Asthma incidence module

- Input: sex, age, calendar year (cal_year), the cumulated number of antibiotic drug doses (CABE)
- We used a logistic regression model to determine whether an agent gets asthma. The parameter estimates were obtained using the asthma incidence rates provided by SickKids, Toronto, Ontario, Canada (here is the link).
- An estimate of the effect of antibiotic drug use was extracted from Patrick, et al., Lancet Respiratory, 2020. We assume that the effect is only present for age < 11 years.
- Here is the equation for agent i:

$$logit(p_i) = \beta_{0,i} + \beta_{sex} \times sex + \beta_{age} \times age + \beta_{sex,age} \times (sex * age) + \\ \beta_{cal\_year} \times cal\_year + \beta_{sex,cal\_year} \times sex * cal\_year + \beta_{CABE} \times (CABE * \mathbf{1}[age < 11]),$$

where $\beta_{0,i} \sim Normal(\mu_0, \sigma_0^2)$.