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August 1, 1997

The Honorable Dale Bumpers
The Honorable Ron Wyden
United States Senate

The Honorable Scott Klug
House of Representatives

Subject: CDC's National Immunization Program: Methods Used to Identify Pockets of Underimmunized Children Not Evaluated

The Centers for Disease Control and Prevention (CDC) estimates that three-fourths of 2-year-old children in America are up-to-date for the basic series of childhood immunizations. However, some specific geographic areas and communities are at higher risk of disease outbreaks because they harbor concentrations of children who have not received timely immunizations.[1] The continued existence of such pockets of underimmunized children, sometimes called pockets of need, is evidenced by measles outbreaks in 1996 in Alaska and Utah that included young children.[2]

You asked us to determine what methods CDC uses to identify pockets of underimmunized preschool children and what is known about the effectiveness of methods in use. To answer these questions we interviewed CDC and state public health officials and other experts in the field; reviewed the relevant literature; and, in June and December 1996, conducted telephone surveys of state immunization program managers. We carried out our work in accordance

[1]Vaccines for Children: Reexamination of Program Goals and Implementation Needed to Ensure Vaccination (GAO/PEMD-95-22, June 15, 1995).

[2]"Measles Outbreak Among School-Aged Children—Juneau, Alaska, 1996," MMWR [Morbidity and Mortality Weekly Report], Centers for Disease Control and Prevention, Vol. 45, No. 36 (Sept. 13, 1996), pp. 777-80, and "Washington County Measles Outbreak Is Over," Utah Department of Health (Salt Lake City, Aug. 7, 1996).

with generally accepted government auditing standards and completed it in May 1997.

RESULTS IN BRIEF

CDC officials view identification of pockets of underimmunized children as a state responsibility rather than a federal one; therefore, CDC does not directly implement methods for identifying pockets of underimmunized 2-year-old children. CDC defines pockets of need as specific geographic areas within state or urban jurisdictions that contain large numbers of 2-year-old children who are either underimmunized or at risk of underimmunization. CDC's National Immunization Program instead focuses on increasing the overall immunization rate for the basic series and reducing disease. In fiscal year 1997 guidance for grant recipients, CDC, for the first time, directed states to develop plans for identifying pockets of need. At that time, CDC suggested two identification methods: (1) measuring immunization coverage rates directly or (2) using surrogate measures that may indicate low coverage rates.

We found that neither CDC nor the states have assessed how well these or other methods identify pockets of underimmunized children or children at risk for underimmunization, although some appraisals have been published about using these methods to measure or improve coverage rates. Nevertheless, almost every state is initiating a new activity, or continuing a previous one, to identify pockets of need. For example, 20 states are assessing immunization coverage rates of children receiving care in public health clinics as their primary method for identifying pockets; 15 other states are using survey techniques such as door-to-door surveys.

BACKGROUND

Since 1963, CDC has provided grants to state and local health agencies for planning, developing, and operating childhood immunization programs and, beginning in 1992, delivering vaccines. These grants for immunization programs and vaccines are intended to assist state and local health agencies in providing services, information, outreach and community mobilization programs, education and training, and disease surveillance and investigation. CDC's National Immunization Program now makes grants to each state and 28 urban areas. These grants are intended to implement each state's and area's own immunization action plan for preventing and controlling vaccine-preventable diseases. For fiscal year 1998, CDC anticipates spending approximately $287.8 million for the immunization grant program, commonly referred to as the 317

program, after section 317 of the Public Health Service Act (42 U.S.C. 247b), as amended, which authorizes project grants for preventive health services.[3]

In 1990, the Department of Health and Human Services (HHS) established immunization and disease reduction goals for the end of this decade. Two of these goals are immunizing at least 90 percent of children 2 years of age and younger with the appropriate basic immunization series and eliminating, or greatly reducing, indigenous cases of preventable diseases by the year 2000.[4] In 1997 congressional testimony, the Director of the National Immunization Program noted that to ensure that the national coverage goal is reached, pockets of need must be identified and activities targeted to improve coverage in the most hard-to-reach populations.[5]

