IMPROVING CHILDHOOD IMMUNIZATION RATES:  
PARENTS' ACCEPTANCE OF CHILDHOOD IMMUNIZATIONS DURING  
AN URGENT CARE VISIT  

by  

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1996
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Date

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1996
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RE: "Can Childhood Immunization Delivery Be Improved By Taking Advantage of Missed Opportunities?" - Graduate Research in Collaboration with Dr. Tracy Lieu, Kaiser Permanente

The project referred to above was reviewed and approved by the Committee for Protection of Human Subjects on Friday, August 19, 1994. Your request for a waiver of formal written consent is granted.

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Austin Ramney  
Professor of Political Science  
Chair, CPHS

cc: Professor Robert Hosang  
Graduate Assistant
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Preface

This thesis was undertaken to answer the question, would parents be willing to have children immunized if they are discovered to be overdue for immunization when they come to an urgent care visit, where a child is thought to have a minor illness, and a provider offers the service. The thesis includes five chapters. The first is an introduction that highlights the importance of childhood immunizations and focuses on barriers to immunization. Chapter two highlights one cause of underimmunization, missed opportunities. The third chapter presents background for the current study. Then, in the fourth chapter entitled, "Parents' Acceptance of Childhood Immunizations During an Urgent Care Visit", the findings of a telephone survey of parents with children behind in their immunization schedule are presented. As this chapter is a manuscript to be submitted for publication in Pediatrics, it is intended to stand alone; thus some information is repeated. In the final chapter I conclude with comments and recommendations,
Acknowledgments

All members of my thesis committee helped significantly with their guidance and feedback while this thesis was being developed. Thank you Drs. Reingold, Gould, and Lieu. A special thanks to Dr. Tracy Lieu who provided me with immeasurable support and assistance throughout this research project by securing funding, and giving intellectual support in the design of the project and data analysis. Her patient teaching and guidance made this thesis possible.

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CHAPTER 1
INTRODUCTION

Childhood vaccinations are among the most cost-effective currently available health interventions. Immunization has contributed greatly to the decline of the incidence of many devastating childhood diseases. In the United States the number of diphtheria cases has drastically decreased from 6,000 in 1950 to the current 3 or 4 cases per year. The number of pertussis cases has also declined from over 120,000 in 1950 to 4,500 in 1990. (Institute of Medicine '93)

The most sought after goal of immunization is the eradication of disease and thus the elimination of the need to vaccinate. This goal was accomplished in the late 1970s with the eradication of smallpox. The United States saves an estimated $120 million each year by not having to vaccinate against smallpox. (Institute of Medicine '93)

In addition to saving money by eradicating diseases, immunization also results in tremendous savings in costly acute and long-term treatment. The risk of illness or death from pertussis, measles, mumps, congenital rubella, and Haemophilus influenzae type b is greatest in infants and children. Thus, as is shown in Table 1, vaccines against these diseases have a high benefit-cost ratio, saving as much as $29 for every $1 invested. The benefit-cost ratio is the
dollar savings in treating the disease for every dollar invested in childhood immunizations.

Despite the obvious benefits of immunizing all children, the United States has a large number, about one-third, of its preschool-aged children underimmunized. (CDC '95) In fact "most developed and many developing countries have achieved higher rates of immunization among their preschoolers than has the United States." (Institute of Medicine '93)

By the time children enter school about 97% are adequately immunized (Ad Hoc Working Group '93), primarily due to state laws that require proof of immunization for attendance in elementary school. In the past, the message presented to parents by the media focused on the immunization of children by the time they enter kindergarten. Now the message has shifted to the importance of a child receiving all appropriate immunizations by the second birthday. The reason for this change is that children from birth to two-years-old are the most vulnerable to disease or death from vaccine-preventable illness. Timely immunization of preschoolers is what will have the most significant positive impact on the health of children.
Current Immunization Schedule

The current immunization schedule that is both approved and promoted by the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP) is presented in Table 2. During the first 2 years of life five or more visits are required to administer the 11-15 doses of vaccines.

In January 1995, for the first time, one simplified schedule was recommended by all the above-mentioned groups. Agreement on a common schedule by these critical groups was essential in improving childhood immunization rates. Previously there were differences in the schedules with contradictory guidelines promoted by different groups causing confusion of providers. Another problem with the schedule has been that it has changed frequently. In the past few years we have seen the addition of vaccines against Haemophilus influenzae type b, hepatitis B, and now varicella to the primary immunization series. Providers must keep current if children are to receive the recommended immunizations in a timely manner.
Benefits of Timely Immunization

Timely immunizations (i.e. giving all recommended immunizations by two years of age) are important for two reasons. One is the opportunity provided by regular immunization visits to provide other preventative services. In a study by Rodewald et al it was found that children underimmunized at 2 years of age were three to twelve times less likely to be screened for anemia, tuberculosis, or lead. (Rodewald '95) Underimmunization is a marker for inadequate primary health care.

The second and most important reason for timely immunizations is to prevent disease in children. In recent years there has been an increase in the number of vaccine-preventable illnesses. An increase in cases of pertussis, especially in infants and toddlers, has been documented as a result of underimmunization. (CDC '90) Low levels of immunization against measles among children less than two years of age contributed to a measles epidemic in 1990 with 27,672 measles cases documented in the United States, resulting in 89 deaths. Preschool-aged children accounted for 48% of these cases and 55% of the deaths. (US General Accounting Office '93) California recorded 12,456 cases of measles in 1990, which was almost half of the cases seen in the United States. (Division of Communicable Disease Control '93) The National Vaccine Advisory Committee reported that
this epidemic was caused primarily by the failure to deliver necessary vaccines to vulnerable preschoolers.

**National Response to Underimmunization**

As a result of the recognition of underimmunization as a problem, in 1978 the United States Secretary of Health and Welfare, Joseph Califano, began a nationwide "Immunization Initiative", the goal of which was by the year 1982 to have at least 90% of children receive their basic immunization series (including measles, mumps, and rubella; polio; and diphtheria, pertussis, and tetanus) by the age of two. This goal was not reached in 1982 and was reset for 1990. The year 1990 came too quickly and still our nation had not achieved this goal. Now the U.S. Public Health Service has the timely immunization (the basic immunization series now also includes *Haemophilus influenzae* type B, Hepatitis B, and varicella) of preschoolers as one of the important national health objectives listed in the Healthy People 2000 document. (U.S. Department of Health and Human Services '90)

In 1992 the increased awareness of the underimmunization problem led to the formation of the National Vaccine Advisory Committee, a coalition of 24 different public and private sector organizations, including state and local health departments. The goal of this group was to achieve a consensus about what it would take to
accomplish timely immunizations of U.S. children. The committee developed the Standards for Pediatric Immunization Practices. (U.S. Dept. of Health and Human Services '92) With the approval of the U.S. Public Health Service the eighteen Standards listed in Table 3, serve as guidelines for all health care professionals providing vaccinations or organizing immunization services for children. The goal of these Standards is to eliminate barriers (see below for a discussion about barriers) to immunization in order to effectively and efficiently provide timely immunizations to all U.S. children.

