Appendix 1 – Distribution-based MID estimation methods

Method	Reference	PROM evaluated in relation to:	Calculation
Paired *t*-statistic	Husted et al., 2000	Standard error of the mean change	$\frac{x_i - x_0}{\sqrt{\frac{\Sigma(d_i - \bar{d})^2}{n(n-1)}}}$
Growth curve analysis	Speer and Greenbaum, 1995	Standard error of the slope	$\frac{B}{\sqrt{V}}$
Effect size	Cohen, 1988	Pre-test standard deviation	$\frac{x_1 - x_0}{\sqrt{\frac{\Sigma(x_0 - \bar{x}_0)^2}{n-1}}}$
Standardized response mean	Stucki et al., 1995	Standard deviation of change	$\frac{x_1 - x_0}{\sqrt{\frac{\Sigma(d_i - \bar{d})^2}{(n-1)}}}$
Responsiveness statistic	Guyatt et al., 1986	Standard deviation of change in a stable group	$\frac{x_1 - x_0}{\sqrt{\frac{\Sigma(d_{i\,stable} - \bar{d}_{stable})^2}{n-1}}}$
Standard error of measurement	Wyrich et al., 1999	Standard error of measurement	$\frac{x_1 - x_0}{\sqrt{\frac{\Sigma(x_0 - \bar{x}_0)^2}{(n-1)}}(\sqrt{1-r})}$
Reliable change index	Jacobson and Truax, 1991	Standard error of the measurement difference	$\frac{x_1 - x_0}{\sqrt{2(\mathrm{SEM})^2}}$

Table reproduced from Crosby RD. J Clin Epidemiol. 2003;56(5):395-407.

x_0 = pre-test score
x_1 = post-test score
d_i = pre-to-post difference score for subject i
$\bar{d}$ = mean difference score
n = sample size
r = reliability of the measure
B = empirical Bayes estimate of the individual slope
$\sqrt{V}$ = empirical Bayes estimate of the Standard error of the slope
SEM = Standard Error of Measurement
PROM, patient reported outcome measure