

Population Health (MDCN 340) Formula Sheet
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Mortality

MR = mortality rate

crude MR = $\frac{\text{no. of deaths/yr}}{\text{mid-yr pop}}$

infant MR = $\frac{\text{no. of deaths} < 1 \text{ y/o}}{\text{live births/yr}}$

neonatal MR = $\frac{\text{no. of deaths} < 28 \text{ days/o}}{\text{live births/yr}}$

maternal MR = $\frac{\text{no. of deaths in pregnancy and childbirth}}{\text{live births/yr}}$

case fatality rate = $\frac{\text{no. of deaths due to disease}}{\text{no. cases of that disease}}$

Morbidity

point prevalence = $\frac{\text{no. cases at particular time}}{\text{pop}}$

period prevalence = $\frac{\text{no. cases over interval of time}}{\text{pop at mid-pnt of interval}}$

incidence risk (cum. incidence) = $\frac{\text{no. new cases over interval of time}}{\text{pop at risk at start of interval}}$

incidence rate (density) = $\frac{\text{no. new cases over interval of time}}{\text{person-yrs at risk over interval}}$

absolute risk (AR) = $\frac{\text{no. deaths}}{\text{pop}}$

relative risk = $\frac{\text{incidence of disease in exposed}}{\text{incidence of disease in unexposed}}$ OR

relative risk = $\frac{\text{AR in exposed group}}{\text{AR in unexposed group}}$

Disease Burden

Acronyms

PYLL = potential years of life lost

PYLD = potential years of life disabled

DALY = disability adjusted life years

QALY = quality of life adjusted life years

Equations

PYLL = $\sum_{\text{age}} (\text{no. deaths at each age})(\text{life exp at each age})$

PYLD = (no. incident cases)(avg duration)(weight)

0 = perfect health, 1 = death

DALY = PYLL + PYLD

Measuring Healthy Populations

Direct standardization: modifies standard pop w/ measured pop

Indirect standardization: modifies measured pop w/ standard pop

SMR = $\frac{\text{no. of observed deaths}}{\text{no. of expected deaths}}$

SMR = standardized mortality ratio

Confusion Matrix

Acronyms

PPV = positive predictive value

NPV = negative predictive value

Equations

	Disease	No disease
Test +	TP	FP
Test -	FN	TN

PPV = $\frac{TP}{TP + FP}$ NPV = $\frac{TN}{TN + FN}$

sensitivity = $\frac{TP}{TP + FN}$ specificity = $\frac{TN}{TN + FP}$