The Federal Government continued to keep immunization a priority with President Clinton's Childhood Immunization Initiative (CII) of 1993. This initiative consisted of five components intended to, 1) improve the quality and quantity of vaccination delivery services; 2) expand access to vaccines; 3) enhance community involvement, education, and build partnerships; 4) improve measuring immunization coverage and detecting vaccine-preventable diseases; and 5) simplify the immunization schedule and improve vaccines. (Orenstein '94) In addition, the administration allocated $460 million for the Vaccine for Children (VFC) program. (Lyznicki '94) The VFC program provides private health care providers with federally-funded vaccines for children who are American Indian, Native Alaskan, enrolled in Medicaid, or uninsured. It is estimated that 60% of children born each year in the U.S. are eligible for VFC. (Orenstein '94) This
program was created to help eliminate the financial barrier to immunization, but other barriers to immunization still exist.

**Barriers to Immunization**

The reasons for not achieving timely immunization of children in the U.S. are complex. There is not one single factor that can be pointed to as the primary reason that U.S. preschool children are underimmunized. The research examining the causes of undervaccination demonstrates that there are many factors involved. One approach to outlining the different causes is through a medical care utilization model, as described by Andersen and Newman in 1973, that divides the determinants of utilization into those related to the health services delivery system and those related to the individual (Andersen '73).

The barriers that result from the health care services delivery system are due to the failure to provide easily available and acceptable immunization services. There are barriers inherent to the clinic or office, such as a lack of sufficient staff, an inaccessible location, or inconvenient clinic hours, with the lack of weekend/evening hours. In addition, an office or clinic may have restrictive policies. "Such policies include visits by appointment only; waits of several weeks for appointments, vaccination on only certain
days of the week; limits on the number of clients registered per day; long waiting times; residency restrictions (not accepting out-of-county residents); the need for physician referral; comprehensive physical exams before vaccination; vaccinations administered only by physicians; charges for vaccine administration, either flat-rate or sliding scale; and the need to sign a statement of inability to pay a private physician." (Cutts '92) Another barrier that can be attributed to the system of delivery can be categorized as "missed opportunities" - the occurrence of visits where immunizations could have been given, but were not. These will be explored further in Chapter 2.

Individual determinants of utilization can be divided into 3 components: the predisposing, enabling, and need components. (Andersen '73) The predisposing elements, or the "propensity" to use services, include factors such as sex, age, race/ethnicity, and values concerning health and illness. Included among these individual-level barriers are cultural or religious beliefs against immunizations, language barriers, misinformation about the risks of vaccines, or lack of knowledge about the immunization schedule. In addition, there are some parents who do not believe in the benefit of shots. They would rather rely on "herd immunity" due to their misconceptions regarding the risk, real or perceived, of vaccine side-effects versus the risk of developing the disease. The enabling component, or the "means" available to use services, includes access to services, determined by
factors such as income or insurance. Many children do not have a primary care provider. In fact one in six children in the U.S. lacks health insurance. (Freed '93) Another aspect of the enabling component includes barriers that result indirectly from a scarcity of money or insufficient resources such as, a lack of transportation or childcare for other children. The need component, or the illness level, applies to immunizations in that in order to seek out immunizations the individual must perceive a probability of the occurrence of an illness against which vaccines protect. A barrier exists from this component in that there is the false perception that the diseases that vaccines protect against no longer pose a risk to children because they are not around anymore or because advances in medicine have made it possible to care for children who get sick with a vaccine-preventable illness.

In different populations the relative importance of these different barriers varies. In a health maintenance organization (HMO) the population has good financial access to preventive care. A study conducted in an HMO population found that the risk factors associated with delayed immunization include not knowing when shots are due, having a large number of children, not having a regular doctor, and not worrying about the risks of shots. (Lieu '94) In a sample of children attending a public health clinic the low immunization rates were attributed to missed opportunities and too few well-child visits. (Wood '95)
This chapter has highlighted the benefits of timely immunization, illustrated the repercussions of underimmunization, and shown that the problem of underimmunization is very complex. The next chapter will focus on one component leading to low immunization rates, missed opportunities.
References for Chapter 1


<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria-Pertussis-Tetanus</td>
<td>29:1</td>
</tr>
<tr>
<td>Measles-Mumps-Rubella</td>
<td>21:1</td>
</tr>
<tr>
<td>Oral Polio Vaccine</td>
<td>6:1</td>
</tr>
<tr>
<td>(Orenstein '94)</td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenza type b</td>
<td>3.57:1</td>
</tr>
<tr>
<td>(US General Accounting Office '93)</td>
<td></td>
</tr>
</tbody>
</table>
### Table 2

**Recommended Childhood Immunization Schedule* - United States, January 1996**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Birth</td>
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<tr>
<td></td>
<td>1 Mo, 2 Mos.</td>
</tr>
<tr>
<td></td>
<td>4 Mos.</td>
</tr>
<tr>
<td></td>
<td>6 Mos.</td>
</tr>
<tr>
<td></td>
<td>12 Mos.</td>
</tr>
<tr>
<td></td>
<td>15 Mos.</td>
</tr>
<tr>
<td></td>
<td>18 Mos.</td>
</tr>
<tr>
<td></td>
<td>4-6 Yrs.</td>
</tr>
<tr>
<td></td>
<td>11-12 Yrs.</td>
</tr>
<tr>
<td></td>
<td>14-16 Yrs.</td>
</tr>
<tr>
<td><strong>Hepatitis B</strong></td>
<td>Hep B-1</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diphtheria and tetanus toxoids</strong></td>
<td>DTP</td>
</tr>
<tr>
<td>and pertussis vaccine†</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Haemophilus influenzae</strong></td>
<td>Hib</td>
</tr>
<tr>
<td>type b**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Poliovirus</strong></td>
<td>OPV</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Measles-mumps-rubella</strong></td>
<td>MMR</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Varicella zoster virus</strong></td>
<td>Var</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Range of Acceptable Ages for Vaccination**

