

## Global Measurement

### 1. Likelihood ratio tests

$$\text{Deviance} = 2 \times (\text{Log } L_{\text{mean}} - \text{Log } L_{\text{fitted}})$$

$\text{Log } L_{\text{mean}}$  = Log likelihood for the mean model

$\text{Log } L_{\text{fitted}}$  = Log likelihood for the fitted model

### 2. Degrees of freedom in likelihood ratio test:

$$\text{df} = k_1 - k_2$$

$k_1$  = number of parameters estimated in the mean model

$k_2$  = number of parameters estimated in the fitted model

$$k_1 = N + 1$$

$N$  = number of dose groups

$k_2$  = number of parameters estimated

When the estimated value hits the boundary, the corresponding parameter(s) should not be counted as an estimated parameter(s).

For example:

#### Parameter Estimates

Variable	Estimate	Std. Err.
alpha	0.00183292	1
rho	0	1
intercept	1.64972	1
v	0.684933	1
n	1	NA
k	3241.57	1

In this case,  $k_2 = 4$  instead of 5 because the power (n) hits the boundary (1).

## Model Comparison

The degree of freedom for AIC should be equal to  $k_2$ .