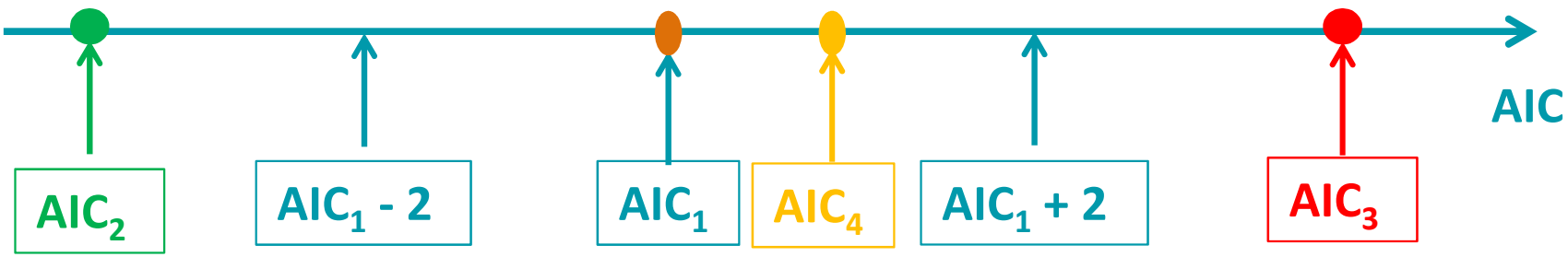
EFSA Guidance for BMD analysis

- BMD flow chart
- Establishing the BMD confidence interval

efsa
European Food Safety Authority

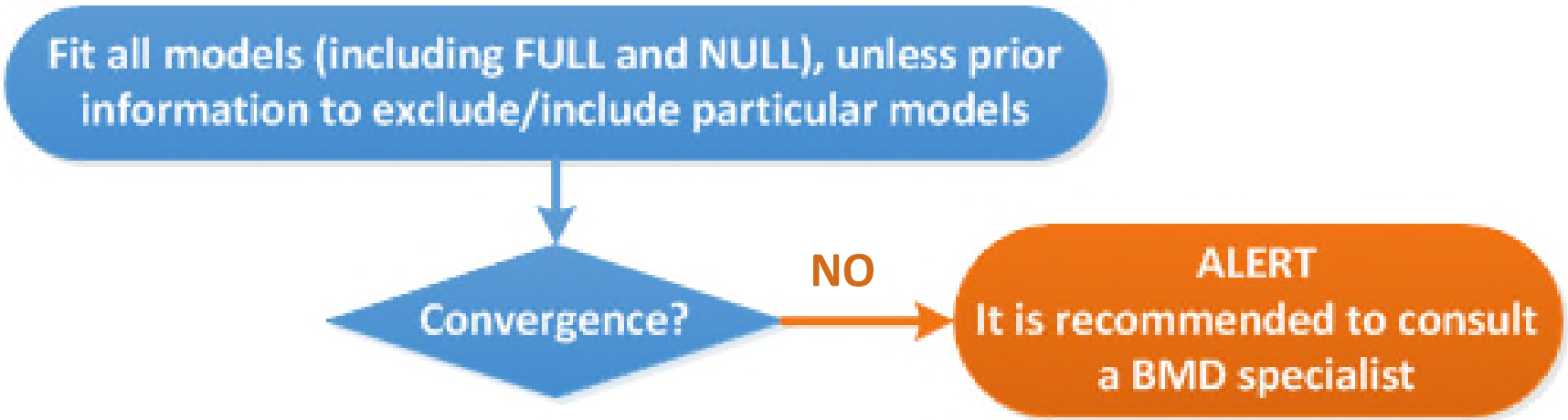
BACKGROUND CONSIDERATIONS

- The lower the AIC value, the better the model fits the data
- Two models are different if their AIC values differ by at least two units