One method CDC uses to estimate immunization coverage rates is the National Immunization Survey (NIS), a telephone household survey conducted by random-digit dialing and including some verification by provider records. According to NIS results for 1995, the national immunization coverage rate is 76 percent for the basic series; states' coverage rates range from 66 to 89 percent, with 38 states not statistically distinguishable for the NIS's national coverage

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[3]For fiscal year 1998, the Administration proposes to reduce the amount of state grants by $14.4 million because the states hold unobligated funds from awards in previous years.

[4]This basic series is the 4:3:1 series, where children receive four doses of diphtheria-tetanus-pertussis vaccine, three doses of poliovirus vaccine, and one dose of any measles-containing vaccine. For statistical purposes, CDC modified the objective and tracks children aged 19 to 35 months as 2-year-olds. For some limitations of this definition, see K.P. Goldstein and R.S. Daum, "Counting Immunisations," Lancet, Vol. 344, No. 8916 (1994), pp. 144-45, and V. Dietz and others, "Vaccination Coverage in the USA [Letter]," Lancet, Vol. 334, No. 8934 (1994), pp. 1439-40.

[5]W.A. Orenstein, "Statement before the Subcommittee on Public Health and Safety, Senate Committee on Labor and Human Resources, U.S. Senate," May 6, 1997.

rate;[6] and coverage rates for the 28 urban areas range from 62 to 87 percent.[7] In a recent report, we noted that the NIS survey may lend a false sense of security by obscuring the existence of substantial pockets of underimmunized children.[8] For example, a household survey of central and southeast Seattle found an immunization coverage rate of 57 percent, in contrast to the 79 percent reported by the NIS for the King County area incorporating Seattle.

The risk of outbreaks of vaccine-preventable diseases is highest where concentrations of nonimmunized or underimmunized children reside. In these geographic areas, the probability is higher that an infected child will come into contact with and infect a susceptible child. This situation contrasts to one in which an overall lower immunization rate occurs, but with susceptible children spread over a larger area. In those instances, a lesser public health threat exists because of the lower probability that an infected child will come in contact with and infect another susceptible child.

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[6]Our comparisons used the state and national percentage rates and confidence intervals published by CDC. We found 8 states higher and 4 states lower than the national rate. See "National, States, and Urban Area Vaccination Coverage Levels Among Children Aged 19-35 Months—United States, January-December 1995," MMWR, Vol. 46, No. 8 (Feb. 28, 1997), pp. 176-82.

[7]CDC also estimates national immunization rates using the National Health Interview Survey, a nationally representative, face-to-face household survey. This survey, last published in 1994, estimated that 73 percent of 2-year-old children are up-to-date on their basic series of vaccinations, 2 percent fewer than the comparable NIS estimate.

[8]For this and other limitations of the survey, see CDC's National Immunization Survey: Methodological Problems Limit Survey's Utility (GAO/PEMD-96-16, Sept. 19, 1996).

CDC RELIES ON STATES TO IDENTIFY POCKETS OF NEED

According to CDC officials, identifying pockets of underimmunized children is the responsibility of the states and therefore CDC does not, itself, identify them.[9] Furthermore, the Director of the National Immunization Program said, CDC immunization efforts should be directed toward improving overall immunization coverage rates in states and urban areas with low rates. In his view, a state with a low coverage rate throughout has more need than a state with a higher overall coverage rate even if the latter state has, within it, specific areas with low coverage rates. In general, CDC officials do not believe that focusing all efforts on pockets of need is a sufficient strategy to increase overall coverage rates.