*“Catch-Up” Vaccination* $$$

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* Vaccines are listed under the routinely recommended ages.
† Infants born to hepatitis B surface antigen (HBsAg)-positive mothers should receive 2.5 µg of Recombivax HB® (Merck & Co.) or 16 µg of Engerix-B® (SmithKline Beecham). The second dose should be administered 21 months after the first dose. Infants born to HBsAg-negative mothers should receive 0.5 ml hepatitis B immune globulin (HBIG) within 12 hours of birth, and either 5 µg of Recombivax HB® or 10 µg of Engerix-B® at a separate site. The second dose is recommended at age 1–2 months and the third dose at age 6 months. Infants born to mothers whose HBsAg status is unknown should receive either 5 µg of Recombivax HB® or 10 µg of Engerix-B® within 12 hours of birth. The second dose of vaccine is recommended at age 1 month and the third dose at age 6 months.
‡ Adolescents who have not received three doses of hepatitis B vaccine should initiate or complete the series at age 11–12 years. The second dose should be administered at least 1 month after the first dose, and the third dose should be administered at least 4 months after the first dose and at least 2 months after the second dose.
§ The fourth dose of diphtheria and tetanus toxoids and pertussis vaccine (DTP) may be administered at age 12 months, if at least 6 months have elapsed since the third dose of DTP. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP) is licensed for the fourth and/or fifth vaccine dose(s) for children aged ≥15 months and may be preferred for these doses in this age group. Tetanus and diphtheria toxoids, adsorbed, for adult use (TD) is recommended at age 11–12 years if at least 5 years have elapsed since the last dose of DTP, DTaP, or diphtheria and tetanus toxoids, adsorbed, for pediatric use (DT).
**Three Haemophilus influenzae type b (Hib) conjugate vaccines are licensed for infant use. If PedvaxHIB® (Merck & Co.) Haemophilus b conjugate vaccine (Meningoococal Protein Conjugate) (PPF-OMP) is administered at ages 2 and 4 months, a dose at 6 months is not required. After completing the primary series, any Hib conjugate vaccine may be used as a booster.
†† Oral poliovirus vaccine (OPV) is recommended for routine infant vaccination. Inactivated poliovirus vaccine (IPV) is recommended for persons—or household contacts of persons—with a congenital or acquired immune deficiency disease or an altered immune status resulting from disease or immunosuppressive therapy, and is an acceptable alternative for other persons. The primary three-dose series for IPV should be given with a minimum interval of 4 weeks between the first and second doses and 6 months between the second and third doses.
§§ The second dose of measles-mumps-rubella vaccine (MMR) is routinely recommended at age 4–6 years or at age 11–12 years but may be administered at any visit provided at least 1 month has elapsed since receipt of the first dose.
\\ Varicella zoster virus vaccine (Var) can be administered to susceptible children any time after age 12 months.
***Unvaccinated children who lack a reliable history of chickenpox should be vaccinated at age 11–12 years.***

---

*Use of trade names and commercial sources is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.


(CDC '96)
Table 3
Standards for Pediatric Immunization Practices

Standard 1. Immunization services are readily available.

Standard 2. There are no barriers or unnecessary prerequisites to the receipt of vaccines.

Standard 3. Immunization services are available free or for a minimal fee.

Standard 4. Providers utilize all clinical encounters to screen and, when indicated, immunize children.

Standard 5. Providers educate parents and guardians about immunization in general terms.

Standard 6. Providers question parents or guardians about contraindications and, before immunizing a child, inform them in specific terms about the risks and benefits of the immunizations their child is to receive.

Standard 7. Providers follow only true contraindications.

Standard 8. Providers administer simultaneously all vaccine doses for which a child is eligible at the time of each visit.


Standard 10. Providers co-schedule immunization appointments in conjunction with appointments for other child health services.

Standard 11. Providers report adverse events following immunization promptly, accurately and completely.

Standard 12. Providers operate a tracking system.

Standard 13. Providers adhere to appropriate procedures for vaccine management.
Table 3

Standards for Pediatric Immunization Practices (cont)

Standard 14. Providers conduct semi-annual audits to assess immunization coverage levels and to review immunization records in the patient populations they serve.

Standard 15. Providers maintain up-to-date, easily retrievable medical protocols at all locations where vaccines are administered.


Standard 17. Vaccines are administered by properly trained individuals.


(US Dept. of Health and Human Services '92)
CHAPTER 2.
MISSING OPPORTUNITIES

A missed opportunity, as defined by the Centers for Disease Control and Prevention (CDC), is a health-care visit during which a child eligible for vaccination on the day of the visit and with no genuine contraindication for vaccination failed to receive the needed dose(s). (CDC '94)

A missed opportunity can occur for a variety of reasons as shown in Table 4.

Missed opportunities for immunization make a significant contribution to decreased vaccination rates. A study by Szilagyi et al showed that of the undervaccination time during a child's first year of life about half of this time could be attributed to missed opportunities. (Szilagyi '93) Three causes of missed opportunities are the focus of much of the medical literature on this topic and appear to be most amenable to intervention. These include: (1) not administering simultaneous vaccines, (2) the application of invalid contraindications to immunizations, and (3) that the immunization status is not checked when the child is in for another reason (i.e. acute illness, well-baby check).
Non-Simultaneous Administration

The practice of not administering multiple vaccines simultaneously contributes to the undervaccination of children. One study showed that the vaccination level could be improved by 17% if vaccines were administered simultaneously. (Dietz '94) Despite the benefit of and recommendation to administer multiple vaccines simultaneously, a study conducted by Meldrum et al showed that 27% of pediatricians and 43% of family physicians would not administer four immunizations (DTP, OPV, MMR, and HIB) at one visit to a healthy 18-month-old. (Meldrum '94) The most common reason, cited by 79% of pediatricians and 68% of family physicians, for not wanting to give multiple injections was that they felt that three or more injections would be too painful for the child. A study by Woodin et al demonstrated that physicians are more concerned about multiple injections at a single visit than are parents. In fact, 60% of physicians had a strong concern about 3 injections for a child 7 months or younger versus 41% of parents, and for four injections 80% of physicians had a strong concern versus 60% of parents. Interestingly, 58% of the parents surveyed would actually prefer to have their child receive four injections at one visit rather than having to come back for vaccines not given simultaneously. (Woodin '95) A financial incentive exists for physicians operating
under a fee-for-service payment scheme to require multiple visits for childhood immunization delivery.

Invalid Contraindications

Another common reason for missed opportunities is that contraindications to vaccination are misapplied. Absolute contraindications, as listed in the Standards for Pediatric Immunization Practices, include, a previous anaphylactic reaction to the vaccine, and severe illnesses (U.S. Dept. of Health and Human Services '92). The most frequent invalid contraindication is a mild acute illness with or without a low grade fever at the time of the needed immunization. A record audit of a public clinic in Los Angeles showed that the missed opportunities to administer an MMR (measles-mumps-rubella) vaccine included otitis media (42%), well-child care only (27%), acute respiratory illness (14%), other mild illness (11%), or administration of another vaccine (6%). (Farizo '92) Other studies have shown that many providers would inappropriately defer an immunization in a child with otitis media, gastroenteritis, or a low-grade fever. (Szilagyi '94, Wood '96, Meldrum '94)

Reasons cited for withholding immunizations during acute illness visits include, "the fear of masking a serious illness, of exacerbating vaccine adverse effects, or of decreasing immunologic response, as well as the need to focus
on the acute condition, insufficient time, and reluctant parents." (Szilagyi '94) The concern that there will be lower seroconversion rates in children immunized while they have an illness was addressed in a study by Dennehy et al showing that there was 100% seroconversion to MMR and varicella in children with a recent or existing upper respiratory tract infection. (Dennehy '94)

