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## Immunization Services in Rural Areas

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Although immunization rates have improved overall for children and adults in recent years, substantial problems remain in providing immunization services. Immunization delivery may be a particular problem in rural areas, where insufficient primary medical care and public health services, higher rates of poverty, and barriers such as transportation difficulties may impede access to immunizations and other basic health services.<sup>1,2</sup> To assess the extent of immunization problems in non-metropolitan areas (counties with no urban population greater than 50,000), we conducted analyses of the 1993 National Health Interview Survey (NHIS), an ongoing survey sponsored by the National Center for Health Statistics. The 1993 NHIS asked parents to report on the immunization status of one child in their family, and asked adults to report whether they had received an influenza immunization in the previous year and whether they had ever received pneumococcal vaccine. Immunization rates derived from such surveys probably overestimate immunization rates to some extent, since they are based on the self-reports of respondents.

In 1993, 44,978 households were interviewed for the core NHIS; 7323 responses were obtained for the childhood component and 21,028 for the adult immunization questions. Of these respondents, 22.5% resided in nonmetropolitan counties. As shown in the Table, nonmetropolitan respondents to the 1993 NHIS reported immunization rates comparable to, or slightly higher than, their more urban counterparts for the basic childhood immunization series, *Haemophilus B* immunization (HIB), and

both adult immunizations. Across all immunizations and age categories, immunization rates were lower than the goals set forth in *Healthy People 2000*<sup>3</sup>; this was particularly true for HIB immunization in children and pneumococcal immunization in adults. That the rate of immunization for HIB is lower than the rate for the "basic" series points out that incorporation of new vaccine recommendations may be slow in both urban and less urbanized settings. The rate of influenza and pneumococcal immunization among adults aged 50 to 64 years was substantially lower than the rate among adults aged 65 and older, probably because immunizations are recommended only for selected high-risk subpopulations with chronic diseases in this age group.

These findings highlight the need for continued efforts in health policy, public health practice, and primary care to improve immunization coverage in both urban and rural areas. Several policy issues are of particular importance in rural immunization efforts, among them, overlooked immunization opportunities, reimbursement by insurers, and effective linkage among a variety of health care providers.

### Missed Opportunities for Immunization

Immunization authorities have emphasized the need to avoid missed opportunities for immunization care. For children, strategies to improve immunization rates include providing multiple immunizations at the same visit and providing immunizations at visits for minor acute illnesses. For adults, clinicians have been urged to provide immunization at the time of hospital discharge or to use a recent hospitalization as a reminder to update immunization status.<sup>4</sup> Studies in both children and adults have demonstrated that substantial improvement in immunization rates can result from clinician use of computerized, office-based reminder systems and call-back systems that contact patients in need of vaccination.<sup>5-7</sup> Such systems have proven feasible in rural primary care practices.<sup>8,9</sup>

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TABLE

**Immunization Rates in Metropolitan versus Nonmetropolitan Areas, National Health Interview Survey, 1993**

Type of Immunization Service	Immunization Rate in MSA Counties*, %	Immunization Rate in Non-MSA Counties*, %	P Value
<b>Childhood immunizations</b>			
Up-to-date, aged 19 to 35 months†	65.5	67.8	.31
Up-to-date, <i>Haemophilus B</i> ‡	15.6	22.7	.03
<b>Adult immunizations</b>			
Influenza vaccine			
Aged 50 to 64 years	22.3	25.1	.09
Aged 65+ years	51.8	52.5	.67
<b>Pneumococcal vaccine</b>			
Aged 50 to 64 years	9.3	11.4	.09
Aged 65+ years	27.9	28.9	.53

\*Metropolitan statistical areas (MSAs) are defined as counties having a city or urbanized area with a population of more than 50,000. Non-MSAs are counties with no urbanized area of 50,000 or more.

†Defined as four diphtheria/pertussis/tetanus, three oral polio, and one measles/mumps/rubella vaccine before 36 months of age.