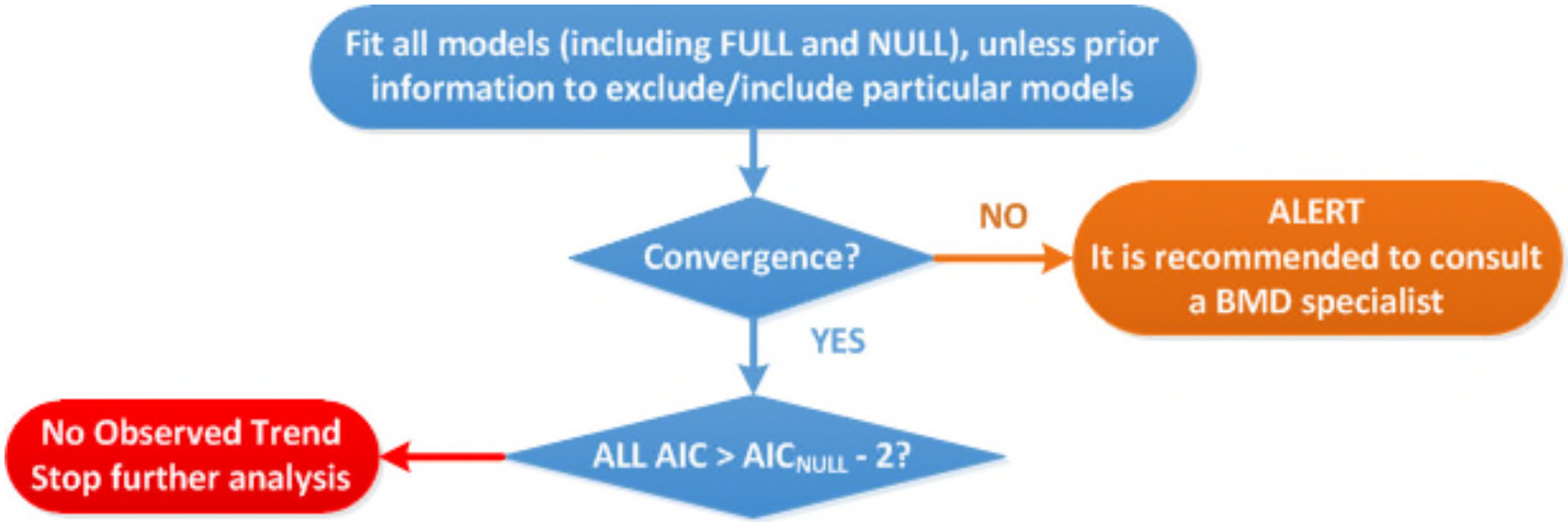


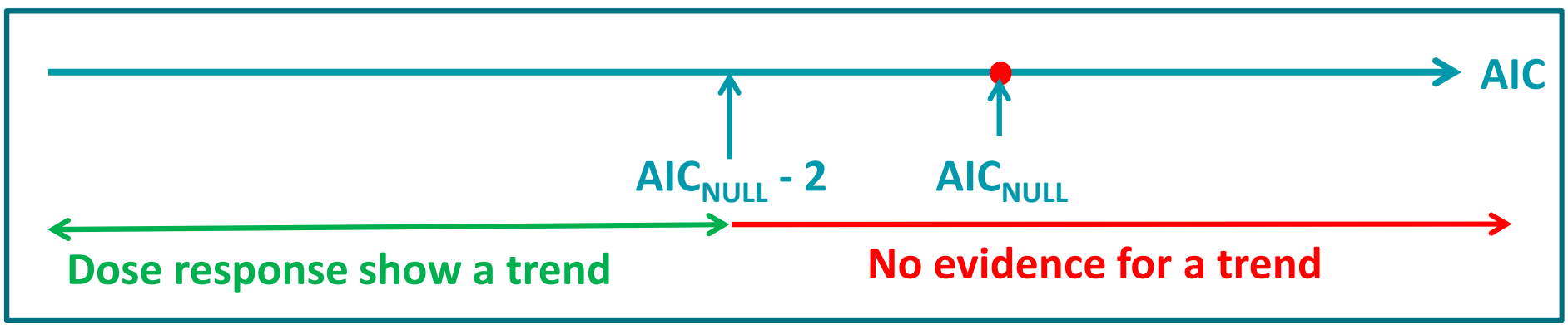
  - Model 2 fits the data better than Models 1, 3 and 4
  - Model 1 fits the data better than Models 3, but less well than model 2
  - Model 4 fits the data as well as model 1. It will fit the data better than model 3 if $AIC_3 > AIC_4 + 2$