**Non-Utilization of All Visits**

Although the *Standards for Pediatric Immunization Practices* states as Standard 4, "providers utilize all clinical encounters to screen and, when indicated, immunize children," (U.S. Dept. of Health and Human Services '92) this still is not universally practiced. Despite the recommendation, at many health care visits a child's immunization status may not even be checked. A survey of Monroe County physicians showed that only about half of pediatricians and two-thirds of family physicians screen immunization records at all types of visits. (Szilagyi '94) A survey of practitioners in Baltimore in private settings indicated that only 70% of the sites "always or routinely screened for immunization status at unscheduled visits for illness". (Hughart '94) This failure to check vaccination status leads to missed opportunities. One study showed that of the patients behind in receiving immunizations, 23% had a
missed opportunity because they came to the public health department for another reason. (Hueston '94)

* * * * * * *

The problem of missed opportunities provides areas amenable to change to improve immunization levels. Chapter 3 will provide the background that was relevant to the study conducted for this thesis.
References for Chapter 2


Table 4.

Missed Opportunities for Childhood Immunization

- The child's immunization status is not assessed at every encounter.
- More than one immunization is indicated but not administered.
- The child has a mild acute illness (e.g. upper respiratory infection, or diarrhea) with or without low-grade fever.
- The child has not had a recent physical examination.
- A child is undergoing antimicrobial therapy or is in the convalescent phase of an acute illness.
- A child has been exposed to an infectious disease such as varicella.
- A child has had a mild or moderate local or systemic reaction (e.g. fever of 105°F, soreness, or swelling) at a previously administered DPT vaccine.
- A tuberculin test is administered at the encounter.
- A child has a non-specific or penicillin allergy, or has a relative with allergies.
- A mother or another household contact is pregnant or is breast-feeding.
- A child has a history of prematurity.

(Dales '93)
CHAPTER 3

BACKGROUND FOR THIS STUDY

Urgent Care Visits and Missed Opportunities

As discussed in Chapter 2, there are many missed opportunities to vaccinate children. For example, physicians do not take advantage of opportunities to immunize at most urgent care clinic visits, visits when a child is thought to have a mild illness. A prior study of missed opportunities at Rochester General Hospital, New York, found that in 63% of the urgent care visits that were potential missed opportunities, there was no contraindication to vaccination. (McConnachie '92) Yet, despite this fact, less than half of providers routinely immunize during acute-illness visits. (Szilagyi '94) The lack of time during these visits is cited as a primary concern of providers who do not even have enough time to focus on the reason for the visit. Other reasons that these visits are not utilized for immunization include: (1) invalid contraindications to immunization are applied; (2) information on the child's immunization status is not readily available; and (3) providers may perceive parents as reluctant to accept immunizations at these visits.

The problem of invalid contraindications can be addressed through the better education of physicians regarding true contraindications. The issue of not having a
child's immunization history available could be addressed through innovations that automatically produce reminders for physicians or nurses seeing patients who were overdue for immunizations. The placement of a flag on a child's chart would enable urgent care clinic providers to more efficiently help with the effort to improve preventive service delivery.

Despite the above improvements there would still be a hesitancy by many providers to use urgent care visits to immunize. A concern that providers have is that parents will be reluctant to accept a shot when their child is sick and that time, already in short demand, will need to be spent convincing parents that this is beneficial. Before the effort is expended to flag charts it would be worthwhile to provide justification by determining parents' level of willingness to accept shots at urgent care visits. A study to determine parental acceptance of childhood immunization at urgent care visits was performed in conjunction with Kaiser Permanente's Division of Research.

Kaiser Permanente Medical Care Program

Although belonging to Kaiser Permanente Medical Care Program (KPMCP) provides financial access to preventative medical services, one in eight children in the Northern California KPMCP is at least 3 months late for the measles-mumps-rubella (MMR) immunization (Lieu '94), and even more
are late for the fourth diphtheria-pertussis-tetanus (DPT) immunization. Since 1991, Northern California KPMCP has had an Immunization Tracking System (ITS) in which all childhood immunizations are recorded on a centralized database. The ITS provides Kaiser with the opportunity to link immunization information with an outpatient registration system so that physicians or nurses seeing patients at urgent care visits could be prompted to give patients’ needed immunization or arrange for follow-up visits.

A prior study was undertaken to determine what proportion of children who are underimmunized at age two have had an urgent care visit and thus had a “missed opportunity.” The study showed that among a group of 4,691 two-year-olds with Kaiser Permanente membership who were late for the measles-mumps-rubella and/or diphtheria-tetanus-pertussis immunization, over half (53%) had made at least one urgent care clinic visit since the time the immunization was due. (Lieu, submitted) A chart review of a random sample of these visits was conducted and demonstrated that 79% of these visits were truly missed opportunities; they had no contraindications to immunization at the time of the visit.

The above-mentioned study showed that children behind in their immunizations had made urgent care clinic visits and in the majority of these visits there had not been a valid contraindication to immunization. However, before suggesting that Kaiser link their immunization tracking system with their outpatient database to flag charts of children in need
of vaccination, it is necessary to determine whether parents would accept immunizations at these urgent care clinic visits.

In conjunction with Tracy Lieu, M.D., M.P.H. with the Kaiser Division of Research, a survey of parents of children who are members of Kaiser, who were behind on their immunizations, and who recently came in for an urgent care visit was designed. The study question was whether parents would be willing to have their children immunized if they are discovered to be overdue when they make visits for minor illnesses and a provider offers the service. Telephone interviews were conducted during the Fall of 1995 and data analysis completed during the Spring of 1996. It is hoped that the following new information regarding childhood immunizations will serve to allow more effective immunization of our children.

*   *   *   *   *   *

In the next chapter, findings from the study will be presented.
References for Chapter 3


CHAPTER 4.
PARENTS' ACCEPTANCE OF CHILDHOOD IMMUNIZATIONS DURING AN URGENT CARE VISIT

ABSTRACT

Objective. -- 1) To determine if parents would be willing to have children immunized if they are discovered to be overdue when they come to an urgent care visit, a visit when a child is thought to have a mild illness, and a provider offers the service. 2) To determine if specific characteristics of the parents or children are correlated with the willingness to accept the immunization.

Design. -- Cross-sectional telephone survey of parents of children behind in their immunization series and who had recently made an urgent care visit in a regional group-model health maintenance organization in Northern California.

Setting. -- Large health maintenance organization in Northern California.

