

Parent Reports on Willingness to Accept Childhood Immunizations During Urgent Care Visits

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ABSTRACT. *Objectives.* To 1) describe whether parents would be willing to accept childhood immunizations at urgent care visits; and 2) identify predictors of parents' willingness to accept childhood immunizations at urgent care visits.

Design and Participants. Cross-sectional telephone survey of parents of children aged 18 to 24 months who were underimmunized according to a computerized immunization tracking system and who had recently made an urgent care visit in a regional group-model health maintenance organization in Northern California. Chart review was conducted to confirm immunization status and to identify contraindications to vaccination.

Results. Of the 424 eligible participants, 351 (83%) completed interviews. Children with contraindications to vaccination and children who were actually up-to-date at the time of the urgent care visit were excluded, leaving 263 families in the final analysis. Among these parents, 75% said they would have been willing to have their child immunized at the urgent care visit in question if the physician had suggested it. An additional 11% said they would have accepted vaccination if the physician told them that the shot would be safe and strongly encouraged them to accept it. Overall, 86% reported they theoretically would have accepted an immunization during the urgent care visit. In the multivariate analysis, the strongest predictors of stated willingness to accept shots at the urgent care visit were the parent: 1) not being aware that their child was underimmunized (odds ratio [OR] 3.5, 95% confidence interval [CI], 1.6–7.7); 2) perceiving that the child was not very sick at the visit (OR 1.8, 95% CI, 1.1–3.0); 3) being less concerned about the risk of shots (OR 1.8, 95% CI, 1.2–2.5); and 4) being of nonwhite race (OR 3.6, 95% CI, 1.6–7.7). Income and education were not significantly associated with reported willingness to accept immunization.

Conclusions. We conclude that most parents of underimmunized toddlers report being willing to accept immunizations during urgent care visits if the clinician recommends it. More effective ways of alerting providers in urgent care settings when immunizations are due, such as indications on a chart or registration form, hold promise for improving immunization coverage rates. *Pediatrics* 1998;102(4). URL: <http://www.pediatrics.org/cgi/content/full/102/4/e47>; immunization, urgent care, managed care, preventive care, missed opportunities.

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ABBREVIATIONS. ED, emergency department; KPMCP, Kaiser Permanente Medical Care Program; ITS, immunization tracking system; MMR, measles-mumps-rubella; HMO, health maintenance organization.

Childhood vaccinations are among the most cost-effective currently available health interventions. Yet, immunization coverage rates for 2 year olds are still far from the Healthy People goal of 90% by the year 2000.^{1,2} One problem is that despite national standards for immunization practice,³ providers frequently miss opportunities to vaccinate at either preventive or urgent care visits.^{4–9}

At urgent care visits, physicians may not take advantage of opportunities to immunize for several reasons: 1) information on the child's immunization status may not be readily available;¹⁰ 2) invalid contraindications to immunizations may be applied;^{6,8} and 3) providers may perceive parents as reluctant to accept immunizations at these visits. The first two problems could be addressed by logistical innovation and provider education. However, it is not clear whether parents would be willing to accept immunizations if they were offered during urgent care visits. A recent study in an emergency department (ED) setting found that 53% of parents would refuse immunizations at ED visits.¹¹ For outpatient clinic settings, which tend to have lower acuity of illness, there is scant evidence on parents' willingness to accept immunizations at urgent care visits.

Improving adherence to the recommendation to use all health care visits for immunization will require a better understanding of parents' preferences. The aims of this study were: 1) to describe whether parents would be willing to have their children immunized if they had been discovered to be overdue during visits for minor illnesses; and 2) to identify predictors of their willingness to accept immunization at these visits.

METHODS

Design

This cross-sectional telephone survey asked the opinions of parents of children aged 18 to 24 months who were underimmunized and who had recently made an urgent care visit in a primary care center. In a previous study of this population, 67% of urgent care visits were during weekday times.⁹ Chart review was conducted to determine if there were contraindications to immunization at the time of the urgent care visit and to confirm immunization status for children whose parents stated they were not truly underimmunized.