1/ MODEL CONVERGENCE



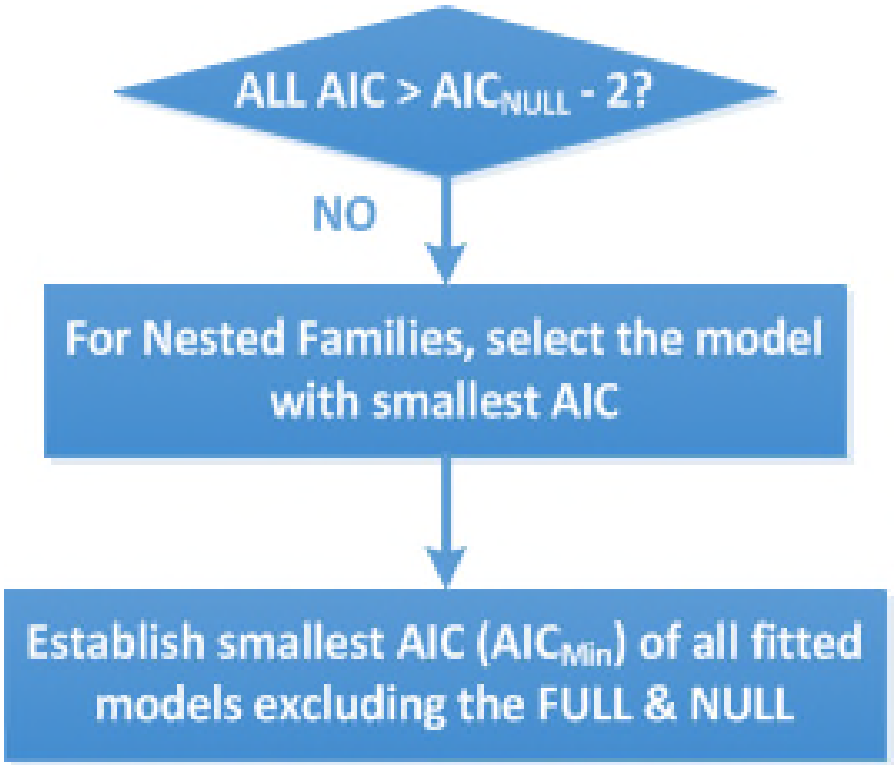
2/ DOSE-RESPONSE TREND



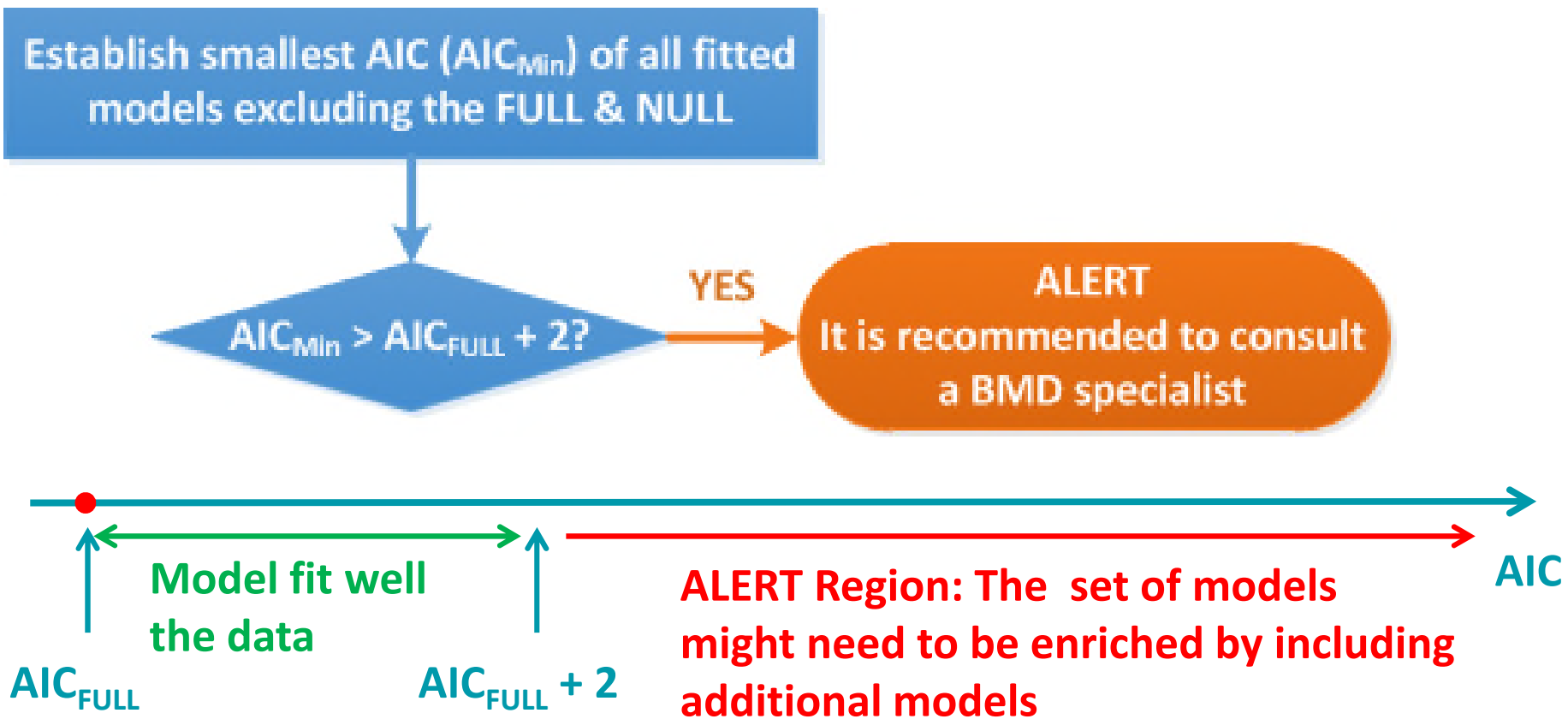