Participants. -- The population from which the study group was drawn included children who had at least one immunization recorded in the health plan tracking system and were between 18-24 months of age as of January 1, 1995. The study group (N=451) were those who were behind in receiving an MMR (i.e. had not received the MMR by 18 months of age) and who had made an urgent care visit between January 2, 1995 and April 16, 1995.
Results. -- Of the 425 eligible participants, 352 (83%) completed interviews. Of these 352, 79 were excluded from the analysis because they did not think that their child was overdue at the time of the urgent care clinic visit. Among the 273 final study participants, 200 (73%) said they theoretically would have been willing to have their child immunized at the urgent care visit in question, if the physician had suggested it. An additional 31 (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, 84% reported they would have accepted an immunization during the urgent care visit. Bivariate analysis revealed that parent/child characteristics that correlated with acceptance of the shot were (1) not being previously late for shots (p = .007); (2) not being aware that their child was behind (p < 0.005) and concern about being up-to-date (p=.0445); (3) no prior history of a worrisome reaction to a vaccine (p=.014); (4) less concern about the risk of shots (p=.0001); and (5) perception that the child was not very sick at the visit (p=.0024). Income, education, and race/ethnicity were not significantly correlated with reported willingness to accept immunization.

Conclusions. -- Most parents of underimmunized children making an urgent care clinic visit would have been willing to accept an immunization if a physician recommended it. These findings show that most parents are not reluctant to accept an immunization for their child during an urgent
care visit. More effective ways of alerting providers when immunizations are due, such as an indication on a chart, is a promising strategy to increase immunization rates.
INTRODUCTION

Childhood vaccinations are among the most cost-effective currently available health interventions. Yet, just over two-thirds of preschool children in the U.S. are adequately immunized with the primary vaccination series by two years of age. (CDC '95) National guidelines, the Standards for Pediatric Immunization Practice, were developed to reduce underimmunization. (US Dept. of Health and Human Services '92) Many providers do not always adhere to the Standards. (Hughart '94, Meldrum '95, Szilagyi '94)

Missed opportunities make a significant contribution to low immunization rates. (Szilagyi '93) Standard 4 of the Standards for Pediatric Immunization Practice state that all clinical encounters should be utilized to screen and, when indicated, immunize children. Yet, during many health care visits (30%-50%) a child's immunization status is not checked. (Hughart '94, Hueston '94, and Szilagyi '94)

Currently, physicians do not take advantage of opportunities to immunize at urgent care clinic visits because (1) information on the child's immunization status is not readily available; (2) invalid contraindications to immunizations are applied; and (3) providers may perceive parents as reluctant to accept immunizations at these visits. Although during some illnesses it is not appropriate to give an immunization, policies in which they are never given at acute care visits result in unnecessary delays for some
children. The first two issues, unknown immunization status and invalid contraindications, could potentially be resolved by education of providers and innovation. However, there appear to be no studies that have attempted to explore if parents truly would be willing to accept immunizations at these visits.

Improving adherence to the recommendation to utilize all health care visits for immunization will require a better understanding of parents' preferences. The purpose of this study was to determine whether parents would be willing to have their children immunized if discovered to be overdue when they make visits for minor illnesses and to identify predictors of the willingness to accept immunization at these visits. This would permit providers to understand under which circumstances parents are most likely to accept an immunization allowing focused vaccination efforts during these specific situations to improve immunization rates.

The site of this study was the Northern California Kaiser Permanente Medical Care Program. A prior study of this population showed that among a group of 4,691 two-year-olds who were late for the MMR and/or DPT immunization, over half (53%) had made at least one urgent care clinic visit since the time the immunization was due. (Lieu, submitted) A chart review was conducted with a random sample of these visits and demonstrated that 79% of these visits were truly missed opportunities; there were no contraindications to immunization at the time of the visit. (Lieu, submitted)
METHODS

Design

A cross-sectional telephone survey of parents whose children were underimmunized and who had recently made an urgent care visit to determine their willingness to have children immunized at urgent care clinic missed opportunity visits.

Setting

The Northern California Kaiser Permanente Medical Care Program (KPMCP) is an integrated group-model health maintenance organization. In 1993, it was a closed-panel plan which served approximately 2.4 million members. It operates 16 medical centers and 15 outpatient medical office facilities over a geographic region approximately 250 miles in diameter. Most members receive health insurance as an employment benefit. Families of toddlers in the program are of diverse race/ethnicity (50% being white, 19% Hispanic, 17% Asian, and 13% Black) and educational backgrounds (35% with high school or less, 29% with some college, 36% with a college degree or more). (Lieu '94) Since 1993, Northern California KPMCP has had an Immunization Tracking System (ITS) in which all childhood immunizations are recorded on a centralized database.
Study population

The study population from which the study group was drawn were children who turned 18-24 months old as of January 1, 1995, who: (1) had active membership in the health plan as of January 1, 1995 with continuous membership between 15-18 months of age, (2) have had at least one immunization recorded in the health plan Immunization Tracking System (ITS), (3) did not have an MMR immunization recorded on ITS between 12 and 18 months of age, (4) did not make any well-child visit at a facility which was not part of the ITS at the time of the visit, (5) made an urgent care clinic visit at any KPMCP facility between January 2, 1995 and April 16, 1995, and (6) were reachable by telephone.

Using the above criteria, a sample of 451 parents were drawn from the Northern California region of KPMCP using the KPMCP registration database. Families were ineligible if the telephone number was wrong or disconnected (n=18); they were no longer a KPMCP member (n=1); the visit was not actually an urgent care visit (n=1); or the parents did not speak English, Spanish, or Cantonese (n=6). Thus, 425 parents were eligible for this study.
Telephone Survey

Telephone interviews were attempted with 425 consecutively selected eligible parents in the study population. Interviews were conducted in English, Spanish and Cantonese by six experienced interviewers. Interview attempts were made within three weeks of the child’s urgent care clinic visit. A letter that notified parents that an interviewer would be calling preceded the interview attempts and indicated that refusal to participate would not affect their medical care in any way. The survey instrument is included in appendix A. The 5-minute interview collected information on:

- attitudes about immunizations;
- whether, according to the parent, the child had already received the MMR immunization at Kaiser or someplace else;
- if the parent was aware that the immunization was due;
- parent's perception of the child's illness including, if the child had a fever, during the urgent care clinic visit;
- 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;
• if not, whether the parent would have accepted a return visit being scheduled at the time of the recent urgent care clinic visit;
• demographic variables including education, income, and race.

**Statistical Analyses**

Descriptive statistics, including proportions and 95% confidence intervals, was used for the proportion of parents willing to accept immunization during the urgent care visit, parents who were not aware the immunization was due, children who had nonfebrile illnesses, and children who were immunized at places other than Kaiser. The chi-square test was used to evaluate associations between categorical variables (e.g., whether parents of children with nonfebrile illnesses would have been more likely to accept immunization at the urgent care clinic visit than parents of children with febrile illnesses) and the Mann-Whitney U test was used for ordinal and continuous nonparametric variables (e.g., whether parents who would have accepted immunization at the urgent care clinic visit were better educated than those who would not).
RESULTS

Of the 425 eligible families, 352 (83%) completed interviews, 46 (11%) were unreachable after repeated attempts, and 27 (6%) declined to be interviewed.

