio | Interpretation: The odds of [EXPOSURE] was [OR] times as high in [cases] compared to [controls] over [time period] |  |
|  | Limitation: Temporal | Limitation: Temporal | Limitation: Take a |  |  |  |

Study Designs

| Case <br> Report- <br> individual <br> level <br> observ- <br> ations by <br> healthcare <br> providers <br> of what <br> they see <br> during <br> clinical <br> practice | Cross <br> Sectional- <br> slice of time "snapshot" through population capturing exposure and outcome at same time | Case-Control - <br> Calculates odds of exposure, rather than odds of disease | Cohort <br> Studies- <br> (can be <br> retros- <br> pective or <br> prospe- <br> ctive) 1. <br> Begins w <br> target <br> population <br> 2. Assess <br> the <br> exposure <br> status of <br> sample 3. <br> Follow <br> partic- <br> ipants for <br> some <br> length of <br> time and <br> observe <br> incident <br> cases |
| :---: | :---: | :---: | :---: |

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