3/ DETERMINATION OF THE AIC_{MIN}

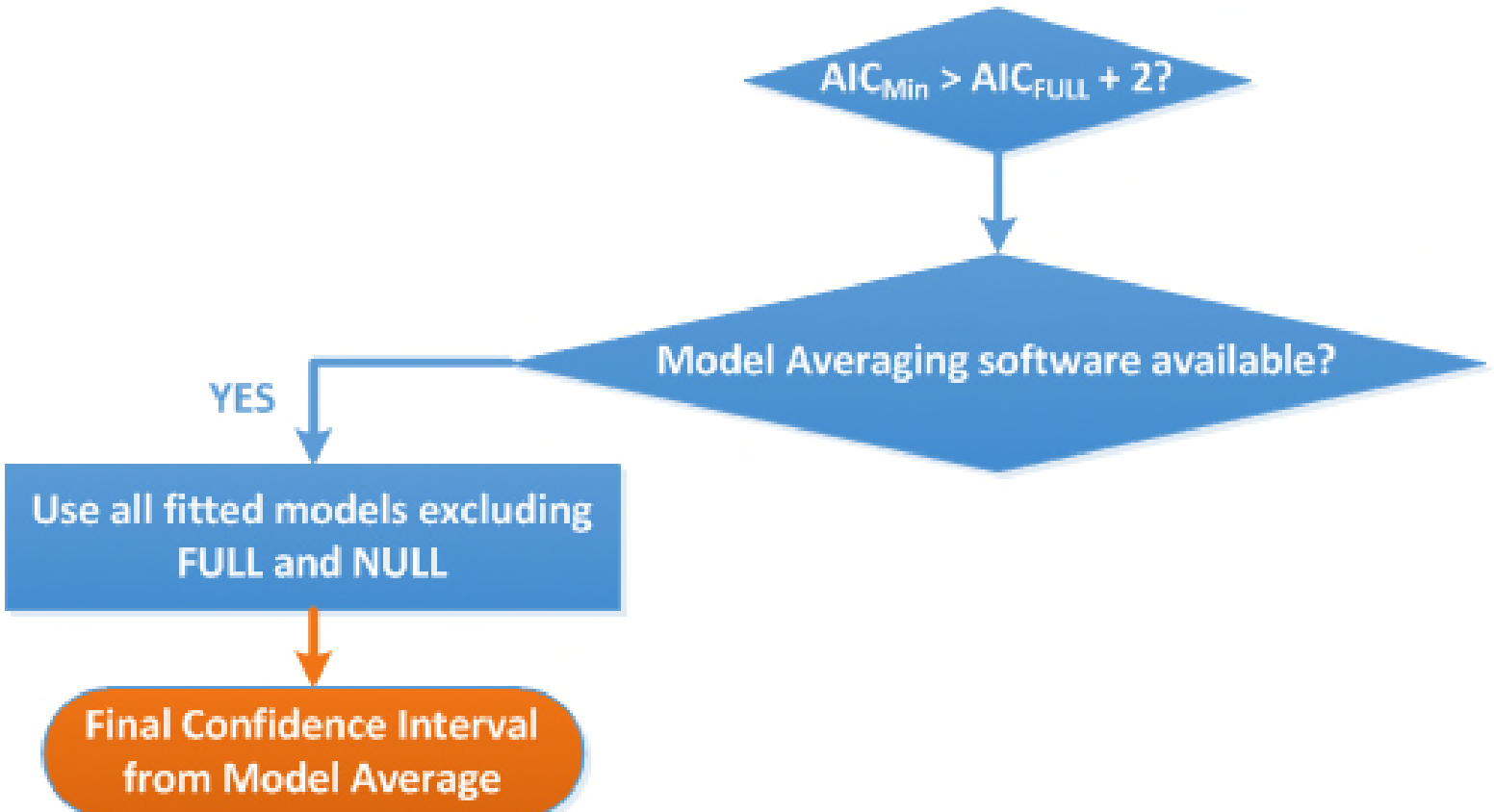
Step specific for continuous data



4/ DO MY MODELS FIT ADEQUATELY MY DATASET?