Of the 352 children, 44% were White, 13% were Latino, 11% were African-American, 9% were Asian-American, 10% were White and Latino multiracial, and 14% were Other. The mean age of the childrens' mothers was 29.8 years; with varied levels of formal education (4% with 8th grade or less, 39% with some or completed high school, 56% with at least some college, and 1% who don't know). The mean age of the childrens' fathers was 32.2 years; with varied levels of formal education (2% with 8th grade or less, 45% with some or completed high school, 48% with at least some college, and 5% missing/don't know).

Among the study population of 352, 79 were excluded from analysis because they did not think that their child was overdue for immunization. Among the remaining 273, 200 (73%) stated they would have been willing to have their child immunized at the urgent care visit, if the physician had suggested it. An additional 31 (11%) stated they would 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, 84% would have accepted an immunization during the urgent care visit. When asked for their preference, 171 (63%) would have wanted the immunization to be given right
then at the urgent care visit, 58 (21%) would have wanted to 
schedule an appointment with their own doctor for later, 36 
(13%) would have liked to come back later without needing an 
appointment, and 3% had no response.

Predictors of Accepting Immunization at Urgent Care Visit

Parents indicating their child had not been late in 
receiving an immunization before were more likely to state 
they would have accepted an immunization at the urgent care 
visit than parents indicating their child had been late 
before (p=.007). Not knowing that their child was behind 
with the immunization series was a predictor of willingness 
to accept the immunization at the urgent care visit (p<.005). 
Parents who reported that their child had not had a worrisome 
reaction to a previous vaccine were more likely than parents 
who reported that their child had had a worrisome reaction to 
say they would have accepted the vaccination at the time of 
the urgent care visit (p=.014). Parents with less concern 
about the risk of shots (p=.0001), but more concern about 
being up-to-date with the child's shots (p=.0445) had a 
higher likelihood of saying they would have accepted the 
shot. Parental perception that their child was less sick at 
the visit was a predictor of accepting the immunization at 
the urgent care visit (p=.0024).

Unexpectedly, families that kept IPECAC in their home 
were less likely to accept an immunization at the urgent care
visit (p=0.047). This may indicate a heightened awareness about their child's safety which may make them more concerned about accepting an immunization outside of the context of a preventive visit. Paradoxically, parents with a shorter travel time to the clinic were more likely to want the shot given at the urgent care visit (p=0.043).

Notably income, education, and race/ethnicity were not significantly associated with whether parents would have been willing to accept the immunization at the urgent care visit.

**Reasons for Not Accepting Immunization at Urgent Care Visit**

There were 42 (15%) parents who said they would not have accepted an immunization at the time of the urgent care visit. Concern regarding the fact that their child was sick was the most important reason for not accepting the immunization (Table 5).

**DISCUSSION**

This study found that most parents reported being willing to accept an immunization at an urgent care clinic visit. Parent and child characteristics that correlated with acceptance of the shot included not being previously late for shots; not being aware that the child was behind; concern about being up-to-date; no prior history of a worrisome
reaction to a vaccine; less concern about the risk of shots; and perception that the child was not very sick at the visit. Income, education, and race/ethnicity were not significantly correlated with willingness to accept the immunization.

This study provides evidence contrary to the previous assumption by providers that most parents are reluctant to accept an immunization during an acute illness visit. Our findings contradict a previous study that evaluated health beliefs of parents using a questionnaire during a private practice office visit in Seattle. Observing a high level of agreement with the statement, "I don't think my child should get an immunization if he/she is sick," the authors concluded that "parents are strongly opposed to their children receiving immunizations during an illness." (Taylor '96) The statement the parents were asked to agree or disagree with evaluated whether parents think that an immunization can be given if a child is sick. The authors' conclusion that parents are "strongly opposed" does not necessarily follow. Rather parents most likely incorrectly think that it is not safe. Our study asked parents' of underimmunized patients who actually experienced an urgent care visit about their willingness to accept the immunization if a physician suggested it. Based on the positive response we received it appears that parents may just need reassurance of the safety and effectiveness of immunizations during a mild illness in order to convince them of the benefit.
Education of parents that it is safe and effective for a child to receive immunization when a mild illness is present would allow children to be more easily immunized during acute care visits. In addition, it would encourage parents to bring their children in for their regularly scheduled immunization appointments even when their child is sick. This has been shown to be another source of missed opportunities (Abbotts '93) that could be prevented by appropriate education of parents.

Even with education about the safety of providing immunization during mild illness our findings show that some parents still will not want their child to receive the immunization at the urgent care visit. Most of the parents not wanting the immunization because their child is sick, indicated that their reason was because they do not want to expose their child to more pain.

The Immunization Tracking System that exists at the site of this study provides the opportunity to link immunization information with an outpatient registration system so that physicians or nurses seeing patients at urgent care visits could be prompted to give patients’ needed immunizations or arrange for follow-up visits. Other sites may not have a computerized tracking system, but could implement a chart review system of charts of children with upcoming acute illness visits. More effective and innovative ways of alerting providers when immunizations are due, such
as an indication on a chart, is a promising strategy to increase immunization rates.

**Study Limitations**

A threat to external validity exists with the selection of patients only from a health maintenance organization. This may limit the generalizability of the results to other practice settings. The survey asked parents to speculate what they theoretically would have done in a particular situation which does not necessarily indicate what their true actions would have been. Also the participants' children were behind in their immunization series. Further research should be conducted to determine if the results obtained from this study are generalizable to all parents, including those whose children are up-to-date with immunizations.

**Conclusions**

Based on this study's findings, providers should not hesitate to offer immunizations during acute illness visits. Advisories regarding the education of providers to reduce missed opportunities should highlight parents' willingness to accept immunization at urgent care visits. Mechanisms should be developed to allow for more convenient immunization during acute illness visits including, flagging the chart and providers better understanding true contraindications to
vaccination. In addition, educational material about the safety and effectiveness of immunizing children during mild acute illnesses should be incorporated into standard immunization brochures to eliminate misperceptions.

* * * * *

The final chapter provides a discussion about the follow-up to this study and gives recommendations based on the results of the telephone interview study.
References for Chapter 4


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<td>concern about side effects/danger shots</td>
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<td>7%</td>
</tr>
<tr>
<td>other</td>
<td>5</td>
<td>12%</td>
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CHAPTER 5.
CONCLUSION

Follow-up to the Telephone Survey

A chart review is being conducted for the children whose parents completed telephone interviews. Data are being collected for the urgent care clinic visit about which the parent was interviewed. Data include discharge diagnosis, temperature, history of fever, blood, urine, stool, or spinal fluid cultures sent, medications administered during the visit, reason for not immunizing, if recorded, and discharge disposition (to home, emergency department, or hospital). Based on current contraindications published by the Centers for Disease Control, we will determine if it would have been possible to immunize the child at this visit and analyze chart review data with the data collected from the telephone interviews.

