Health Department Clinics as Pediatric Immunization Providers

A National Survey

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Objectives: To describe a national sample of health department immunization clinics in terms of populations served, patient volume trends, services offered, and immunization practices.

Methods: Telephone survey conducted with health departments sampled from a national database, using probability proportional to population size.

Results: All (100%) 166 sampled and eligible clinics completed the survey. The majority of pediatric patients were uninsured (42%) or enrolled in Medicaid (34%). Most children (69%) and adolescents (70%) were referred to the health department, with only 12% using these clinics as a medical home. A number of clinics (72%) reported recent increases in adolescents served. Less than 25% of clinics offered comprehensive care, 47% conducted semiannual coverage assessments, and 76% and 38% operated recall systems for children and adolescents. Storage of records in an electronic database was common (83%).

Conclusions: Although the majority of these clinics do not provide comprehensive care, they continue to serve vulnerable children, including adolescents, Medicaid enrollees, and the uninsured, and may represent the main contact with the healthcare system for such patients. Because assuring the immunization of these children is essential to their health and the health of our nation as a whole, this immunization safety net must be preserved. Experience implementing key recommendations such as coverage assessment and feedback as well as reminder or recall may enable health department staff to assist private provider colleagues. Further research is needed to investigate how patient populations, services offered, and immunization practices vary by different clinic characteristics.

Medical Subject Headings (MeSH): immunization, pediatrics, public sector (Am J Prev Med 2001;20(4):266–271)

Introduction

Routine childhood immunization is implemented as a shared responsibility among public health departments, other publicly funded clinics, and private providers. Public health department clinics serve approximately one sixth of the nation's infants and toddlers[1] and are the second most common source of immunizations for this age group. Although sizable, the current proportion of U.S. children immunized in health department clinics represents a decrease from a decade ago when half of all children were immunized in the public sector.[2] Today, health department clinics frequently serve as safety-net immunization providers for children whose families cannot afford the cost of immunizationss and those without an established relationship with a primary care provider.[3–5]

Health department clinics have been the target of numerous interventions to raise immunization coverage levels.[6] As a result, much has been learned about the effect of interventions in this setting. Yet relatively little is known about the extent to which recommended immunization practices are implemented. This contrasts sharply with the large number of studies conducted to assess immunization practices among private providers.[7–13]

Although national studies[14,15] have characterized local health department activities, expenditures, and jurisdictions in general, little information is available about the immunization activities supported by these

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health departments. We report on a cross-sectional survey of a national sample of local health department clinics that describes population served, perceived trends in patient volumes, implementation of the Standards for Pediatric Immunization Practices,[16] communication with other providers, and billing and managed care activities.

Methods

This study was reviewed by the Human Subjects Coordinator at the Centers for Disease Control and Prevention's National Immunization Program and was determined to be a nonsensitive evaluation of public health practice exempt from Institutional Review Board review.[17]

Study Population

The sampling frame for this study was developed from the 1997 database of local public health agencies maintained by the National Association of County and City Health Officials. Local public health agencies were eligible to participate if they operated, directly or by contract, a facility that provided immunization services. Estimates of the size of the population served by each agency were obtained from the database (when available) and were supplemented with 1990 U.S. Census figures as necessary. These estimates were used to divide agencies for the study sample into two strata. One stratum consisted of all agencies serving a population that exceeded 1.25 million (sampled 100%); the second stratum consisted of the remaining agencies (sampled by using probability proportional to size of population served).

Data Collection

A letter that explained the study was sent to the health officer for each public health agency. Follow-up telephone calls were made to discuss the study, to obtain consent, and to identify the district immunization clinic manager. In districts with more than one immunization clinic, the manager of the largest clinic was selected. Clinic managers were contacted to arrange a telephone interview; a copy of the instrument was faxed to the interviewee for review before the interview. Telephone interviews were conducted between June and October 1998.

The survey instrument contained approximately 100 questions, most of which were fixed-response questions or were worded to be answered with a single number. Several open-ended questions were included as well, with responses later converted to multi-outcome responses by the authors. Before data collection, the survey instrument was pilot tested with a sample of clinic managers (n=14); revisions were made to improve clarity.

Before the start of the interview, respondents were instructed that questions would focus on all pediatric patients (aged 0–18 years) unless otherwise indicated. Certain questions were asked separately for children (aged 0–11 years) versus adolescents (aged 12–18 years).

Statistical Analysis

For survey items that had a fixed response (e.g., has the number of children served increased, decreased, or stayed the same in the past 3 years?), the study goal was to estimate the population-weighted proportion of clinics that responded in each possible manner. For survey items that had a single number as a response (e.g., what is the proportion of patients who have no insurance?), the study goal was to estimate the population-weighted mean response. Unless otherwise indicated, results presented are weighted by the population served.

