### Benchmark Dose Model Recommendation/Selection Rules for Apical Endpoints

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| Rule | Criteria for "Viable" | Numerical Threshold (N) | Bin Placement for Rule Failure |
| BMD existence | A BMD exists. | N/A | Failure |
| BMDL existence | A BMDL exists. | N/A | Failure |
| AIC existence | An AIC exists. | N/A | Failure |
| Residual of interest existence | The residual at the dose group closest to the BMD (i.e., the residual of interest) exists. | N/A | Failure |
| Variance model fit | The variance model used fits the data. | N/A | Nonviable |
| Variance model selection | The variance model is appropriate. | N/A | Nonviable |
| Global goodness of fit | The mean model fits the data means sufficiently well (BMDS 2.7 Test 4 p-value > N). | 0.1 | Nonviable |
| Degrees of freedom | There is at least one degree of freedom (i.e. more dose-groups than model parameters) | N/A | Nonviable |
| BMD-to-BMDL ratio | The ratio of BMD to BMDL is not large (BMD/BMDL < N). | 20 | Viable |
| High BMDL | The BMDL is <N times higher than the maximum dose. | 1 | Viable |
| High BMD | The BMD is <N times higher than the maximum dose. | 1 | Viable |
| Low BMD | The BMD is <N times lower than the minimum nonzero dose. | 3 | Non-reportable |
| Control residual | The residual at control is small (residual < N). | 2 | Nonviable |
| Control standard deviation | The modeled standard deviation is similar to the actual (<N times different). | 1.5 | Nonviable |
| Residual of interest | The residual at the dose group closest to the BMD (i.e., the residual of interest) is small (residual < N). | 2 | Nonviable |
| No warnings reported | No warnings in the BMD model system were reported. | N/A | Viable |