Although CDC officials believe that focusing all efforts only on pockets of need is an insufficient strategy for improving overall immunization coverage rates, they consider identification and elimination of these concentrations as useful and necessary for meeting coverage goals. In August 1996, for fiscal year 1997, CDC added targeting pockets of need to its list of requirements for section 317 project grants.[10] CDC required each state and each of the 28 urban areas to include in its application a separate plan to identify geographic areas in which subpopulations are (1) at high risk for underimmunization or (2) underimmunized and at high risk for vaccine-preventable disease.[11] These

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[9]According to our discussion with Department of Health and Human Services (HHS) officials, HHS's statement on pockets of need, which follows, was in error: "For the first time in FY 1996, CDC also will be able to help States target resources to pockets of need because of the new National Immunization Survey" (HHS, Office of the Assistant Secretary for Management and Budget, U.S. Department of Health and Human Services: The Fiscal Year 1997 Budget (Washington, D.C.: Mar. 19, 1996), p. 28.

[10]Earlier, in September 1995, the Senate Committee on Appropriations directed CDC to develop and implement a strategy for identifying and targeting immunization resources for high-risk populations (see S. Rept. 145, 104th Cong., 1st sess., 1995, accompanying the fiscal 1996 HHS appropriation, p. 53). In comments responding to a draft of this correspondence, CDC stated that in most years since 1991, grant guidance discussed the need to address such populations.

[11]CDC uses a broad definition for pockets of need because different geographic regions might be faced with different problems.

geographic areas may consist of groupings of census tracts, distinct communities, or HHS-designated shortage areas for health providers. CDC pointed out that all states and the 28 urban areas are likely to include such pockets.

CDC's grant guidance said that to identify defined geographic areas, states should measure immunization coverage rates directly, using methods such as provider-based assessments, community-based household cluster surveys, random household telephone surveys, and birth certificate surveys. If coverage data from these survey methods are unavailable, CDC recommended using surrogate characteristics for demographic, sociological, or epidemiological measures, such as high proportion of racial and ethnic minority subpopulations, high poverty rate, low education status of parents, high population density, and high incidence of vaccine-preventable diseases.

During the current fiscal year, CDC has facilitated information sharing among a group of traditionally underserved urban areas where pockets of need probably exist.[12] In addition, CDC is supporting an immunization demonstration project in two Chicago public housing projects that it considers likely pockets of need.

STATES ARE IMPLEMENTING METHODS TO IDENTIFY POCKETS, BUT THEIR EFFECTIVENESS HAS NOT YET BEEN DETERMINED

Our survey of state immunization program managers in December 1996 found that states are using, or are beginning to use, a wide array of primary methods to identify pockets of underimmunized children or children at risk for underimmunization, including methods that CDC has recommended. In fact, most states were already engaged in attempts to identify pockets before CDC issued the grant guidance.[13] For the primary method of identifying pockets, we found that 20 states are using provider-based assessments of coverage rates for children who are seen in public health clinics and other public programs; 7 states are using retrospective school surveys; 6 states are using surrogate

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[12]In late 1996 and early 1997, from 11 of the urban areas with large numbers of underimmunized children, CDC convened two meetings of immunization program managers to share local plans for increasing immunization rates.

[13]In our June 1996 survey of state immunization program managers, 42 states were engaged in some activity to identify pockets of underimmunization. When we started our surveys, CDC did not have a definition, so we defined pockets of need to the managers as concentrations of preschool children in which immunization rates are much lower than the average in a state.

characteristics; 6 states are using immunization registries; 5 states are using birth certificate surveys; 3 states are using door-to-door surveys; and 3 states are using no method at all. Many state managers use several methods for identifying pockets of need, they said.[14] (See enclosure I for breakdown of the states and the methods used.)

The following is a brief description of the methods states are using to identify pockets of need:

- Provider assessments focus on improving the immunization coverage rates among 2-year-old children either attending public health clinics or enrolled in clinics serving clients of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Additionally, as the number of children receiving care in public health clinics dwindles, states are considering expanding their assessments to include private physician offices. Immunization program officials believe this method is effective in increasing overall coverage rates.