Population-weighted estimates were obtained by using generalized difference estimators. These estimators allow inferences in populations sampled with unequal probabilities. To further refine study estimates, one of the authors (LER) provided prior estimates without knowledge of the survey responses; this guaranteed that prior estimates were independent of survey results.

In the case of ratios (e.g., proportion of facilities that used a computerized tracking system among those facilities with a mechanism to identify patients who are behind in immunization), variances were obtained by using standard linear approximation methods. Approximate 95% confidence intervals (CIs) were defined as (estimate) $\pm$ 1.96 {variance}$^{0.5}$.

Results

Of 167 local public health agencies chosen to participate, 166 had clinics that met eligibility criteria for the study; one agency was excluded because staff indicated that no facilities providing immunization services were operated by that agency. Surveys were completed with 100% of the sampled and eligible clinics. An unweighted breakdown of participating clinics included 31 (19%) located in large urban communities (population $\geq$999,999), 129 (77%) in smaller communities (population 2,501–999,998), and 6 (4%) in rural communities (population $\leq$2500).

Characteristics of Participating Clinics

Ninety-one percent of clinics were operated directly by the public health department, and nine percent operated under a contract. Sixty-four percent of clinics were co-located with a Special Supplemental Nutrition Program for Women, Infants, and Children clinic.

Populations Served

The majority of patients served were reported to be uninsured (42%, 95% CI=39% to 44%) or enrolled in Medicaid (34%, 95% CI=32% to 37%), and clinics reported an average of 24% (95% CI=21% to 26%) of patients who were commercially insured. The majority of children (69%, 95% CI=66% to 72%) and adolescents (70%, 95% CI=67% to 74%) were referred to the health department by other providers. The percentage of pediatric patients for whom the facility was a medical home was perceived to be low (12%).

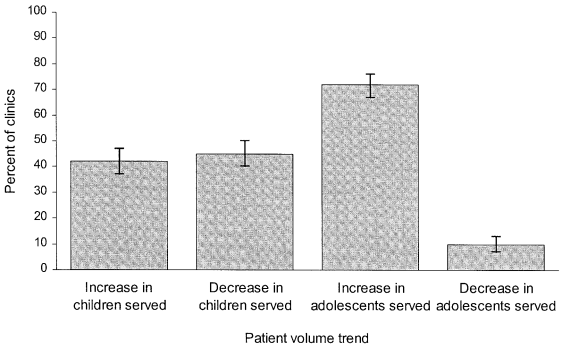

Figure 1. Population-weighted percentages of trends in pediatric patients served over the past 3 years

Data about patient volume trends over the 3 years before the survey are presented in Figure 1. Although the percentage of clinics reporting an increase in children served was similar to the percentage reporting a decrease in children served, the majority of clinics (72%, 95% CI=67% to 76%) reported serving an increased number of adolescents. Among clinics reporting an increase in children served, 58% cited expanded immunization requirements as the most or second-most important reason. Among clinics reporting a decrease in children served, the most common first- or second-ranked reasons were the Vaccines for Children (VFC) program (56%), Medicaid managed care (39%), and improved insurance coverage (28%). Among clinics reporting an increase in adolescents served, the most common first- or second-ranked reasons were the 1996 adolescent recommendations[18] (55%), increased school-based screenings (19%), and the VFC program (16%).

Types of Services Provided

Table 1 summarizes the services provided to children and adolescents. Clinics were classified as providing comprehensive primary care if they reported providing all of the following: comprehensive well care, acute illness care, acute follow-up care, chronic illness care, and immunizations. Although 100% and 98% provided immunizations to children and adolescents, respectively, few (21% and 19%) provided comprehensive primary care.

Immunization Practices

Table 2 illustrates the percentage of clinics that reported implementing selected recommended practices. Implementation varied by the age of the patient involved, with more clinics reporting certain recommended practices for children than for adolescents. Although less than half of the clinics reported conducting semiannual coverage assessments (as recommended in the Standards for Pediatric Immunization Practices), 82% (95% CI=77% to 86%) reported conducting these assessments on an annual basis (as required by Senate appropriations language during the year in which this study was conducted).[19]

Information Management Activities

Table 3 describes how clinics routinely communicate with the primary care providers of referred patients. For children and adolescents, approximately 85% of clinics reported that they had no routine mechanism to communicate with other providers or that they relied on parents to do so. Only 5% (95% CI=3% to 8%) of clinics reported routinely receiving information from other providers about immunizations given elsewhere.

In terms of record keeping, 55% (95% CI=49% to 61%) of clinics reported maintaining immunization records in a medical chart. Among these clinics, 95% (95% CI=90% to 99%) used a designated immunization summary page within the chart. Most clinics (83%, 95% CI=76% to 91%) reported storing immunization records in a computerized database, and for 78% (95% CI=73% to 83%) of these clinics, the computerized database was linked with other providers (other health department sites, private providers, or both).

