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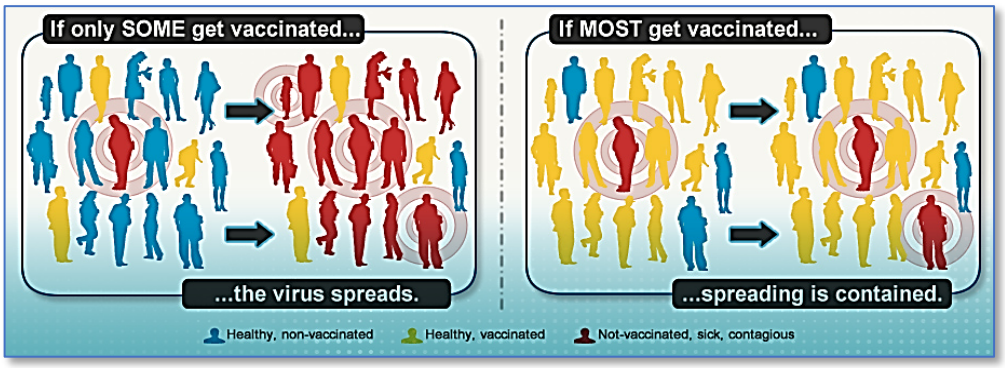
Building Community Resiliency Against Vaccine-Preventable Diseases

Communities looking to build resilience against common infectious diseases can increase herd immunity by encouraging vaccinations for preventable diseases and addressing vaccine hesitancy spread through mis- and disinformation. Herd immunity occurs when a large percentage of individuals in a community—such as schools and offices—are immunized against vaccine-preventable contagious diseases.

Vaccinations can be effective in preventing outbreaks of infectious diseases such as measles, whooping cough (pertussis), and seasonal influenza[1]. In 2019, the United States experienced the largest number of reported measles cases since 1992, with the majority of cases among people who were not vaccinated. The United States also endured a severe 2017-2018 influenza season with higher rates of outpatient visits and hospitalizations compared with recent seasons. The 2017-2018 influenza vaccine is estimated to have reduced overall risk of having to seek medical care by 40 percent, according to the Centers for Disease Control and Prevention.



Source: Centers for Disease Control and Prevention

- Herd immunity becomes most protective when vaccination rates in a population are high—that is a 93 to 95 percent vaccination rate for childhood vaccine-preventable diseases such as measles and a 95 percent rate for whooping cough. Seasonal influenza prevention in adults requires at least a 70 percent vaccination rate.[2]
- Herd immunity also better protects vulnerable people from vaccine-preventable diseases, creating resiliency in communities. Vulnerable people include infants too young to be vaccinated, the elderly, people with some serious allergies, and those with weakened or failing immune systems due to cancer, HIV/AIDS, type 1 diabetes, or other health conditions.

[1] Not all vaccine-preventable diseases are reviewed in this bulletin. Vaccinations for measles are commonly referred to as the Measles, Mumps and Rubella (MMR) vaccination. Only references to measles are presented in this bulletin.
[2] Immunization rates for vaccination-preventable diseases in all age groups can be found through the Office of Disease Prevention and Health Promotion.

The District of Columbia, Maryland, and Virginia's vaccination rates for childhood vaccine-preventable diseases—such as measles and whooping cough—are higher than the level of vaccination rates for influenza in adults. For example, in DC vaccination rates for adults aged 18 to 64 years was less than 40 percent during the 2016-2017 influenza season. This indicates there was a lower herd immunity for influenza. Adults can contribute to the resiliency of their communities by getting an influenza vaccine anytime during the influenza season, which generally runs from October to May.

	Childhood MMR Vaccination Rate	Adult Influenza Vaccination Rate
DC	87%-93% (Rates for the 2018-19 school season for all age groups)	39% (adults 18-64) 65% (adults over 65) (2016-17 influenza season)

Source: Washington Post (Childhood MMR), and Centers for Disease Control and Prevention (Adult Influenza)

	Kindergarten MMR Vaccination Rate	Adult Influenza Vaccination Rate
MD	>95% (2018-19 school season)	47% (adults 18-64) 72% (adults over 65) (2018-19 influenza season)
VA	95% (2018-19 school season)	45% (adults 18-64) 71% (adults over 65) (2018-19 influenza season)

Source: Centers for Disease Control and Prevention

Low vaccination rates indicate vaccine hesitancy—the reluctance or refusal to vaccinate despite the availability of vaccine— negatively impacting the community's herd immunity. A worldwide increase in vaccine hesitancy threatens to reverse progress made in tackling vaccine-preventable diseases. One factor contributing to vaccine hesitancy is the spread of mis- and disinformation. A research study of anti-vaccination tweets between July 2014 and September 2017 revealed that, in addition to real Twitter users posting pro- and anti-vaccination messaging, bots, Russian trolls, and content polluters (accounts that disseminate malware) were spreading mis- and disinformation[3], about vaccines.

- Twitter bots are accounts that automate content promotion or production. Vaccine proponents and opponents may disseminate messages using bot networks.
- Russian trolls are disinformation campaigns that are designed to amplify discord around divisive issues; the study indicated these campaigns in the United States gave equal attention to pro and anti-vaccination messaging.
- Content polluters use "clickbait" or divisive content to lure people to click on their tweets. These posts can contain links to malicious websites or files that, when accessed, download malware onto victims' computers.

Earlier this year, Twitter and Facebook tried to disrupt disinformation about vaccines. Twitter now displays a post entitled "know the facts" from the United States Department of Health and Human Services (HHS); when users search words related to 'vaccine' the HHS link pops up and directs them to reliable health information about vaccines.

Visit your local health care provider for specific vaccination information and guidance.

Additional Resources:

- Why Vaccinate?
- Influenza Vaccination Coverage Information (FluVaxView)
- School Year Vaccination Coverage Information (SchoolVaxView)

[3] NTIC's "How to Detect Disinformation Campaigns"