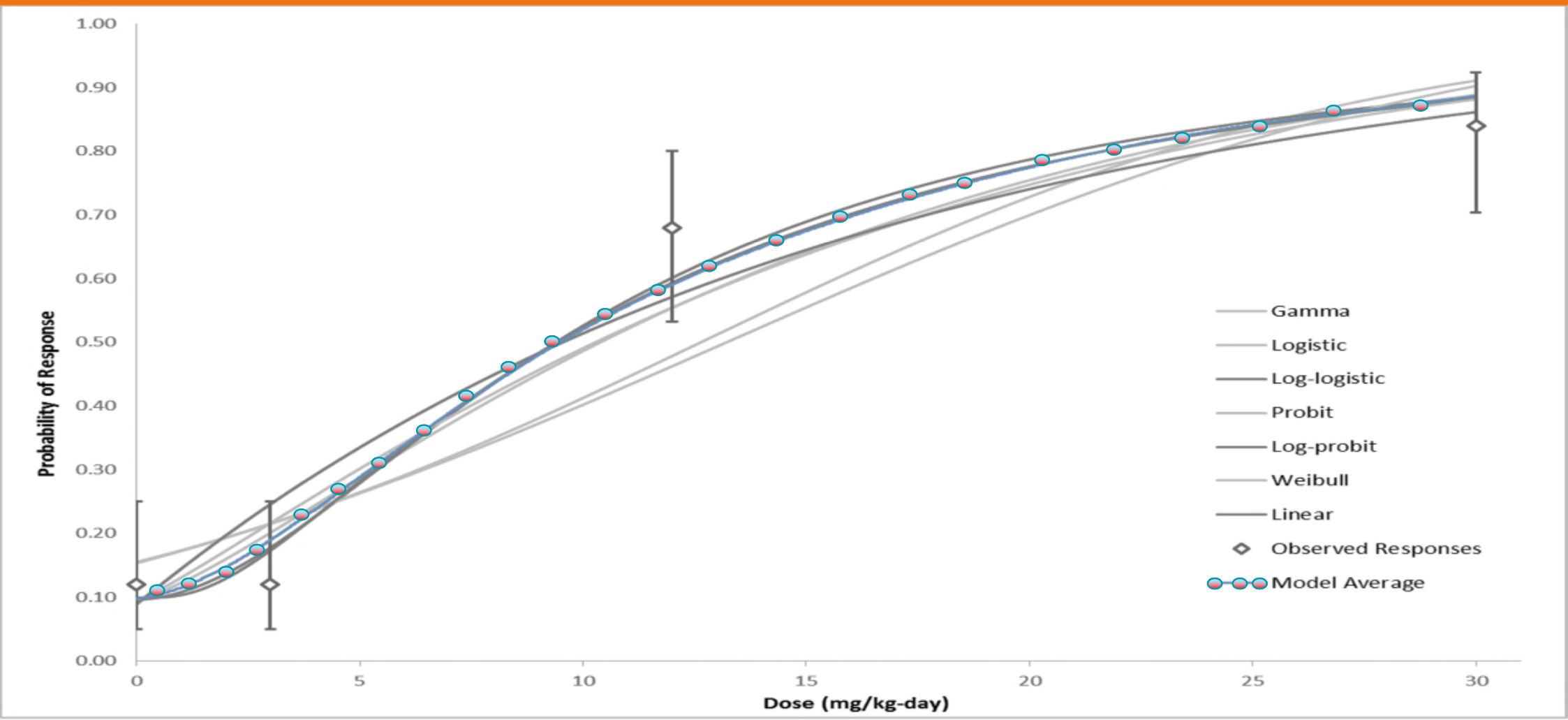


MODEL AVERAGING AS PREFERRED APPROACH



Model	Weight	AIC
Log-probit	0.411	189.73
Log-logistic	0.395	189.81
Gamma	0.080	192.99
Weibull	0.061	193.54
Multistage 2°	0.044	194.20
Logistic	0.005	198.47
Probit	0.004	199.07