Billing Practices and Managed Care Participation

Seventeen percent (95% CI=14% to 21%) of clinics reported serving as a primary care provider or gate-

Table 1. Services provided to children and adolescents by local health department clinics

Service	Population-weighted percentage of clinics providing service to children (95% CI)	Population-weighted percentage of clinics providing service to adolescents (95% CI)
Comprehensive well care	61 (56–66)	45 (39–51)
Acute illness care	26 (23–30)	23 (19–26)
Acute follow-up care	33 (28–38)	28 (23–32)
Chronic illness care	26 (22–30)	24 (19–28)
After-hours phone coverage	27 (23–30)	23 (19–27)
Comprehensive primary care[a]	21 (17–24)	19 (15–22)

[a]Comprehensive primary care is defined as comprehensive well care, acute illness care, acute follow-up care, chronic illness care, and immunizations for the indicated age group.
CI, confidence intervals.

Table 2. Immunization practices reported by local health department clinics

Practice	Population-weighted percentage of clinics reporting practice (95% CI)
Conduct semiannual coverage assessments (by computer or manually) **(14)**[a]	47 (41–52)
Operate a tracking system to identify patients behind in immunization **(12)**	
Children	82 (79–85)
Adolescents	56 (51–62)
Operate a reminder system **(12)**	
Children	69 (64–74)
Adolescents	42 (37–47)
Operate a recall system **(12)**	
Children	76 (71–80)
Adolescents	38 (33–43)
Check immunization status at health maintenance and acute illness visits **(4)**	87 (80–93)
Hold routine weekend or evening sessions **(1)**	59 (54–64)
Do not require physical examinations for routine immunizations **(2)**	96 (95–97)
Do not require appointments for immunizations **(2)**	
Children	94 (91–96)
Adolescents	94 (91–96)
Routinely administer up to four simultaneous injections **(8)**	97 (95–99)

[a]Standard (from the Standards for Pediatric Immunization Practices[16]) on which practice is based is listed beside the practice in (**bold**).
CI, confidence intervals.

keeper (enrolled provider) for a managed care organization. Thirty-one percent (95% CI=27% to 36%) of clinics reported billing managed care organizations for children who were referred, and thirty-one percent (95% CI=26% to 35%) reported billing for referred adolescents. Billing Medicaid was more common: 94% (95% CI=88% to 100%) of clinics billed Medicaid for assigned pediatric patients and 64% (95% CI=59% to 69%) for referred pediatric patients.

Discussion

The Institute of Medicine (IOM) recently reviewed the roles and responsibilities of the states and of the federal government in supporting immunization programs and services.[20] As part of this effort, the IOM developed a conceptual model of the six fundamental roles of the nation's immunization system: (1) assure adequate purchase of vaccine, (2) assure access to vaccine by public sector when private sector services are not adequate, (3) control and prevent infectious disease, (4) conduct surveillance of immunization coverage, (5) sustain and improve coverage levels, and (6) use primary care and public health resources efficiently in achieving national immunization goals. This study, although not designed to evaluate how well local health department immunization clinics meet the roles outlined by the IOM, provides descriptive information relevant to roles two and five—the provision of direct service delivery in the public sector and experience with recommended practices to improve immunization coverage levels.

The study has some important strengths and limitations. Strengths include the sampling frame, which contained a nearly exhaustive listing of all local public health agencies within the United States, and the 100% participation rate. Both factors maximize the likelihood that data collected were representative and generalizable. Limitations are several. First, survey responses were not independently validated. Second, the sample for this study was chosen to be nationally representative, resulting in insufficient power to make any within-

Table 3. Communication with primary care providers of vaccinated children and adolescents

Procedure	Population-weighted percentage of clinics using this procedure for children (95% CI)	Population-weighted percentage of clinics using this procedure for adolescents (95% CI)
Other providers not routinely notified	10 (7–13)	11 (8–14)
Parent asked to notify other provider	74 (69–78)	74 (72–75)
Letter or postcard sent to provider	14 (10–18)	13 (9–17)
Fax notification sent to provider	2 (0–4)	0[a]
Telephone call to provider	0 (0–1)	0 (0–1)

[a]Data do not support construction of confidence interval (CI).

group comparisons. Finally, in districts with more than one immunization clinic, only the manager of the largest clinic was interviewed; thus, differences among clinics within a single district are not reflected.

