Let $\mu$ denote the median survival time. BOP2 assumes that $\mu$ follows inverse gamma prior distribution $IG(a, b \log 2)$, where $a$ and $b$ are determined based on user’s input “null median survival time” (denoted as $t_0$) and “Prior effective sample size” (denoted as $n_0$) as follows:

$$a = n_0 + 1, \quad b = n_0 t_0 / \log 2$$

This prior sets prior mean equals to the median survival time at the null hypothesis, with the prior information equivalent to $n_0$ events.

By default, BOP2 uses a vague prior $IG(1.05, 0.072t_0)$ to calibrate design parameters and calculate operating characteristics. If user want to specify prior, then BOP2 will use a vague prior $IG(1.05, 0.072t_0)$ to calibrate design parameters and use user-specified prior to calculate operating characteristics.