This issue of Pediatric Annals includes a series of (if I may say so myself) really excellent articles and reviews on highly important immunization topics, organized by my colleague Tina Q. Tan, MD, from Chicago. These topics include an examination of the vaccine pipeline, the importance of adult and specifically maternal immunizations, and developments in meningococcal, influenza, and potential dengue vaccines.

Even if the general public (or at least subsets of that public) refuses to acknowledge that vaccination against infectious diseases has saved tens or hundreds of millions of lives, we child care providers understand the importance of continued successful vaccine programs. The public truly doesn’t comprehend that even transiently sub-optimal rates of immunization against vaccine-preventable infections can lead to outbreaks. Three very recent reports from three highly industrialized countries highlight this very clearly. The countries are France, Canada, and Japan.

GLOBAL OUTBREAKS

In France, more than 20,000 cases of measles have been documented from 2008 to 2011, with adolescents and young adults accounting for more than half of the cases but with the highest incidence rate in children younger than age 1 year (135/100,000 infants). During this period, almost 5,000 patients were hospitalized, including 1,023 for severe pneumonia and 27 for encephalitis/myelitis. Ten patients died. In 2006 and 2007, only 40 and 44 measles cases had been identified respectively, and the incidence was below the World Health Organization threshold for measles elimination (0.1 cases/100,000). More than 80% of the 2008 to 2011 cases have occurred in unvaccinated individuals; it highlights the presence of substantial pockets of susceptible people. A national serosurvey in 2009 to 2010 in France showed that 9% of 20- to 29-year-olds were measles susceptible, but publicity campaigns were unsuccessful in achieving higher immunization rates.1

In addition, the largest North American measles epidemic in over a decade was recently reported from Quebec. This 2011 outbreak involved 21 measles importations into Quebec with 725 measles cases documented, for an overall incidence of 9.1 per 100,000 population. The highest incidence was in 12- to 17-year-olds (75.6 per 100,000), and this age group comprised 80% of the cases. At least 22% of cases had received two doses of measles-containing vaccine, with milder illness and lower risk of hospitalization compared with those unvaccinated or single-dose recipients.2 These two reports remind us two-dose measles vaccine coverage rates of at least 94%-95% are necessary to prevent outbreaks of measles, but that even two-dose recipients may occasionally be vulnerable in an epidemic setting, for example, if their first dose was at 12 months rather than at 15 months of age.

The third report may be even more surprising. From Jan. 1 to May 1, 2013, 5,442 cases of rubella were documented in Japan, with 77% occurring in adult males. Tragically, 10 cases of congenital rubella were also reported from Oct. 2012 to May 1, 2013. Record low levels of rubella cases in Japan were observed until 2010, until a few outbreaks among adult males were noted in 2011 and then cases skyrocketed in 2012 and 2013. In 1976, Japan introduced rubella vaccine for girls only in junior high school and then in 1989 MMR for all children ages 12 to 72 months. However, a large population of adult males remains susceptible, as 68% of the recently reported cases in males 20 to 39 years old were not included in the initial rubella vaccination program.3

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An avid stamp collector, Dr. Shulman chooses relevant stamps from his personal collection to accompany his column each month.

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Immunizations 2013

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On a much more positive note, the success of the pneumococcal vaccination program in the United States in the first 10 years after the introduction of 7-valent pneumococcal conjugate vaccine (PCV7) was highlighted very recently. Compared with the pre-PCV7 period, annual hospitalization rates for pneumonia in those younger than age 2 years declined by 551 per 100,000 children (47,000 fewer hospitalizations annually), and the rate for those age 85 years and older declined by 1,300 per 100,000 (73,000 fewer hospitalizations annually). Significant reductions were also seen in those age 18 to 39 years, age 65 to 74 years, and age 75 to 84 years. Overall, there was an age-adjusted annual reduction of 54.8 per 100,000 (resulting in 168,000 fewer pneumonia hospitalizations annually). This remarkable success story, with infant immunization with PCV7 being associated with sustained reductions in pneumonia hospitalization rates even in the elderly, deserves increased publicity.

VACCINE INNOVATORS

The stamps I have selected to present here all have to do with vaccination and/or immunology. The yellow Thai stamp honors Rotary International for its outstanding commitment to the eradication of polio, with more than 25 years of leadership in the Global Polio Eradication Initiative and providing more than $1 billion in support. The brown and white stamp from Dominica shows Sir Frank Macfarlane Burnet, MD (1899-1985), who shared the Nobel Prize in Physiology or Medicine in 1960 for basic immunologic studies related to the theory of clonal selection, which is the basis of the antigenic specificity of immune responses. The greenish stamp from Transkei shows Jonas Salk, MD (1914-1995), who developed the first safe and effective polio vaccine, the inactivated injectable Salk vaccine that was associated with a drop from an average of 45,000 cases per year in the US to fewer than 1,000 by 1962. Lastly is the strip of three black US stamps issued in 2008 to honor Albert B. Sabin, MD (1906-1993), who developed the live attenuated oral polio vaccine.

REFERENCES