- Population surveys--such as door-to-door and face-to-face household surveys, as well as random household telephone surveys--are intended to measure immunization coverage rates in specific neighborhoods. This method also identifies specific underimmunized children. However, this method is labor intensive and may not work well in areas with a transient population.

  Follow-back surveys for birth certificates are another form of population survey. When doing these, surveyors select a sample of birth certificates for children born 2 years earlier, then--using available information such as the mother's name, telephone number, address at the time of childbirth, motor vehicle licensing records, and hospital and public health department records--trace and locate each child. After locating children, surveyors obtain the children's immunization histories. As with other population surveys, tracing children in transient family situations can be difficult and time-consuming.

- School surveys to determine, retrospectively, immunization status at age 2 are based on school record examinations of children who are entering kindergarten and first grade. Using these school records, public health

[14]We report here only the method that each state manager indicated is the primary method.

officials look backward to determine the immunization status of the children when they were younger, typically when they were 2 years old. Following trends of underimmunization, some states are recognizing some neighborhoods or school districts as persistent pockets of need.

- Surrogate characteristics are demographic, social, and epidemiological attributes thought to be associated with the presence of underimmunized children. These might include population density, race and ethnicity, income, or incidence of vaccine-preventable disease. After identifying geographic areas characterized by the chosen surrogates, public health officials would target interventions directed toward increasing the immunization coverage rate of children. However, other pockets exist, as evidenced by the measles outbreaks in Utah and Alaska, where the usual surrogate characteristics probably would not have helped to identify pockets of underimmunized children.

- Immunization registries track the immunization status of children from birth or their first encounter with a public or private provider that participates in registries. Registries make available to participating providers, by telephone or computer, current information on a child's immunization status, based on provider records of children residing in or seeking care in a defined geographic area. Registries are also used as reminder systems to notify parents and providers when immunizations are due.[15] However, the usefulness of these tools to identify pockets of underimmunization depends on the extent to which (1) such systems include all children in a selected age group within a given community or service area and (2) public and private providers submit information on immunizations.

For a more detailed discussion of our assessment of the strengths and limitations of states' primary methods of identifying pockets of underimmunization, see enclosure II.

With the exception of using surrogate characteristics, none of the methods states are using was developed to identify pockets of underimmunized children or children at risk for underimmunization. Rather, these methods were

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[15]In most states, at least one immunization registry project is under way, many with the financial support of private foundations. Statewide registries in Arizona, Mississippi, North Dakota, and Rhode Island report that they have established databases of 75 percent or more of their target populations.

developed to measure immunization coverage rates or to motivate changes in provider practices. According to the Director, National Immunization Program, CDC (1) has not conducted any evaluations of the effectiveness of these methods for identifying pockets of need and (2) is unaware of any other such evaluations. In late 1996, CDC made a 2-year grant to a university researcher for developing and evaluating surrogate characteristics and geographic information systems as methods to identify pockets of underimmunized children in 19 counties within a particular state.[16] According to one immunization program manager, it would be helpful if CDC provided an inexpensive evaluation method for identifying pockets of need. According to several state managers, CDC should do research to determine what methods of identifying pockets are effective or how to measure the outcomes of identification.

AGENCY COMMENTS AND OUR RESPONSE

We provided a draft of this correspondence to CDC officials. In a letter dated July 2, 1997, the Director of CDC said that the agency generally agrees that targeting efforts towards pockets of need helps to prevent outbreaks of vaccine-preventable diseases. CDC reiterated its view that the states, not CDC, are responsible for identifying pockets of need. According to CDC, because states are experienced with their unique immunization circumstances, they are better positioned to identify specific census tracts, zip codes, or other small geographic areas where children may be at risk. Furthermore, in CDC's view, federal budgetary resources are more appropriately used for interventions that will increase immunization coverage among preschool children rather than for additional evaluation of the methods states are using to identify pockets of underimmunized preschool children. CDC stated that evaluation would require a complete census of the entire state, county, or city area relating to potential pockets of need and would require considerable funding. In the agency's view, the ultimate evaluation of CDC and state efforts to address pockets of need is whether disease outbreaks are occurring. Vaccine-preventable disease levels nationally are generally at, or near, all-time record low levels, CDC says.

