Several studies have shown the important burden of influenza virus disease in children, both in hospital and outpatient settings. Influenza-associated deaths in children have also been reported and are highest in children younger than 6 months.

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The recent emergence of a pandemic novel influenza H1N1 strain (2009 H1N1) and its rapid worldwide spread have had an important effect on children. In Argentina, when compared with seasonal influenza in the previous year, hospitalization rates for children infected with 2009 H1N1 were two-fold higher, with the overall mortality rate 10-fold higher than that reported in the previous influenza season. Rates of hospitalization and death were the highest in children younger than 1 year.

Immunization is the most effective preventive measure to reduce influenza virus infection and its related morbidity and mortality. Two licensed influenza vaccines are available for children: trivalent inactivated vaccine (TIV) and live attenuated influenza vaccine (LAIV). Both have been demonstrated to be efficacious for the prevention of clinical and laboratory-confirmed seasonal influenza in a number of clinical trials. TIV has an excellent safety profile, with the most common adverse events being local pain and tenderness at the injection site. TIV efficacy has been shown to be greater in older children, but vaccine efficacy for laboratory-confirmed influenza after two doses of inactivated vaccine in children younger than 9 years has been shown to be 63%.

LAIV have been shown to be more effective than trivalent inactivated vaccines for the prevention of laboratory-confirmed influenza in younger children, but wheezing was also more common in this group. For this reason, LAIV is recommended for children older than 2 years and in children with no previous history of wheezing. Although children younger than 6 months of age are at the highest risk for influenza-associated hospitalization, no influenza vaccines are approved for this population.

Influenza vaccine recommendations in the United States have changed considerably over the past decade. In 2004, a universal recommendation was made for all children 6 to 23 months to receive influenza vaccine. In 2006, these recommendations were extended to all children 24 to 59 months, and finally, in 2008, the recommendation was extended to all children 6 months to 18 years. Two doses separated by 1 month are recommended for the first vaccination in previously unvaccinated children 6 months to 9 years. Only one annual dose is recommended for children aged 9 to 18 years.

The threat of an influenza pandemic and the desire to generate more immunogenic influenza vaccines has stimulated the evaluation of a number of new vaccine adjuvants. Antibody titers are significantly higher after adjuvanted TIV vaccines when compared with TIV alone. However, mild, transient local reactions are seen more often. Live attenuated and inactivated 2009 pandemic influenza A (H1N1) monovalent vaccines were approved by the Food and Drug Administration (FDA) to be used in the prevention of influenza caused by the novel H1N1 virus. None of the vaccines approved in the United States contain adjuvants. These vaccines have been shown to be safe and immunogenic.

The increased use of either inactivated or live influenza vaccines directed at seasonal and pandemic strains has the potential to reduce the influenza disease burden in children and to potentially extend herd protection to those who are unvaccinated.