Defining the geographical area of interest

Define geographical origin and destination location boundaries in country A and country B

Estimating malaria prevalence per location

Calculate mean population-weighted PPR for each location in country A using PPR endemicity (Gething et al 2011) and population distribution (www.afripop.org) maps

Calculate mean population-weighted PPR for each age group in each location in country A using mathematical models (Smith et al 2007)

Categorizing and estimating relevant HPM flows between locations

Resident of country A travelling to country B

Residents of country B travelling to country A and back to country B

Estimate origin-destination HPM between locations in A and B using survey data

Mathematical models to estimate infection acquisition

Convert PPR to EIR using mathematical models (Smith et al 2010)

Convert EIR to Probability of infection (with time spent in location in country A using mathematical models (Le Menach et al 2011)

Estimating imported infections

Estimate HPM flow per age group per location in country A * population-weighted PPR for location in country A

Estimate HPM flow per age group per location in country A * Probability of infection per person

Estimate number of imported infections per receiving location in country B

†Human population movement (HPM) between locations can be obtained from cross-border survey data [56]. For example, travel history data may be obtained for residents sampled in each location.

*Using the probability of infection acquisition per person and migrant flows, the total number of imported infections/1000 of the receiving population can be estimated; a metric useful for strategic control and elimination planning.