‡Defined as four doses of *Haemophilus* type B vaccine before 36 months of age.

several concurrent Medicare policies, such as the approval of "roster billing," which allowed multiple immunization claims to be submitted on a single form, the absence of a requirement that the vaccine be administered under the direct supervision of a physician, and the reimbursement of the cost of the vaccine itself and of vaccine administration. Although Medicare benefits have been paid for pneumococcal vaccine since 1981, pneumococcal immunization rates have consistently lagged behind influenza immunization, in part because of the ongoing debate about the efficacy of the vaccine in older or immunocompromised adults,<sup>11</sup> but also because of the lack of

### Reimbursement for Immunizations

Despite the cost-effectiveness of childhood and adult immunizations, not all private insurance policies provide reimbursement for immunization care. Although many states now require private insurance plans to cover basic immunization services, the federal Employees Retirement Income Security Act (ERISA) creates immunity from state oversight for self-insured health plans, which thus cannot be required to provide immunization coverage. The effect of the ERISA exemption on childhood immunizations in rural areas has not been assessed. Incorporation of childhood immunization status as a quality standard in Health Plan Employer Data and Information Set (HEDIS) guidelines for managed care organizations has increased the attention of many insurance plans to strategies for improving childhood immunizations.<sup>10</sup> Because of the lower level of managed care in rural areas, such strategies may have limited impact on rural immunization rates, however.

The recent sharp rise in influenza immunizations among the elderly since Medicare began coverage of the vaccine attests to the influence of the regulatory process on the immunization status of the population. This immunization success was facilitated by

roster billing, the requirement of a physician order for immunization, and the lack of reimbursement for vaccine administration.<sup>12</sup> Changes in reimbursement policies for pneumococcal vaccine to mirror successful influenza vaccine policies are being considered by Medicare; in particular, relaxation of the requirement of a physician order for pneumococcal vaccine may encourage pneumococcal immunization in rural areas with physician shortages.

The 1994 Vaccine For Children (VFC) initiative is a federal program designed to improve immunization levels by providing federally purchased vaccine to populations of children with no health insurance and those whose insurance policies do not cover immunizations. The VFC program could improve continuity of care in rural areas, since rural primary care clinicians have reported higher rates of referral to public health departments for immunizations than their urban counterparts.<sup>13</sup> This program was widely criticized for its costliness and perceived inefficiencies during implementation. The impact of this highly politicized program on immunization rates or continuity of care has not been assessed to this point, making the program vulnerable to elimination by Congress.

### Care Linkages in Rural Areas

In some rural states, creative collaborations have been established among private practices, community clinics, public health departments, and community service organizations to achieve immunization goals. In South Dakota, with a rural population of about 50%, the state's Department of Health initiated a major program to improve influenza and pneumococcal immunization. A statewide coalition of public health nurses, private physicians, health care organizations, and community groups advertised the need for immunization at the local level, distributed information packets to physicians, hospitals, nursing homes, pharmacies, and the 10 largest employers in the state, and conducted public awareness campaigns at health facilities and community organizations such as senior centers. In a phone assessment of immunization activities in rural areas, we have identified other innovative programs to improve immunizations that are taking place at the local or county level, "beneath the radar" of both the academic and public health establishments. As an example, home health agencies in some areas are providing immunizations to homebound rural elders both as a community service and as a marketing strategy. Rural public health officials in many locations report that primary care physicians are often not involved in these community efforts, though they usually provide immunizations in their own offices. Existing collaborations deserve evaluation so that successful programs can be more widely disseminated; efforts to involve rural physicians may well be critical to their success.

Although available data do not suggest that non-metropolitan or rural residents have lower immunization rates than their urban counterparts, immunization rates in rural areas still remain below federal goals for the year 2000. Some of the strategies to reach these goals, such as identification of opportunities to provide immunization in clinical settings and better use of reminder systems for patients and clinicians, are equally relevant to urban and rural physicians. The lack of health care providers in many rural areas may necessitate increasing collaboration in providing immunizations among clinicians, public health officials, and community organizations through programs tailored to the unique

needs of their communities. As with most attempts to improve the health of the public, no single solution is likely to resolve all the problems of immunization care in rural areas. Nevertheless, the increasing awareness of public health needs fostered by efforts such as *Healthy People 2000* is likely to serve as a catalyst for creative local immunization efforts. Rural family physicians have an opportunity to improve immunizations both by developing systems to increase the comprehensiveness of immunization delivery in their own offices, and by organizing immunization efforts in their communities.

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