DIPLOMATE EXAMINATION

FORMULAE SHEET

Term	Formula
Attributable Risk	$$AR = R_{exposed} - R_{unexposed}$$ where AR = Attributable Risk $R_{exposed}$ = Risk in exposed group $R_{unexposed}$ = Risk in unexposed group
Attributable Risk Fraction Aetiological Fraction Etiological Fraction	$$ARF = \frac{R_{exposed} - R_{unexposed}}{R_{exposed}} = 1 - \frac{R_{unexposed}}{R_{exposed}}$$ where ARF = Attributable Risk Fraction $R_{exposed}$ = Risk in exposed group $R_{unexposed}$ = Risk in unexposed group
Vaccine Efficacy	$$VE = \frac{R_{unvaccinated} - R_{vaccinated}}{R_{unvaccinated}} = 1 - \frac{R_{vaccinated}}{R_{unvaccinated}}$$ where VE = Vaccine Efficacy $R_{unvaccinated}$ = Risk in unvaccinated group $R_{vaccinated}$ = Risk in vaccinated group
Population Attributable Risk	$$PAR = R_{population} - R_{unexposed}$$ where PAR = Population Attributable Risk $R_{population}$ = Risk in population $R_{unexposed}$ = Risk in unexposed

Term	Formula
Population Attributable Risk Fraction	$$PARF = \frac{R_{population} - R_{unexposed}}{R_{population}} = 1 - \frac{R_{unexposed}}{R_{population}}$$ where PARF = Population Attributable Risk Fraction $R_{population}$ = Risk in population $R_{unexposed}$ = Risk in unexposed $$PARF = \frac{p\ (RR-1)}{p\ (RR-1)+1}$$ where PARF = Population Attributable Risk Fraction p = Prevalence of the exposure in the population RR = Relative risk of outcome for the exposed compared with the unexposed
Variance	$$s^2 = \frac{\sum(x_i - \bar{x})^2}{(n-1)}$$ where s^2 = Variance of sample x_i = Individual value $\bar{x}$ = Arithmetic mean of sample n = Number of items in sample
Standard Deviation	$$s = \sqrt{\frac{\sum(x_i - \bar{x})^2}{(n-1)}}$$ where s = Standard deviation of sample x_i = Individual value $\bar{x}$ = Arithmetic mean of sample n = Number of items in sample
Standard Error of the Mean	$$SEM = \sqrt{\frac{s^2}{n}}$$ $$SEM = \frac{s}{\sqrt{n}}$$ where SEM = Standard Error of the Mean s = Standard deviation of sample n = Number of items in sample

Term	Formula
Confidence Interval for an Arithmetic Mean	$$95\%\ CI = \bar{x} \pm 1.96\sqrt{\frac{s^2}{n}}$$ $$95\%\ CI = \bar{x} \pm 1.96\ \frac{s}{\sqrt{n}}$$ where 95% CI = 95% Confidence Interval $\bar{x}$ = Arithmetic mean of sample s = Standard deviation of sample n = Number of items in sample
Confidence Interval for a Difference in Arithmetic Means	$$95\%\ CI = \lvert\bar{x}_1 - \bar{x}_2\rvert \pm 1.96\sqrt{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)}$$ $$95\%\ CI = \lvert\bar{x}_1 - \bar{x}_2\rvert \pm 1.96\ s_p\sqrt{\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$ where 95% CI = 95% Confidence Interval $\bar{x}_1$ = Arithmetic mean of 1st sample s_1 = Standard deviation of 1st sample n_1 = Number of items in 1st sample $\bar{x}_2$ = Arithmetic mean of 2nd sample s_2 = Standard deviation of 2nd sample n_2 = Number of items in 2nd sample s_p = Pooled standard deviation of 1st & 2nd samples
Confidence Interval for a Proportion	$$95\%\ CI = \hat{p} \pm 1.96\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$ where 95% CI = 95% Confidence Interval $\hat{p}$ = Observed proportion in sample n = Number of items in sample
Confidence Interval for a Difference in Proportions	$$95\%\ CI = \lvert\hat{p}_1 - \hat{p}_2\rvert \pm 1.96\sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$$ where 95% CI = 95% Confidence Interval $\hat{p}_1$ = Observed proportion in 1st sample n_1 = Number of items in 1st sample $\hat{p}_2$ = Observed proportion in 2nd sample n_2 = Number of items in 2nd sample

Term	Formula
Confidence Interval for a Count	$Approx. 95\%\ CI = Count\ \pm 1.96 \sqrt{Count}$ where Approx. 95% CI = Approximate 95% Confidence Interval based on Poisson approximation to Binomial distribution $Count$ = Count of observed events
Standardised Mortality Ratio	$SMR = \frac{O}{E}$ where SMR = Standardised Mortality Ratio O = Observed total number of deaths E = Expected total number of deaths
Confidence Interval for a Standardised Mortality Ratio	$Approx. 95\%\ CI = SMR\ \pm 1.96\ \frac{\sqrt{O}}{E}$ where Approx. 95% CI = Approximate 95% Confidence Interval based on Poisson approximation to Binomial distribution SMR = Standardised Mortality Ratio O = Observed total number of deaths E = Expected total number of deaths
Chi-squared Statistic	$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$ where χ_c^2 = Chi-squared statistic with *C* degrees of freedom O_i = Observed count in each cell E_i = Expected count in each cell
McNemar's Chi-squared Statistic for Matched Pairs with Binary Outcomes	$McNemar's\ \chi_1^2 = \frac{(n_{12} - n_{21})^2}{(n_{12} + n_{21})}$ where χ_1^2 = Chi-squared statistic with 1 degree of freedom n_{12} = Observed count in cell for discordant values 1 & 2 n_{21} = Observed count in cell for discordant values 2 & 1

END OF DOCUMENT