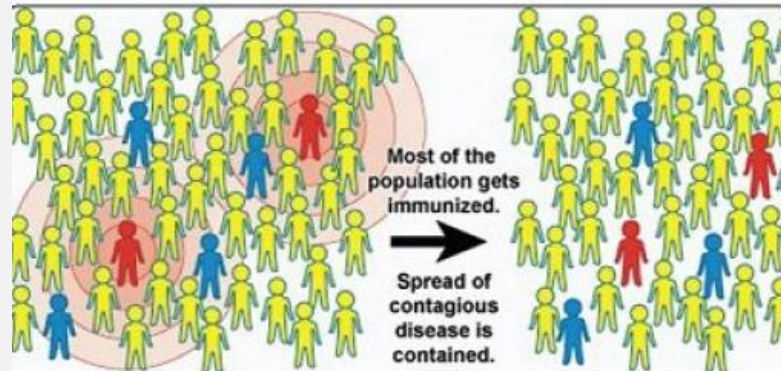
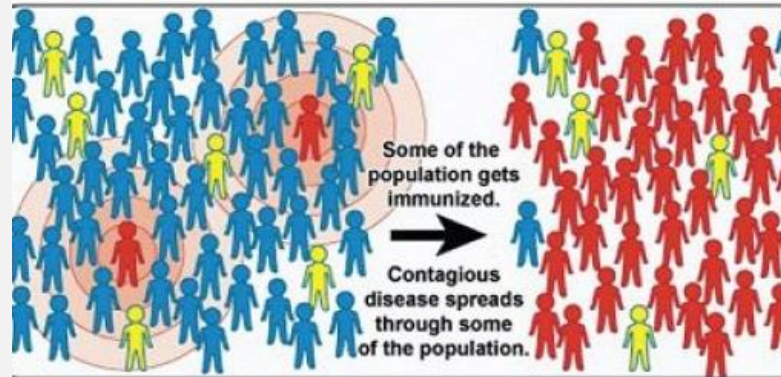
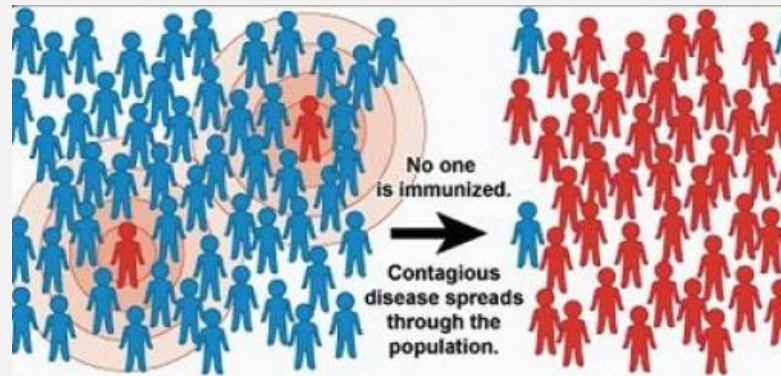


Herd immunity

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Vaccination acts as a sort of firebreak or firewall in the spread of the disease, slowing or preventing further transmission of the disease to others. Unvaccinated individuals are indirectly protected by vaccinated individuals, as the latter will not contract and transmit the disease between infected and susceptible individuals.



- ✓ The proportion of immune individuals in a population above which a disease may no longer persist is the herd immunity threshold. Its value varies with the virulence of the disease, the efficacy of the vaccine, and the contact parameter for the population.
- ✓ Indirect effect of 'herd immunity':
 - Lower the number of susceptible
 - Lower likelihood for spreading
 - Impact on carriership as well as on number of infected
 - Lower exposure



Estimated herd immunity threshold for vaccine preventable diseases

Disease	Transmission	R_0	Herd immunity threshold
Diphtheria	Saliva	6-7	85%
Measles	Airborne	12-18	83-94%
Mumps	Airborne/droplet	4-7	75-86%
Pertussis	Airborne/droplet	12-17	92-94%
Polio	Fecal-oral	5-7	80-86%
Rubella	Airborne/droplet	5-7	80-85%
Smallpox	Social contact	6-7	83-85%

R_0 is the basic reproduction number, or the average number of secondary infectious cases that are produced by a single index case in completely susceptible population.

