

Food Program for Women, Infants and Children, housing programs, etc. Many of the children who were victims of the 1989-1991 measles epidemics were from families that had contact with such programs.

New and innovative collaborative strategies involving the medical, welfare, and social services communities are needed to ensure that such children do receive the full benefits of immunization, particularly where they do not have access to routine medical care. Many welfare and social service agencies already have contact with these children, and should be encouraged to include or expand information and education on the need for immunization in their regular programs. For example, agencies that offer parenting education and child abuse prevention programs could cover immunization in their regular curricula; self-sufficiency and income-support programs such as JOBS and Aid to Families with Dependent Children could include information on immunization in their case management and life-skills components; educational initiatives on nutrition and health, such as those of the Department of Agriculture's Cooperative Extension Service, could include information on immunization; and local agencies such as Community Action Agencies, Head Start programs, and public health clinics could train and hire local residents to work as liaison workers linking the medical establishment and the children who need to be immunized. Furthermore, doctors and public health nurses could be stationed on site at Community Action Agencies, welfare offices, etc. to provide immunizations when families arrive for their regular services. Initiatives have been started in many of the areas noted above and more will be stimulated in the near future by the National Vaccine Program Office.

The proper immunization of all children is essential if the United States is to meet its immunization targets. Even more critical is the need to get children at risk of underimmunization into the health system through the Childhood Immunization Initiative, and to keep them there so that they can continue to receive general preventive health care through regular health care providers.

## **ADULT IMMUNIZATION**

Vaccines against influenza, pneumococcal pneumonia, hepatitis B, diphtheria, tetanus, measles, mumps, and rubella can be used to protect all adults from these diseases. Additionally, vaccines against poliomyelitis, rabies, typhoid, yellow fever, meningococcal meningitis, and cholera are available for use in adults in special circumstances (as are some vaccines used only in the military).

Nevertheless, too many adults in the United States continue to be struck down by vaccine-preventable diseases. Each year, 50,000 to 70,000 adults die of influenza, pneumococcal pneumonia, and hepatitis B. The overall cost to society of these and other vaccine-preventable diseases of adults exceeds \$10 billion each year, yet adult vaccines continue to be not widely used (National Vaccine Advisory Committee, 1994b). Even though it is estimated that 90 percent of influenza deaths occur in those over 65 years of age, vaccination coverage for this population group is estimated at only 41 percent. For pneumococcal vaccination, the coverage is around 20 percent. Many adults remain susceptible to other vaccine-preventable diseases because they have not been immunized earlier in life (see table 2).

The reasons for this situation include (1) limited appreciation of the importance of adult vaccine-preventable diseases; (2) doubts about the safety and efficacy of adult vaccines; (3) the complexity of selective, rather than universal, adult vaccination; (4) different target groups for the various adult vaccines; (5) too few organized programs in either the public or private sector to deliver adult vaccines; and (6) neglect of the reimbursement system for adult immunization.

The adult population group that consistently receives the highest level of protection against vaccine-preventable diseases consists of members of the armed forces. Upon enlistment, all military personnel receive immunizations for diphtheria, tetanus, polio, measles, mumps, rubella, adenovirus types 4 and 7, and groups A, C, Y, and W135 meningococcal meningitis. Immunization for influenza is required annually. Other vaccines, such as those for typhoid, hepatitis B, yellow fever, and rabies, are provided as needed depending on occupation, specialty, and location of military duty.