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[16]A geographic information system is computer software that organizes and links data from different sources to display information on maps. For an application to disease outbreaks, see M.L. Popovich and B. Tatham, "Use of Immunization Data and Automated Mapping Techniques to Target Public Health Outreach Programs," American Journal of Preventive Medicine, Vol. 13, No. 2S (1997), pp. 102-7.

CDC appears to have misunderstood our discussion about evaluation. We note that no evaluations have been completed for the methods, which states are using or that CDC recommended to them, of identifying pockets of underimmunization. We are not implying, however, that CDC should evaluate the success of states in identifying pockets of underimmunization.

CDC also believes that surrogate methods have been adequately evaluated for their effectiveness in identifying pockets of underimmunized children. To support this assertion, CDC cites four studies, completed in 1993, that it funded to find out why preschool children in Baltimore, Los Angeles, Philadelphia, and Rochester had not been immunized on time. We disagree. Although these studies identified several factors associated with missed opportunities for immunization, the studies do not examine the relationships between those factors and pockets of need.[17] Therefore, it cannot be inferred that these factors are generally associated with pockets nor can these four studies be generalized to the 50 states.

In written comments, CDC provides examples of state activities to improve immunization rates, such as cooperating with the WIC program, doing clinic assessments, and developing registries. However, as we point out in this letter, these methods were developed to improve coverage rates. They were not developed to identify pockets of need, nor have they been evaluated for this purpose.

CDC takes issue with our illustration of recent measles outbreaks in Alaska and Utah as examples of pockets of need because only a minority of the cases are in the preschool age range. A CDC official emphasized that those transmitting the disease were predominately school-age children. These facts were clear to us. Any outbreak of disease in a defined pocket has the potential to affect preschool children as well as school-age children and adults, as these outbreaks did. CDC also suggests that philosophical or religious objections to immunization may be involved in some of these cases. We believe that such objections may play a role in underimmunization in some areas and contribute to determining a pocket of need.

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[17]For our previous discussion of the four studies, see Vaccines for Children (GAO/PEMD-95-22), pp. 17-18, and for a published report of one of the studies, see R.G. Frank and others, "The Demand for Childhood Immunizations: Results from the Baltimore Immunization Study," Inquiry, Vol. 32, No. 2 (1995), pp. 164-73.

In CDC's view, we underemphasize the relative disadvantages of household survey methods. As indicated in our recent report on the National Immunization Survey,[18] household surveys may be comparatively less efficient because many households must be screened to identify enough with 2-year-old children. Accordingly, as we point out in this letter, such surveys may be labor intensive. We discuss relative advantages and disadvantages of all methods used to identify pockets of underimmunized children; it is not our intention to endorse any particular method.

In addition to the comments above, CDC provided some technical comments that we incorporated into the final letter, when appropriate.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this letter until 30 days from its date of issue. At that time, we will send copies of this letter to interested congressional committees, the Secretary of HHS, the Director of CDC, and other federal and state officials. We will also make copies available to others upon request.

This letter was prepared under the direction of Sandra K. Isaacson, Assistant Director, (202) 512-7174. Other major contributors include Richard C. Weston and George Bogart.

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Enclosures – 2

[18]See CDC's National Immunization Survey (GAO/PEMD-96-16), pp. 9-17.