BMD CONFIDENCE INTERVAL PROVIDED BY THE AVERAGE MODEL



IF MODEL AVERAGING IS NOT AVAILABLE

Model	Weight	AIC
Log-probit	0.411	189.73
Log-logistic	0.395	189.81
Gamma	0.080	192.99
Weibull	0.061	193.54
Multistage 2°	0.044	194.20
Logistic	0.005	198.47
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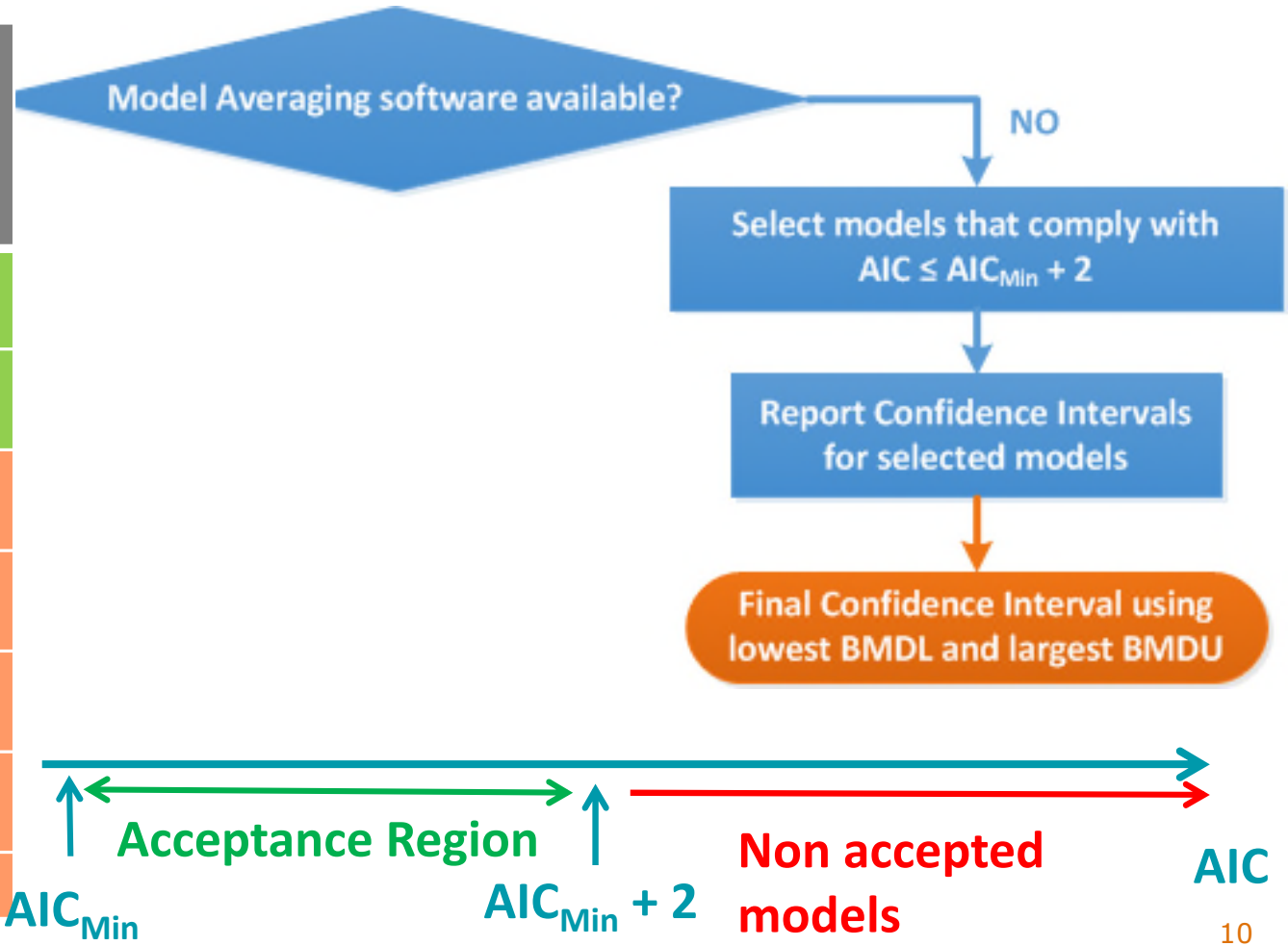
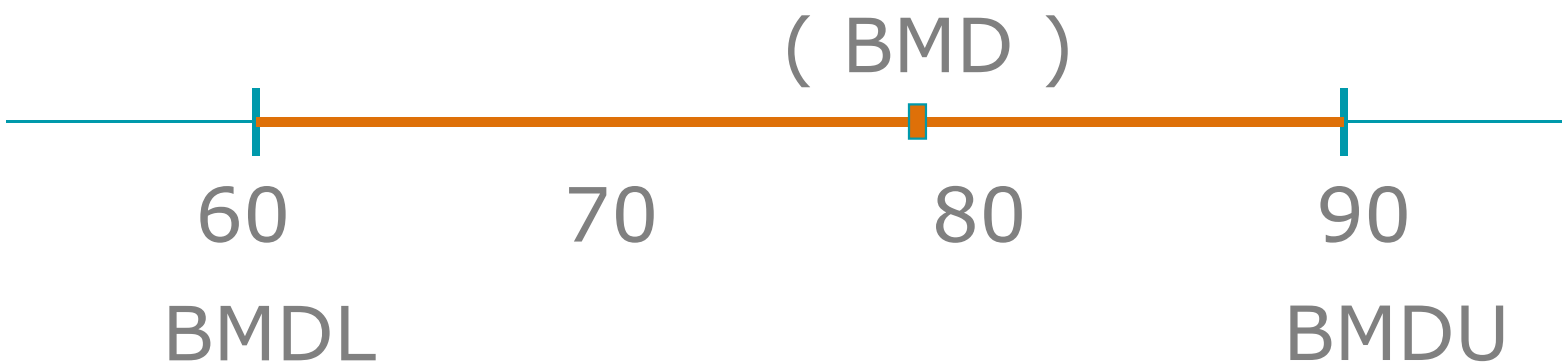