Setting

The Kaiser Permanente Medical Care Program (KPMCP) is an integrated group-model health maintenance organization (HMO) that serves ~2.6 million members in Northern California. It operates 16 medical centers and 15 outpatient medical office facilities throughout a geographic region ~250 miles in diameter. Most members receive health insurance as an employment benefit. Since 1991, KPMCP in Northern California has had an Immunization Tracking System (ITS) in which all childhood immunizations are recorded on a centralized database.

Study Population

The population from which the study group was drawn ($n = 23\ 239$) were children who had: 1) active membership in the health plan at the start of the study (January 1, 1995); 2) continuous membership between 15 to 18 months of age; 3) at least one immunization recorded in the health plan ITS; and 4) were between 18 to 24 months of age at the start of the study. A power calculation indicated a sample size of 250 was needed (based on outcome of interest as the proportion of parents who would have accepted immunization during the urgent care visit and allowing a confidence interval around a proportion of 50%). The study sample included 450 children randomly selected from among the 1025 who did not have a measles-mumps-rubella (MMR) immunization recorded on ITS between 12 and 18 months of age and who had made an urgent care visit between January 2, 1995 and April 16, 1995 (ie, were 18–27 months old). Families were ineligible if: the telephone number was wrong or disconnected ($n = 18$); the parents did not speak English, Spanish, or Cantonese ($n = 6$); they were no longer a KPMCP member ($n = 1$); or the visit was not actually an urgent care visit ($n = 1$). Thus, 424 families were eligible for this study.

Telephone Survey

Telephone interviews were conducted in English, Spanish, or Cantonese by six experienced interviewers within 3 weeks of the child's urgent care clinic visit. The structured, closed-ended interview lasted ~10 minutes and collected information on: 1) attitudes about immunizations including how much they worry about risks of shots and being up-to-date; 2) whether, according to the parent, the child had already received the MMR immunization at Kaiser or another facility; 3) whether the parent was aware that the immunization was due; 4) parent's perception of the child's illness during the urgent care clinic visit; 5) whether the parent would have accepted immunization for the child at the time of the recent urgent care visit if the child had been overdue and the provider had recommended it; 6) if not, whether the parent would have accepted a return visit being scheduled at the time of the recent urgent care clinic visit; 7) attitudes about prevention including the use of a child safety seat and presence of ipecac in the household; and 8) demographic variables including age, education, income, and race/ethnicity. The race/ethnicity question allowed the respondent to choose multiple categories, similar to the question now being adopted by the Congressional Office of Management and Budget for use in the US Census.

Chart Review

Chart reviews were conducted for the urgent care clinic visit asked about during the completed telephone interviews. The chart review was independent of the interview. Information obtained included orders for tests, treatments, and immunizations. Also recorded was the patient's temperature, discharge diagnoses, and disposition to determine contraindications/obstacles to immunization. Contraindications were defined based on criteria from the *Standards for Pediatric Immunization Practices* document³ and included: 1) hospitalization from the outpatient visit; 2) a suspected respiratory condition requiring a chest radiograph; and 3) a specified contraindication, eg, allergy to eggs. The *Standards for Pediatric Immunization Practices* indicate that moderate or severe illnesses are contraindications, but do not specify a definition of moderate or severe illnesses. In this study, two physician investigators reviewed all chart review diagnoses and reached a consensus to designate pneumonia, croup, bacteremia, asthma requiring a nebulizer treatment during the visit, and varicella as diagnostic contraindications. A temperature of 101.0°F or more at the time of the visit was defined as a relative contraindication. Obstacles were

defined as real-life situations that would make immunization logistically difficult, including referral to a second clinic or the ED for same-day consultation.

Statistical Analyses

The χ^2 test was used to evaluate associations between categorical variables (eg, whether parents of children perceived as less sick would have been more likely to accept immunization at the urgent care clinic visit than parents of children perceived as more sick). The Mann-Whitney U test was used for ordinal and continuous nonparametric variables (eg, whether parents who would have accepted immunization at the urgent care clinic visit were better educated than those who would not).