Correlations between whether parents would have accepted the immunization at this visit and clinical findings (e.g., temperature, history of fever, presence or absence of otitis or other common diagnoses) will be tested using the chi-square test for categorical variables. These correlations may be quite useful to clinicians because they may identify in advance children whose parents would be very likely or very unlikely to accept a recommendation for immunization during an urgent care visit.
Recommendations

Based on the work conducted for completion of this thesis I would like to conclude with my recommendations to improve immunization rates:

• Urgent care visits should be used to immunize children if there are no valid contraindications.

• Physicians should educate themselves regarding true contraindications, these are listed in the Standards for Pediatric Immunization Practices, and determine their own guidelines for relative contraindications.

• Mechanisms should be developed to allow for more convenient immunization during acute illness visits including, flagging the chart and better understanding by providers of true contraindications to vaccination.

• Educational programs should be developed, geared towards providers, highlighting parents' willingness to accept immunization at urgent care visits.

• Educational outreach programs should be implemented that target parents about the safety and effectiveness of immunizing children during mild acute illnesses.
APPENDIX A

PARENTS' ACCEPTANCE OF CHILDHOOD IMMUNIZATIONS DURING AN URGENT CARE VISIT: A TELEPHONE SURVEY

Name: ___________________________ (last) ___________________________ (first)
Location: ________________________ Date of birth: __/____/____
MR#: ____________________________ Sex: 1[ ] Male 2[ ] Female

Telephone #: _______________________ Day ( ) _________ Eve (___________) __________

Date and time of urgent care clinic visit: __/____/____

AN/PM Last date for interview: __/____/____ (4 weeks after urgent care visit)

Call Record

Date (Mo/Day) Time Int. # Outcome/Comment

Outcomes include:
C=Complete BS=Busy R=Refused DC=Disconnected
NA=No answer AM=Ans. machine WN=Wrong number NP=Not reach parent
CB=Call back LB=Lang. barrier NK=Not Kaiser member O=Other (specify)

Hello, my name is _________ . I am calling from the Kaiser Permanente Division of Research. May I speak with the person who took (__) to the urgent care visit on ________ ________?

(read month and day of visit from above label)?

(Repeat first two sentences if a different person answers the phone)

I am calling as a follow-up to the letter we recently sent you about a study to help us improve our services for children. As the letter describes, it would involve answering a few questions and should take no longer than 5 to 10 minutes.

Is this a good time to talk?

no  --> What would be a good time?

yes  --> Thank you (and continue)
I'd like you to know that your participation is voluntary; your responses are completely confidential and will not influence your family's care at Kaiser in any way.

1. What is your relationship to (___)?  
   (check one only)
   1[ ] Mother
   2[ ] Father
   3[ ] Other relative (specify):________________
   4[ ] Non-relative (specify):________________

2. Including (___) how many children under 18 are in your family?

   ☐ ☐
   (use leading zeros)

3. Can you tell me their ages, starting with the oldest?  
   (Use age on last birthday.)

   ☐ ☐ ☐ ☐ ☐

   ☐ ☐ ☐ ☐ ☐
   (Write in ages; use leading zeros)

4. How many adults 18 or older live in your household?  Include yourself if you are 18 or older.

   ☐ ☐
   (use leading zeros)

5. Would you say (___)’s health in general is: (read options)
   1[ ] Excellent
   2[ ] Very good
   3[ ] Good
   4[ ] Fair
   5[ ] Poor

6. How satisfied are you with (___)’s medical care at Kaiser? Would you say (read options):
   1[ ] Very dissatisfied
   2[ ] Dissatisfied
   3[ ] Satisfied
   4[ ] Very satisfied
7. How satisfied are you with the service at Kaiser? Would you say (read options):
1[ ] Very dissatisfied
2[ ] Dissatisfied
3[ ] Satisfied
4[ ] Very satisfied

8a. About how long does it usually take you to travel to Kaiser for a well child visit? Counting from the time that you leave work or home until you register.
(write in number; use leading zeros)

_____ _____ _____ minutes
8[ ] Don’t know

8b. After registering, about how long do you usually have to wait before you speak to the doctor?
(write in number; use leading zeros)

_____ _____ _____ minutes
8[ ] Don’t know

Now I would like to ask you a few questions about child safety.

9a. Does(__) now have a child safety seat in your car?
1[ ] Yes
2[ ] No

9b. When riding in the car, how often is(__) buckled in the seat? Would you say:
(read options)
1[ ] All or most of the time
2[ ] Some of the time
3[ ] Once in awhile
4[ ] Never

10. There is a medication called Ipecac (ip’i kak) syrup which can be taken to cause vomiting in case a child swallows something poisonous. Do you now have any Ipecac syrup in your house?
1[ ] Yes
2[ ] No
8[ ] Don’t know
Now I would like to ask you a few questions about childhood immunizations.

11. Some parents tend to be concerned a great deal about the risk of shots, while others say they don’t worry at all. How much do you worry about the possible risks of shots? (read options)

1[ ] A great deal
2[ ] A moderate amount
3[ ] A little
4[ ] None at all

12. Some parents tend to be concerned about being up-to-date on shots, while others say they don’t worry at all. How much would you worry if (____) were not up-to-date on shots? (read options)

1[ ] A great deal
2[ ] A moderate amount
3[ ] A little
4[ ] None at all

13. Has (____) ever been more than a month late getting a shot?

1[ ] Yes —> What was the most important reason it was late? (check one only; do not read options)
2[ ] No
8[ ] Don’t know

01[ ] Child was sick —> Was it you or the doctor who decided the shot should be postponed?
1[ ] Me 2[ ] Doctor 3[ ] Both

02[ ] I was too busy
03[ ] Didn’t know the shot was due
04[ ] Not important to get shots
05[ ] Forgot
06[ ] Concern about danger of shots
07[ ] Scheduling difficulties with Kaiser
08[ ] Other (specify): ________________

14. At any time (____) or any of your other children had a shot, did they ever have a reaction that caused you to worry? (If more than one incident, say, “Let’s talk about the most worrisome time.”)

1[ ] Yes —> Did it seem serious enough to call the doctor or the advice nurse?
2[ ] No

1[ ] Yes 2[ ] No

Now I’d like to ask a few questions about (____)’s recent urgent care visit. Our computer shows that (____) made an urgent care visit on ____________________ (read month and day of visit from first page).
15. Please think back to the illness that caused the urgent care visit. How sick was (___) at the time you made this visit? Would you say: (read options)

1[ ] Very sick
2[ ] Moderately sick
3[ ] A little sick
4[ ] Not very sick

16. Did (___) have a fever during this illness?

1[ ] Yes —> Had (___) had the fever before your urgent care visit?

1[ ] Yes
2[ ] No
8[ ] Don't know

—> Did (___) have the fever at the time you checked in for your urgent care visit?