DETERMINING THE BMD CONFIDENCE INTERVAL

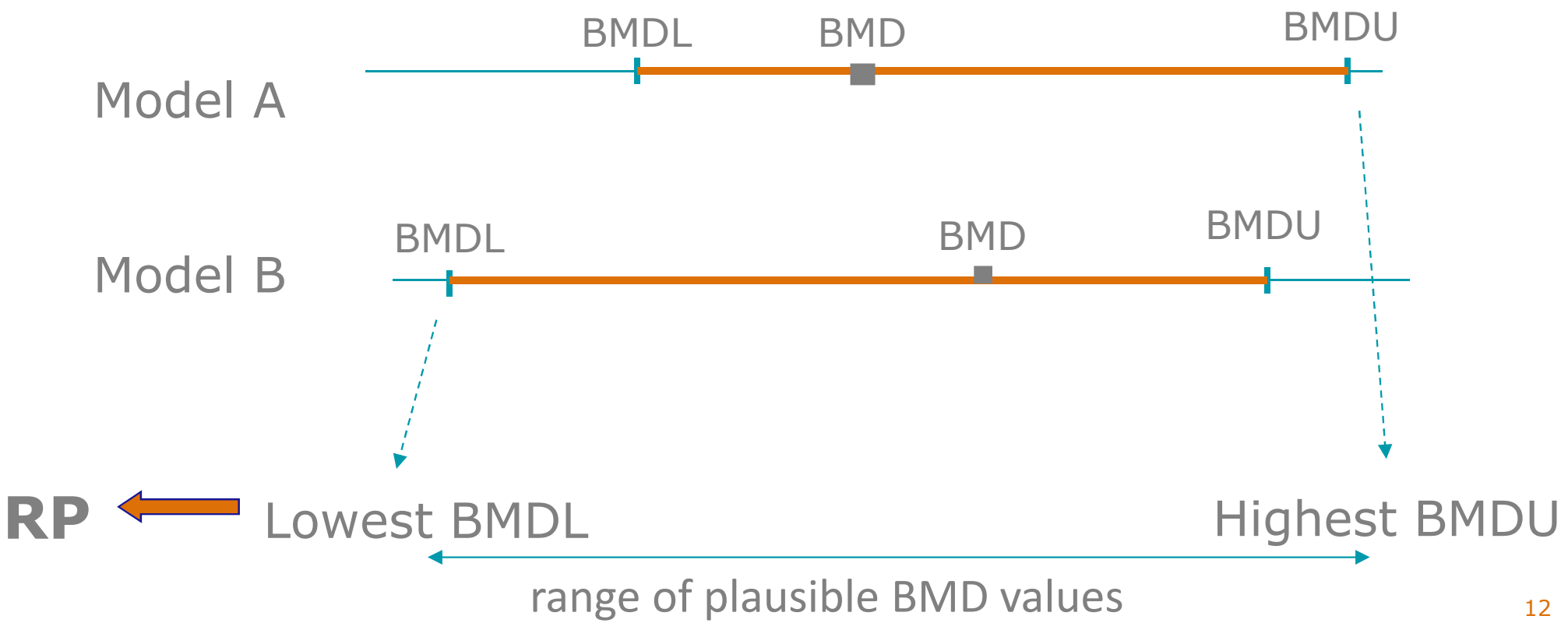
Each fitted (and accepted) model results in a confidence interval for the BMD