Multivariate analysis was conducted in SAS (SAS Institute, Cary, NC). Stepwise logistic regression models, using independent variables identified as potential predictors from the bivariate analysis, were created to identify predictors associated with willingness to accept immunizations. To take advantage of observations that had missing values for variables not included in the final model, a forced-entry logistic regression method was used to modify the results of the stepwise regression. The best fitting model in which all independent variables had a P value of $\leq .05$ was selected. Only observations with nonmissing values for all of the variables in the final model were included. We found no evidence of a high degree of colinearity among the variables included in the final model.

RESULTS

Of the 424 eligible families, 351 (83%) completed interviews, 46 (11%) were unreachable after repeated attempts, and 27 (6%) declined to be interviewed. Of the 351 families who completed interviews, the mother served as the respondent in 86% of the interviews. Forty-three of these families were excluded from the analysis because the parent stated, and subsequent chart review confirmed, that the child was actually not overdue for the MMR. After chart review, 40 children were excluded from analysis because of contraindications, obstacles, or relative obstacles to immunization, as listed in Table 1. Five others were excluded because of having had a shot actually ordered during the urgent care visit ($n = 4$), or missing records ($n = 1$). Thus, 263 families were included in the final analysis.

As shown in Table 2, the study population was of diverse race/ethnicity. The mean household income was \$39 000 and 38% had an educational level of high school or less. Thirty respondents said that their child was not overdue for a shot, but subsequent chart review did not support this statement. Of the remaining 233 respondents, 174 (75%) stated they would have been willing to have their child immunized at the urgent care visit if the physician had suggested it. An additional 26 (11%) said they would

TABLE 1. Obstacles/Contraindications to Immunization at Urgent Care Visits, Northern California Kaiser Permanente, 1995*

Obstacle/Contraindication	n (%)
Temperature >101°F	23 (7%)
Pneumonia	6 (2%)
Croup	5 (2%)
Chest radiograph	2 (0.6%)
Bacteremia	1 (0.3%)
Varicella	1 (0.3%)
Hospitalized	1 (0.3%)
Consultation referral	1 (0.3%)

* Chart review indicated 40/303 (13%) urgent care visits with an obstacle/contraindication.

TABLE 2. Demographic Characteristics of Underimmunized Children Who Made Urgent Care Visits, Northern California Kaiser Permanente, 1995

Characteristic	n* (%)
Sample size, no.	263 (100%)
Age	
Mother: mean = 30 (SD = 5.58)	
Father: mean = 32 (SD = 7.31)	
Child's race/ethnicity	
African-American	27 (10%)
Asian	19 (7%)
Latino	33 (12%)
White	120 (46%)
White/Latino	29 (11%)
Other	35 (13%)
Annual household income: mean = \$38 813 (SD = 18 579)	
<\$30 000	73 (28%)
\$30 000–50 000	88 (33%)
>\$50 000	74 (28%)
Respondent's education	
<8th Grade	9 (3%)
Some high school	14 (5%)
High school graduate	82 (31%)
Some college	108 (41%)
College graduate	33 (12%)
Postgraduate	12 (5%)

* Numbers may not sum to 263 due to missing values.

have accepted the shot(s) if the physician had told them that it would be safe and had strongly encouraged them to accept it. Overall, 86% said they would have accepted an immunization during the urgent care visit.

All 263 respondents were asked how they would prefer immunization to be offered in urgent care settings. Among the parents, 165 (63%) would have wanted the immunization to be given right then at the urgent care visit, 57 (22%) would have wanted to schedule a return visit with their own doctor, 36 (14%) would have liked to come back to the injection clinic at another time without needing an appointment, and 5 had no response.

