Supplemental Digital Content 1. Step-by-step Details of the Healthy Control Selection Algorithm System

Control Selection Algorithm

1. Calculate expected # of newborns enrolled in each calendar month - using monthly proportional distribution of births from previous live birth data from site
   *Expected newborns enrolled in each calendar month=Live births in month * n / Total live births*
2. Calculate expected # of controls in each calendar month - using monthly proportional distribution of births from previous live birth data from site
   Expected controls in each calendar month=Live births in month * 400/ *Total live births*
3. Calculate base control selection probability *b* from total projected newborn enrollment in site *n* and required controls (*400*), equally distributed to the 10 scheduled visits
   $bp_k=(400/n) / 10$ [where k is calendar month]
4. Monthly adjustments of control selection probability (at 00:00 hrs on the 1st of every month): to ensure ~400 controls selected after 24 months, irrespective of total enrollment
   Month 1: use starting base probability bp_k
   Month 2 onwards: bp_k = [((expected # of controls in previous month - actual controls selected) + expected # of controls in current month)/ expected # of neonates' enrollment for that month] / 10
5. Calculate the % of cases enrolled in each visit slot in last month (moving 30 days)
   c_i = total cases enrolled in last 30 days for visit *i* /total neonates enrolled as of previous day (n)
6. Standardize the probability of a case occurring for each visit slot
   $sc_i = c_i * 10$ / sum of c_i across all visits
7. Calculate the adjusted control selection probability for each visit slot for each calendar month
   $ap_{ki}= bp_k * sc_i$
8. Random selection of controls:
   - Multiply ap_{ki} for each visit slot by 100 000
   - Calculate cumulative total of ap_{ki} x 100 000 across all 10 scheduled visits
   - For every newborn now enrolled, generate a random number (between 1 and 100 000), and check whether that random number systematically falls in a specific age/visit slot, e.g., if the cumulative total for visits 20 and 27 are 12 400 and 12 800 and the random number is 12 672, then this newborn will be selected as a control for day 27.
   - If the random number is higher than the cumulative total after visit 59, then the newborn is not selected as a control.