PRIMARY METHODS STATES USE TO IDENTIFY POCKETS OF UNDERIMMUNIZED CHILDREN

	Examples	States
Provider assessments	Assessments of coverage rates for public health clinics or private providers; assessments of coverage rates for the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) clinics	Total: 20 Colorado, Connecticut, Georgia, Hawaii, Idaho, Illinois, Iowa, Kentucky, Louisiana, Maine, Michigan,[a] Missouri, Nebraska, Nevada, New Hampshire, New York,[b] Pennsylvania, Utah, Virginia, and West Virginia
Population surveys	Door-to-door surveys; birth certificate surveys	Total: 8 Florida,[b] Mississippi, North Carolina, Ohio, Oregon, Tennessee, Texas, and Washington
School surveys	Retrospective surveys	Total: 7 Kansas, Maryland, Minnesota, South Dakota, Vermont, Wisconsin, and Wyoming
Surrogate characteristics	Ethnic diversity, poverty rate, population density, socioeconomic status, and disease incidence	Total: 6 Alabama, Alaska, California, Indiana, Massachusetts, and Rhode Island
Immunization registries	Tracking systems for immunization information	Total: 6 Arizona, Arkansas, Delaware, North Dakota, Oklahoma, and South Carolina

Note: Montana, New Jersey, and New Mexico reported using no method.

[a]Only Michigan reported planning random household telephone surveys.

[b]New York and Florida each reported developing a geographic information system, applying weighted demographic characteristics to population data derived from census and commercial sources.

STRENGTHS AND LIMITATIONS OF PRIMARY METHODS

The following is a discussion of the strengths and limitations of methods states use–provider evaluations, population surveys, school surveys, surrogate characteristics, and immunization registries–to identify pockets of underimmunized children or children at risk for underimmunization.

PROVIDER ASSESSMENTS

Provider assessments can be an inexpensive and effective method for improving overall immunization rates. This is because such assessments focus on immunization coverage rates among at-risk children who are in contact with health care providers available to intervene immediately. For example, when routine measurement of immunization coverage rates began in Georgia's public health clinics, the immunization rates among children served in its approximately 220 public health clinics more than doubled, from 37 percent in 1986 to 83 percent in 1994.[19] However, this method is unlikely to be effective if used to identify pockets of need because underimmunized children not receiving care in clinics may go undetected.

Assessing the immunization status of children enrolled in WIC is also viewed as a provider assessment. However, this method has limitations similar to public health clinic provider assessments. For example, CDC investigators found that during the 1991 measles epidemic in New York City, at least 90 percent of preschool children enrolled in WIC were up-to-date for measles by 21 months of age.[20] But no information was provided on the underimmunized children in New York who were not enrolled in the WIC program.

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[19]W. Orenstein, "Update on CDC's National Immunization Program," in All Kids Count National Program Meeting: Summary Proceedings, Savannah, Ga. (Feb. 29-Mar. 1, 1996), pp. 8-14. See E.F. Dini and others, "Information as Intervention: How Georgia Used Vaccination Coverage Data to Double Public Sector Vaccination Coverage in Seven Years," Journal of Public Health Management Practice, Vol. 2, No. 1 (1996), pp. 45-49, and C.W. LeBaron and others, "Impact of Measurement and Feedback on Vaccination Coverage in Public Clinics, 1988-1994." JAMA [Journal of the American Medical Association], Vol. 277, No. 8 (1997), pp. 631-35.

[20]Such high coverage for measles immunization at the peak of a major epidemic suggests that very high rates of coverage are necessary to prevent outbreaks of measles in preschool populations (see C.W. LeBaron and others, "Measles Vaccination Levels of Children Enrolled in WIC during the 1991 Measles Epidemic in New York City," American Journal of Public Health, Vol. 86, No. 11 [1996], pp. 1551-56).

POPULATION SURVEYS

Methods such as door-to-door surveys or random household telephone surveys ascertain the immunization status of preschool children, measure immunization coverage in specific neighborhoods, and might identify geographic pockets of currently underimmunized children. Such surveys allow for identifying and collecting information on all children, including children who are unaccounted for in provider records and children who are not in households with telephones. In addition, door-to-door interviews, conducted in the home, usually improve response rates and generally increase the validity of responses. In the home, if parents cannot recall the child's immunization status, they might have written documentation to refer to or the surveyor can readily obtain written consent authorizing access to health care provider records for immunization status. Another advantage of these surveys is their potential for providing ready linkage to intervention if vaccinations need to be administered. However, these surveys may be labor intensive.