Predictors of Willingness to Accept Immunization at the Urgent Care Visit

Table 3 shows the results of the multivariate analysis of predictors of willingness to accept immunization at the urgent care visit. Parents who perceived

that their child was not very sick at the visit, who had less concern about the risks of shots, who were not aware that their child was underimmunized, and who were nonwhite were significantly more likely to say they would accept immunization during an urgent care visit. Those who did not have ipecac in the household and those who were not seeing their regular physician at the visit were also more likely to report being willing to accept immunization. Income, age, education, language spoken in the home, travel time to the clinic, and worry about being late were not predictors of willingness to accept immunization.

Reasons for Not Accepting Immunization at Urgent Care Visit

Thirty-three parents (14%) said they would not have accepted an immunization at the time of the urgent care visit. The main reasons given were: not wanting to cause more pain when the child was sick ($n = 12$), concern that shots might be dangerous when sick or exacerbate illness ($n = 5$), concern about the adverse effects of shots ($n = 4$), not seeing their regular doctor during the visit ($n = 2$), not believing in shots ($n = 2$), and other reasons ($n = 8$).

DISCUSSION

Major Findings

Most parents of underimmunized toddlers in this study reported being willing to accept an immunization at an urgent care clinic visit if the physician suggested it. In addition, most parents prefer the shot to be available at the time of the visit, rather than needing to return at another time. These results differ from those of previous studies¹¹ and lend support to efforts to deliver vaccines during visits for minor illnesses.

Explanation of Predictors

The majority of the predictors were easy to understand as to why they would be associated with parental acceptance of immunization at an urgent care visit, but two are not as straightforward. A family not being seen by their regular physician was positively associated with acceptance of immunization at

TABLE 3. Multivariate Analysis of Predictors Associated With Parental Report of Willingness to Accept Immunization of Child at Urgent Care Visit, Northern California Kaiser Permanente, 1995

Predictor	Adjusted Odds Ratio*	95% Confidence Interval	P Value	Frequency of Responses*†
1. Race, nonwhite	3.58	(1.65–7.75)	.0012	98 (46.9%)
2. Not aware child late for measles-mumps-rubella	3.55	(1.64–7.66)	.0013	115 (55.0%)
3. Ipecac not in house	2.72	(1.19–6.22)	.0174	83 (39.7%)
4. Did not see regular medical doctor at urgent visit	2.50	(1.07–5.83)	.0335	163 (78.0%)
5. Child not very sick at visit	1.84†	(1.13–2.99)	.0139	19 (9.1%)§
6. Don't worry about risks of shots	1.76†	(1.22–2.55)	.0026	69 (33.0%)

* Odds ratio and frequencies are expressed in comparison to the baseline categories: white race, aware late, ipecac in house, saw regular medical doctor, very sick, worries a great deal about risks of shots.

† This variable had four categories; the odds ratio is expressed as an increase for each increment in response of the predictor.

‡ Frequencies total 209 as 54 observations (out of 263) were excluded from the logistic regression model due to having missing values in at least one of the variables.

§ The comparison frequencies are: child was a little sick, 28 (13.4%); moderately sick, 103 (49.3%); or very sick, 59 (28.2%).

|| The comparison frequencies are: parents worry about the risk of shots a little, 60 (28.7%); a moderate amount, 50 (23.9%); or a great deal, 30 (14.4%).

the urgent care visit. A possible explanation for this is that the parent of the child wanting continuity of care had come to an urgent care visit when they knew that their regular doctor would be there. This group would be less likely to want an immunization outside of the context of a well child visit. The presence of ipecac in the home was negatively associated with acceptance of the immunization. Ipecac, serving as a marker for parental attitude about prevention, may signify more importance placed on prevention and thus these parents may be hesitant to accept an immunization outside of the context of a well child visit.

Comparisons With Other Studies

Our findings contrast with those of a previous study which found that many parents agreed with the statement, "I don't think my child should get an immunization if he/she is sick."¹² This statement may have evaluated whether parents think that an immunization can be given if a child is sick. Our study was more specific in that it asked parents of underimmunized patients who actually experienced an urgent care visit about their willingness to accept the immunization if a physician had suggested it. We found that up to 86% said they would accept a shot if the doctor strongly recommended it and reassured them it was safe. These contrasting findings suggest that parents may in fact not oppose immunization at urgent care visits, but may need reassurance about the safety and effectiveness of immunizations during minor illnesses.

