"Influenza Vaccine Effectiveness among Children 6 to 59 Months of Age during Two Influenza Seasons: A Case Cohort Study" by Peter Szilagyi et al. *Archives of Pediatrics and Adolescent Medicine*. 2008;162[10]:943-951.

Background:
This study, conducted by Peter Szilagyi et al. (2008) and funded by the Centers for Disease Control and Prevention (CDC), examined the ability of the influenza vaccine to prevent hospitalizations and reduce physician visits for flu in children during the 2003-04 and 2004-05 flu seasons, when there was a sub-optimal match between the flu vaccine and predominant circulating strains in the United States.

This study involved 414 children aged younger than 5 years who lived in 3 counties and developed influenza during the 2003-04 and 2004-05 seasons. Of these children, 245 were seen in hospitals or emergency departments and 169 were seen in outpatient practices. Their vaccination status was compared with that of more than 5,000 children from the same three counties who did not have flu during those seasons.

Results did not demonstrate significant flu vaccine effectiveness in children for either of the seasons after adjusting for county, sex, insurance, chronic conditions recommended for influenza vaccination, and timing of influenza vaccination. Vaccine effectiveness estimates ranged from 7-52% across settings and seasons for fully vaccinated 6- to 59-months-old children. Although the effectiveness estimates suggested a benefit, the estimates were not statistically significant.

Researchers concluded that the sub-optimal match between the flu vaccine and circulating strains during the seasons studied may have contributed to lower vaccine effectiveness. No benefit was found for partial vaccination.

Issues for Consideration

- This study may cause some uncertainty or confusion among parents about whether their child should get an influenza immunization. That's understandable. We want our flu vaccines to provide the highest level of protection every year, and it's disappointing when that doesn't happen.
- There are three very good reasons for parents to get their child immunized. One, the information we have right now shows there is a good match between this year's flu vaccine and the viruses that are causing illness. When there's a good match, the vaccine protects many children from serious outcomes like hospitalization. Two, other studies have shown flu vaccination does protect young children from influenza. And three, because influenza can cause serious illness as well as death, it's smart to take all the steps possible to protect children from flu—and that includes annual immunization.
- Every year, influenza causes a substantial number of emergency room visits, outpatient clinic visits and hospitalizations involving U.S. children age 6 to 59 months olds.

- The information we have at this point about influenza indicates this year's influenza vaccine is a good match when it comes to the flu viruses that are causing illness.
- It's also important that parents assure their children are FULLY vaccinated against flu—which means a child needs two doses of vaccine if they are under 9 years old and this is the first year they are getting the influenza vaccination. If children who are under 9 years old got 2 doses last season, or one dose in some other year, they only need one dose this year. Children 9 or older only need 1 dose each year.

- It's important to note that this was a small study, with low vaccination rates among the participants. These limitations make it difficult to assess vaccine effectiveness.
- It is especially difficult to determine vaccine effectiveness in years such as those in this study (2003-04 and 2004-05), where there was a sub-optimal match between the flu vaccine and circulating strains.
- Every year is different when it comes to influenza and influenza vaccine. Each year, there are different flu viruses circulating and causing illness, and in an effort to match up against those viruses, the strains in the vaccine also often differ from year to year.
- How well the vaccine viruses match the viruses that are causing most of the illness makes a difference when it comes to how well the vaccine protects. If our predictions, made months in advance, are good ones—and the vaccine is well matched—then the protection from the vaccine is substantial (e.g., 85-90 percent effectiveness).
- The study highlights the challenges posed by influenza – each year, many strains are circulating and causing illness, and the vaccine's ability to prevent or reduce illness depends on how well it matches the circulating strains.
- Other studies have shown flu vaccination does help protect young children from influenza.
- When there is a good match between the influenza vaccine and the flu viruses that are causing illness children should receive substantial protection against serious outcomes like hospitalization. We also know that annual influenza vaccination is the best way to reduce the chances that a child will get influenza this winter.
- It's important to do everything we can to protect young children from influenza. Every year, influenza causes serious illness as well as deaths in children. Influenza vaccine is the best way to protect children.
- Scientists strive for the best possible flu vaccine every year, but predicting which viruses will circulate during the influenza season is very challenging. This study reaffirms the need for continued efforts to improve influenza vaccines and the consistency of their effectiveness.