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Epidemics in Households of Adults and Children

Abstract

Various mathematical models of the spread of infectious disease assume that the population is made of one single community which mixes homogeneously. Such an assumption will quite often be invalid as some populations can consist of *groups* of individuals, such as households or schools. Furthermore, households can consist of many different types of people. The most common difference between people is their age. It is quite common for a disease to infect children with greater ease than adults, while the effect a disease has on children can also be much more severe. The elderly could form a third class of individual as well, as the infection rate and severity of the disease for the elderly also differs than that of adults. The model presented in this talk will consider households consisting of both adults and children and discuss the effect children have on various quantities such as the threshold for invasion, the early growth rate, the household offspring distribution and the final size distribution.