expected number of cases of meningococcal meningitis in a developing country (Kenya). METHODS: We constructed a simulation model of the spread of meningitis and the effects of intervention strategies with data from peer-reviewed literature. The effectiveness of each intervention strategy was measured in terms of the expected annual number of cases of meningococcal meningitis prevented, relative to a “do nothing” strategy. Each person in a population of 10,000 was modeled daily as a distinct entity with an array of personal and demographic attributes. This approach captured the population heterogeneity and allowed modeling person-to-person interactions. Modeling population members as distinct entities also allowed us to direct intervention strategies toward at-risk individuals. Simulations using 100 different seeds, representing unique starting years were performed. Intervention strategies were: 1) vaccinating 6-year olds entering school; 2) vaccinating persons ages three to fifteen years (the most at-risk population); and 3) providing chemoprophylaxis (antibiotics for short-term protection against invasive cases of the disease) to family members of meningococcal meningitis patients. Vaccination provides protection for a specified period of time (2 years by default), while chemoprophylaxis is protecting only during the course of the drug. A force-of-infection function representing the probability that a person exposed to a carrier becomes infected allows modeling of seasonal variation. RESULTS: Average annual number of cases without treatment was 29.54. Strategy 1 reduced expected annual cases by 4.91 (p < 0.01), strategy 2 by 16.91 (p < 0.01), and strategy 3 by 1.21 (NS). CONCLUSIONS: The strategy of vaccinating only six-year-old children and the strategy of vaccinating persons ages three to fifteen years both significantly reduced the number of invasive cases. The strategy of giving chemoprophylaxis to family members of meningococcal meningitis patients did not significantly reduce the number of invasive cases.