Another form of population survey is birth certificate surveys. This form might also locate underimmunized children who do not come into contact with providers. These surveys rely on identification information collected when a child is born; generally, therefore, they do not include children who have moved into or out of the state. Although some state vital statistics offices now have the capacity to provide data for public health follow-up activities, tracing children from transient families can be difficult and time-consuming.[21]

SCHOOL SURVEYS

These surveys may be excellent for determining trends in neighborhood and community coverage. Unlike some other methods, school surveys include children with no regular providers, children who change providers, and children who may lack connections to the health care system. However, the delay between timely preschool immunization and entering school limits the utility of retrospective school record surveys compared with some other methods. This is because timely interventions to improve coverage of those 2-year-olds who are underimmunized is impossible. Furthermore, because of the retrospective aspect of the survey, school surveys do not include children who were

[21]For example, the state of Washington has a project to establish a birth data system for birth certificates, newborn screening, child immunization, birth defects registry, and maternal and child health referrals, see P. Starr and S. Starr, "Reinventing Vital Statistics: the Impact of Changes in Information Technology, Welfare Policy, and Health Care," Public Health Reports, Vol. 110, No. 5 (1995), pp. 534-44.

residents during their preschool years but moved to another school district before enrollment.[22]

SURROGATE CHARACTERISTICS

This method can be relatively inexpensive and easy to develop. If the surrogate characteristics are well-chosen, targeting groups with these characteristics may be useful in selecting appropriate immunization interventions. Because this method includes using aggregate data to target groups, it may not identify individual underimmunized children. Although race and ethnicity or income, for example, may correlate with some pockets of children at risk for underimmunization, these surrogate characteristics may not reflect the immunization status of individual children. Additionally, these surrogate characteristics may not help to increase immunization coverage if they inadequately capture other critical characteristics of local health care services.[23]

IMMUNIZATION REGISTRIES

The usefulness of this method to identify pockets of underimmunization is determined by the extent to which (1) tracking systems for immunization information registries include children within a selected age group, within a given community or service area, and (2) public and private providers submit information on immunization.[24] Often registries are relatively expensive to start and require large-capacity computer hardware and a high degree of software expertise. Establishing the databases requires maximizing the extent and ease of public and private provider access, while maintaining confidentiality of

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[22]See T.V. Murphy and others, "Estimating Immunization Coverage from School-Based Childhood Immunization Records," Pediatric Infectious Disease Journal, Vol. 14, No. 7 (1995), pp. 561-67, and L.E. Rodewald and others, "The School-Based Immunization Survey: an Inexpensive Tool for Measuring Vaccine Coverage," American Journal of Public Health, Vol. 83, No. 12 (1993), pp. 1749-51.

[23]The characteristics of health clinics or of physicians may also be important. See N. Rudner, "Potentials for Improving Health Department Immunization Rates: The Relationships Between Service Delivery Factors and Immunization Completion," Journal of Public Health Management Practice, Vol. 2, No.1 (1996), pp. 50-58.

[24]See K.M. Faherty and others, "Prospects for Childhood Immunization Registries in Public Health Assessment and Assurance: Initial Observations from the All Kids Count Initiative Projects," Journal of Public Health Management Practice, Vol. 2, No. 1 (1996), pp. 1-11.

registry records.[25] For example, because of confidentiality considerations, CDC has recommended including a child's address–a data element of importance if a registry is used to identify geographic pockets of underimmunization–in state registry data sets but not in data sets for transferring a child's record to another registry.

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[25]For a discussion of privacy issues, see L.O. Gostin and Z. Lazzarini, "Childhood Immunization Registries: A National Review of Public Health Information Systems and the Protection of Privacy," JAMA Vol. 274, No. 22 (1995), pp. 1793-99.

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