Allocation of influenza vaccines during a pandemic
Cristina Carias, Bradford Greening, Bishwa Adhikari, Danielle Moulia, Gabriel Rainisch, Jonathan Lehnert, Emily Kahn, Martin Meltzer, Samuel Graitcer

Background:
In a severe influenza pandemic, use of public health managed temporary mass vaccination clinics alone may be insufficient for the rapid vaccination of the general population.

Setting:
Health departments will need to leverage a variety of vaccination provider types, such as pharmacies, outpatient clinics, school vaccination sites, occupational health clinics and others. The variety and number of vaccination providers adds significant complexity to local pandemic planning and provider outreach efforts. Thus, planners need tools to understand how the vaccination capacity of each provider type and vaccine allocation decisions by provider types affect overall vaccination coverage and capacity.

Population:
Adult/Children

Project Description:
To assist public health programs in their pandemic preparedness and provider outreach efforts, we developed a spreadsheet-based model to estimate the speed (number of weeks required to vaccinate a certain share of the population) and efficiency (whether the allocation settings result in vaccine wastage) of vaccine allocation strategies being considered. The tool allows the user to specify the target population (number of individuals, share of children in the population), available vaccine doses, types of providers, numbers of each provider type and population groups they serve (children and/or adults), estimated weekly vaccination capacity for each provider type, and vaccination allocation over time to each provider type. Based on these inputs, the tool provides a graphic display of how various provider allocation strategies meet (or not) desired vaccination coverage levels for the target population.

Results/Lessons Learned:
This tool may be useful for public health leaders for making pre-pandemic decisions about how to prioritize pre-pandemic resources and staff time for provider outreach for a vaccination campaign. This tool can also be utilized by local planners and by state and local authorities to understand current pandemic vaccination program readiness in their respective jurisdictions.
Use of the San Diego Immunization Registry (SDIR) to Facilitate Mass Vaccination Among Inmates During A Hepatitis A Outbreak in San Diego County: March – November 2017
Danelle Wallace, Catherine Blaser, Sayone Thihalolipavan, Eric McDonald, Melissa Thun, Jeffrey Johnson, Karen Waters-Montijo

Background:
In March 2017, the County of San Diego Health and Human Services Agency (HHSA) noted an increase above baseline reporting of Hepatitis A cases. The epidemiology of the cases beginning in late November 2016 shifted from primarily being associated with international travel prior to being related to homelessness and illicit (intravenous and non-intravenous) drug use. In response to the determined outbreak, increased public health efforts were undertaken to protect those at-risk, including mass vaccination clinics, education and outreach, and sanitation opportunities. The County Public Health Officer declared a local Health Emergency due to the outbreak on September 1, 2017.

Setting:
Due to the populations primarily affected, one of the vaccination efforts targeted incarcerated individuals among the six detention/jail facilities in San Diego County which typically houses about 5,700 inmates.

Population:
(combined with Setting section)

Project Description:
HHSA worked with the jail administrators to conduct mass vaccinations in the adult jails/detention center facilities. Lists of inmates were electronically queried against San Diego Immunization Registry (SDIR) to assess individual vaccination status. After an initial comparison of 6,069 inmates, the lists were sent weekly to SDIR staff for update prior to immunization events. In addition, upon inmate intake processing, immunization status was also checked in SDIR.

Results/Lessons Learned:
Of the initial 6,069 list of inmates sent to SDIR for matching 2 months into the outbreak, 3,237 (53%) were found to have Hepatitis A vaccination records. The remaining 2,832 (47%) as well as incoming inmates were offered the vaccination. From March through November, there were 6,824 Hepatitis A vaccinations administered in the jails/detentions facilities. Immunization Information Systems (IIS) may be used in Public Health emergencies to assist with mass vaccination campaigns in targeting at-risk individuals and preventing unnecessary vaccinations. In this case, the Hepatitis A outbreak provided an opportunity to use the local IIS to target an at-risk population.
**Immunization Information Systems**  
**Title:** Can forecasting improve vaccine uptake during an outbreak?  
Nkenge Jones-Jack, Loren Rodgers, Jessica MacNeil, Sarah Meyer, Karen Kirtland

**Background:** Meningococcal disease is a serious illness, caused by *Neisseria meningitidis*, that can unexpectedly strike healthy individuals, sometimes causing long-term or fatal outcomes. Adolescents and young adults are at increased risk for meningococcal disease, with the majority of infections in this age group due to serogroup B. Two serogroup B meningococcal (MenB) vaccines are licensed in the United States, Trumenba (MenB-FHbp) and Bexsero (MenB-4C). In June 2015, the Advisory Committee on Immunization Practices (ACIP) voted to recommend that adolescents and young adults aged 16 to 23 years may receive MenB vaccine based on individual clinical decision making (i.e., category B recommendation). Since this was the first “large scale” category B recommendation among adolescents and young adults made by ACIP, uptake of the vaccine is uncertain and warrants surveillance. For the purposes of this project, timely assessment of MenB vaccine uptake was monitored using IIS Sentinel Site Project data for adolescents 16 to 18 years of age.

**Population:** Adolescents

**Project Description:** Data analyzed from six IIS Sentinel Sites (Michigan, Minnesota, New York City, North Dakota, six counties in Oregon, and Wisconsin) was used to assess MenB vaccine uptake and vaccination coverage estimates between October 2015 and December 2017 among adolescents ages 16 through 18 years. These Sentinel Sites represent approximately 10% of the United States population, including areas where MenB outbreaks occurred and mass vaccination campaigns were implemented. A survey was also conducted among Sentinel Site Project staff to further assess factors that might have influenced uptake.

**Results/Lessons Learned:** Wide variations in vaccine uptake were observed across IIS sites throughout the study period. At the beginning of the study, coverage estimates for one dose of any MenB vaccine ranged from 0.06% to 1.4% across Sentinel Sites, and increased to a range of 4.1% to 14.8% by the end of the study. Dose completion was greater for Bexsero among Sentinel Sites, increasing from 0% to 7%, compared to Trumenba (0% to 0.3%, respectively) over the same time period. Survey results identified sites with the most aggressive forecasting strategy as having the highest coverage estimates. Uptake of the MenB vaccine is steadily increasing, but overall usage is low and varies substantially between sites. Vaccine forecasting may influence dose initiation and series completion more than other factors (e.g., outbreaks, vaccine shortages); however, further study is warranted.