Findings from the current study have several noteworthy programmatic implications. Many patients served in these clinics needed to visit another source(s) of primary care to receive the full complement of clinical preventive services because (1) most clinics did not offer comprehensive primary care, (2) only a few children considered these clinics to be a medical home, and (3) most patients were referred. This need for extra visits creates missed opportunities and is problematic for vulnerable children, such as Medicaid enrollees or uninsured children, who are already at increased risk for underutilization of preventive services, including immunizations.[21–23]

A number of programs, targeted to vulnerable children and designed to support the receipt of immunizations and other preventive services simultaneously, are currently in place. Examples include the VFC program, an entitlement program that provides public-purchased vaccines for the immunization of certain groups of eligible children; the Children's Health Insurance Program, a federal–state partnership that provides comprehensive insurance for children whose families do not qualify for Medicaid; and Medicaid managed care, established on a state-by-state basis under waivers to Title XIX, which allows states the flexibility to serve Medicaid recipients via managed care organizations.

Given the existence of these programs, one might ask why childhood immunizations warrant an additional health department safety net. There are several reasons. First, it is unlikely that public entitlement and insurance programs can provide every child with affordable, timely, and consistent access to care. Second, childhood immunizations protect the public's health and are necessary for the control of vaccine-preventable diseases in this country. Finally, all states have laws that require immunization for school entry, making it essential that access to immunizations be assured.

Another noteworthy finding is the widespread increase in immunization services provided to adolescents. Reasons cited for higher adolescent patient volumes included an increased need for services (because of new recommendations and school requirements) as well as the availability of financial support (including expansion of the recommended age-range for certain vaccines covered by the VFC program). These findings suggest that many adolescents do not have a strong link with a medical home[24] and that, when immunizations are required for school enrollment, adolescents depend on local health departments.

A third noteworthy finding involves implementation of the Standards for Pediatric Immunization Practices. Published by the Department of Health and Human Services in 1993, the Standards represent scientific evidence, expert opinion, and consensus about how to deliver childhood immunization services.[16] In the current study, clinic staff reported inconsistent implementation of the Standards, with certain practices applied more frequently than others. Practices implemented most commonly included not requiring a physical examination or appointment for immunizations, checking immunization status at all visits, and administering up to four shots simultaneously, all of which require few additional resources. In contrast, practices such as the use of reminder or recall, semiannual coverage assessments, and extended clinic hours, which require personnel and financial resources, were implemented much less frequently. This finding is consistent with the fact that federal funding for immunization delivery infrastructure, which includes support for health department immunization clinics, has decreased by more than 50% since 1996.[20]

Although not strictly comparable because of different time frames and methodology, similar surveys have been conducted about immunization practices among private providers. In general, these surveys have found that relatively few private providers implement recommended office-based immunizations strategies like reminder or recall and coverage assessments. For example, less than 20% of private providers report using a reminder or recall system in their practice,[10,25] and annual coverage assessments are conducted at only 6% of practices.[26]

A fourth important finding is the large number of clinics that do not bill third-party payers or do not participate in managed care. This result likely reflects the history of health department clinics, government-supported entities created to serve indigent, uninsured patients. With the development of public insurance programs, however, children and adolescents served by these clinics are increasingly likely to have some form of insurance coverage. In addition, as managed care organizations, particularly those serving Medicaid recipients, become more prevalent, there is growing opportunity for providers to participate in managed care. Because of their experience serving high-risk, publicly insured patients, health department clinics that provide comprehensive services may be uniquely qualified to join such networks.

Finally, that the majority of clinics rely on parents to notify their children's primary care providers about immunizations received at health department clinics is concerning, particularly as the immunization schedule becomes increasingly complex. Several studies[27–29] have demonstrated that parents are often unaware of their children's immunization status and rely on providers to inform them when immunizations are needed. Lack of accurate information about a child's immunization history is a barrier to immunization,[30]and relying on parents to transmit immunization information be-

tween providers (verbally or by a hand-held shot record) may exacerbate this barrier. Immunization registries may be one way to minimize this problem by consolidating immunization information.[31]

Implications

Ideally, vaccines should be given as part of comprehensive care. Although most health department clinics do not provide comprehensive primary care, these clinics continue to serve vulnerable children, including adolescents, Medicaid enrollees, and the uninsured, and may represent the main contact with the healthcare system for such patients. Because assuring the immunization of these children is essential to their health and the health of our nation as a whole, this immunization safety net must be preserved. Although budget constraints may make it difficult, the clinics (in collaboration with local and state health departments) may be able to improve their financial standing by billing third-party payers for services rendered and by participating as providers in managed care.

These clinics have experience with coverage assessment and feedback, with reminder or recall, and with the use of electronic immunization records. This experience places health department staff in a good position to assist local private provider colleagues in implementing these quality improvement activities.

These findings raise important questions about differences in practices among subgroups, such as urban clinics vs. rural clinics; clinics that participate in immunization registries vs. clinics that do not; clinics that bill third-party payers vs. clinics that do not, which deserve investigation. This study, although it lacks power to make such comparisons with precision, provides valuable information for planning such an investigation.

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