1[ ] Yes
2[ ] No
8[ ] Don't know

2[ ] No
8[ ] Don't know

17. How satisfied were you with the care that (___) received at the urgent care visit that we have been talking about? (read options)

1[ ] Very dissatisfied
2[ ] Dissatisfied
3[ ] Satisfied
4[ ] Very satisfied

18. Does (___) have a regular doctor at Kaiser?

1[ ] Yes —> Was it your regular doctor that (___) saw during the urgent care clinic visit?

1[ ] Yes 2[ ] No

2[ ] No
8[ ] Don't know

19. Did you feel that the doctor spent enough time with you addressing your concerns?

1[ ] Yes
2[ ] No
20. At the time you made the urgent care visit, our computer records show that (___) was not up-to-date with immunizations. Were you aware of this at the time of the visit?

1[ ] Yes  

→ What was the most important reason (___)’s immunization was overdue?
   (check one only; do not read options)
   01[ ] Child was sick  → Was it you or the doctor who decided the immunization should be postponed?
   1[ ] Me  2[ ] Doctor  3[ ] Both
   02[ ] Too busy
   03[ ] Didn’t know the immunization was due
   04[ ] Not important to get immunizations
   05[ ] Forgot
   06[ ] Concern about danger of immunizations
   07[ ] The clinic was fully booked so there were weeks between my request and the appointment
   08[ ] Other (specify): ________________

2[ ] No

3[ ] My child was not overdue →
   1[ ] Had shot outside Kaiser
   2[ ] Had the shot at Kaiser
   3[ ] Other (specify): ________________
   (If not overdue, skip to question 24)

21. We are working on a system that would tell the doctor or nurse that a child needed an immunization. Thinking back on the urgent visit that we have been talking about, if the doctor had suggested it would you have wanted (___) to be immunized at this visit?

1[ ] Yes  → skip to question 24
2[ ] No
8[ ] Don’t know

22. If the doctor had told you that it would definitely be safe and strongly encouraged you to have the immunization, would you have been willing to have (___) immunized at this visit?

1[ ] Yes  → skip to question 24
2[ ] No
8[ ] Don’t know
23. What is the main reason that you would not want (___) to receive the immunization?

1[ ] Child was sick → Was that because you thought:
(read options: check all that apply)
1[ ] Immunization would be dangerous when sick
2[ ] Immunization wouldn’t work when sick
3[ ] You didn’t want him/her in more pain when already sick

2[ ] Didn’t want to wait extra time for the immunization
3[ ] Other (specify): ______________
8[ ] Don’t know

24. Suppose (___) were not very sick and you were told during an urgent care clinic visit that he/she was behind on immunizations. Would you prefer to (read options):

1[ ] Have your child immunized right then after the visit
2[ ] Have the urgent care doctor give you a slip so you could come back for the immunization without an appointment
3[ ] Schedule a well child appointment with your own doctor for the immunization (by stopping at the appointment desk or calling back)

We have just a few more questions about your family that are for statistical purposes only.

25. What language is usually spoken by the adults in your home?
(select all that apply)

1[ ] English
2[ ] Spanish
3[ ] Cantonese
4[ ] Tagalog
5[ ] Other (specify): ____________

Complete questions 26A-28A for mother or primary female caretaker.
Complete questions 26B-28B for father or primary male caretaker.

26 A. How old {were you/was (___)’s mother} on {your/her} last birthday?

[ ] [ ]

(write in age)

26 B. And how old {was (___)’s father/you} on {his/your} last birthday?

[ ] [ ]

(write in age)
27 A. {Are you/Is (__)'s mother} currently employed?
   1[ ] Yes  -->  1[ ] Full-time  2[ ] Part-time
   2[ ] No  -->

   Are you/Is she:
   1[ ] retired
   2[ ] disabled
   3[ ] a student
   4[ ] homemaker
   5[ ] not looking for paid employment
   6[ ] temporarily unemployed

27 B. And ((__)'s father/you)? {Is he/ are you} currently employed?
   1[ ] Yes  -->  1[ ] Full-time  2[ ] Part-time
   2[ ] No  -->

   Are you/Is he:
   1[ ] retired
   2[ ] disabled
   3[ ] a student
   4[ ] homemaker
   5[ ] not looking for paid employment
   6[ ] temporarily unemployed

28 A. What is the highest grade or year of school {you/(__)'s mother} completed?
   1[ ] 8th grade or < (<8)  4[ ] Some college or techn school (12-15)
   2[ ] Some HS (9-11)  5[ ] Completed college (16)
   3[ ] HS graduate (12)  6[ ] Post graduate training (16+)

28 B. And ((__)'s father/you)? What is the highest grade or year of school {he/you} completed?
   1[ ] 8th grade or < (<8)  4[ ] Some college or techn school (12-15)
   2[ ] Some HS (9-11)  5[ ] Completed college (16)
   3[ ] HS graduate (12)  6[ ] Post graduate training (16+)
29A. Is (__) multiracial or multiethnic?

1[ ] Yes
2[ ] No

29B. What is (__)’s race and/or ethnicity? (check all that apply)

1[ ] Asian or Pacific Islander
   1[ ] Chinese
   2[ ] Filipino
   3[ ] Korean
   4[ ] Japanese
   5[ ] Asian Indian
   6[ ] Vietnamese

2[ ] Black /African-American
   1[ ] US Black or African American
   2[ ] Caribbean
   3[ ] Central or South American
   4[ ] North African
   5[ ] Sub-Saharan African

3[ ] Latina/Latino or Hispanic
   1[ ] Mexican American or Chicana/Chicano
   2[ ] Puerto Rican
   3[ ] Cuban
   4[ ] Central or South American

4[ ] Native American or Indigenous People
   1[ ] North American Indian
   2[ ] Eskimo
   3[ ] Aleut
   4[ ] Native Hawaiian
   5[ ] Native Samoan, Guamanian, or other Pacific Islander

5[ ] White
   1[ ] European (including Spanish)
   2[ ] North American
   3[ ] Middle Eastern
   4[ ] North African

6[ ] Other: (specify) ___________________
30. And while we don't need to know exact amounts, could you please tell me whether your total annual family income in 1993 was under or over $30,000 before taxes?

1[ ] Under $30,000 → Is that under $10,000, between $10,000 and $20,000, or over $20,000?

1[ ] Under $10,000
2[ ] $10,000 - $20,000
3[ ] Over $20,000
4[ ] Refused

2[ ] Over $30,000 → Is that under $40,000, between $40,000 and $50,000, between $50,000 and $80,000 or over $80,000?

1[ ] Under $40,000
2[ ] $40,000 - $50,000
3[ ] $50,000 - $80,000
4[ ] Over $80,000
5[ ] Refused

3[ ] Refused

31. Do you have any ideas about what Kaiser could improve to make it easier for children to get their shots?

Thank you very much for your time.

The following questions are to be completed by the interviewer. Do not read.

A. Language of interview:

1[ ] English
2[ ] Spanish
3[ ] Cantonese
4[ ] Tagalog
5[ ] Other (specify): __________

B. Did you interview the person who took the child to the urgent care visit:

1[ ] yes
2[ ] no

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