A recent study in an ED setting found that 53% of parents offered immunizations for their children at ED visits refused them.¹¹ Among families of children who refused shots, the proportion who were in fact up-to-date (64%) was higher than among families of children who accepted shots (46%). Our findings agree in that parents who believed their children were not up-to-date were more likely to say they would accept immunizations. The higher proportion of parents who reported they were willing to accept immunizations in our study (86%) underscores the differences between urgent care and ED settings.

Even if parents are instructed that immunizations are safe and effective during minor illnesses, our findings show that some parents still will not want their children to be immunized at urgent care visits. Most of these parents simply did not want their child to have more pain when already sick. Our multivariate analysis found that parents who perceived their children as less sick would be more likely to accept shots at the urgent care visit. However, the analysis also suggested that no single variable will enable a clinician to predict which parents will accept immunizations at urgent care visits.

Policy Implications

Our finding that parents report being willing to accept immunizations for their children at urgent care visits addresses only one of many barriers to delivery in these settings. First, some providers are concerned that if children are immunized in urgent care settings, they will not be brought back for well-

child visits, but recent studies refute this concern.^{11,13} A second barrier to providing shots during urgent care visits is the limited time available to discuss the immunizations and arrange for them to be given. However, these findings suggest that it would not be difficult to convince most parents in an urgent care setting to accept vaccines if their children were found to be underimmunized.

A third barrier to immunization in urgent care visits is that providers often are not aware whether a child is overdue. In the HMO in this study, an immunization tracking system is in place, allowing providers to determine a child's immunization status at all visits, but this is not routinely done during urgent care visits because of time constraints. One potential solution would be to link the computerized immunization tracking system with the outpatient registration system or another information source that is routinely reviewed at the time of each visit, so that clinicians would be automatically prompted to give patients' needed immunizations or arrange for follow-up visits. At sites without computerized tracking systems, chart review for children with upcoming acute illness visits has been attempted, but with mixed results.¹⁴ The fact that private physicians overestimate the number of fully-immunized children in their practice¹⁵ suggests that alerting acute care providers when immunizations are due would reduce missed immunization opportunities in a variety of settings.

Study Limitations

This study's main limitation was its theoretical nature: we studied parents' statements of what their choices would have been, which may differ from what their choices would actually have been had they been offered immunizations during urgent care visits. However, anecdotal reports from physicians in this HMO who offer immunizations during urgent care visits support the belief that most parents are quite willing to accept them.

The 30 who mistakenly thought that their child was up-to-date were not asked the main outcome variable. This group would most likely decline an immunization at the urgent care visit. Thus, this exclusion most likely overestimates our rate of acceptance.

The population studied were enrolled in a group model HMO. These results may not generalize to children without good financial access to medical care. In addition, in our study setting urgent care and preventative services are provided in the same clinic environments. Thus, these results may not apply to a population who receive acute care in different environments from their well child visits, such as in an ED.

This study included families of diverse races and educational levels. However, it focused on parents of toddlers, whose opinions may differ from those of parents of infants. In addition, 2% of the patients selected for attempted interviews were ineligible and 4% were unreachable. Hard-to-contact respondents may have been more likely to be nonwhite.¹⁶ Non-white study participants were more likely to report

they would accept an immunization at urgent visits, thus the 4% unreachable potentially would have strengthened our findings.

CONCLUSIONS

We conclude that most parents of underimmunized toddlers report being willing to accept immunizations during urgent care visits if the clinician recommends it. Providers should not hesitate to offer immunizations during visits for minor illnesses. More effective ways of alerting providers in urgent care settings when immunizations are due, such as indications on a chart or registration form, hold promise for improving immunization coverage rates.

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