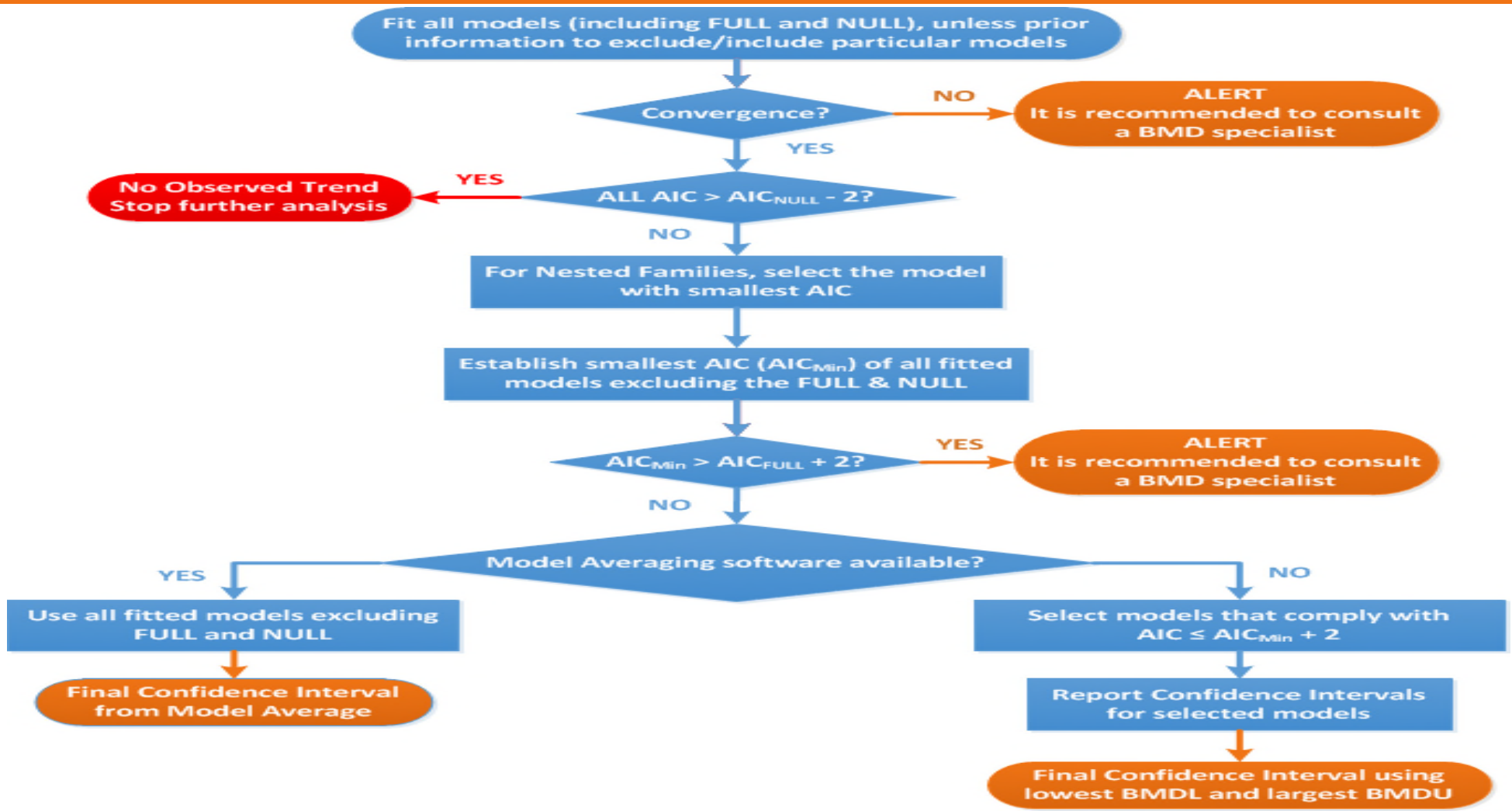
Lower confidence limit of BMD

Upper confidence limit of BMD

DETERMINING THE BMD CONFIDENCE INTERVAL



EFSA FLOW CHART FOR BMD ANALYSIS



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