

Vaccines Provided by Family Physicians

Doug Campos-Outcalt, MD, MPA¹

Michelle Jeffcott-Pera, MA, LMLP²

Pamela Carter-Smith, MPA²

Bellinda K. Schoof, MHA, CPHQ²

Herbert F. Young, MD, MA²

¹Family and Community Medicine, University of Arizona College of Medicine, Phoenix, Phoenix, Arizona

²Scientific Activities Division, American Academy of Family Physicians, Leawood, Kansas

ABSTRACT

PURPOSE This study was conducted to document current immunization practices by family physicians.

METHODS In 2008 the American Academy of Family Physicians (AAFP) conducted a survey among a random sample of 2,000 of its members who reported spending 80% or more of their time in direct patient care. The survey consisted of questions regarding the demographics of the practice, vaccines that are provided at the physicians' clinical site, whether the practice refers patients elsewhere for vaccines, and participation in the Vaccines for Children (VFC) program.

RESULTS The response rate was 38.5%, 31.8% after non-office-based respondents were deleted. A high proportion of respondents (80% or more) reported providing most routinely recommended child, adolescent, and adult vaccines at their practice sites. The exceptions were rotavirus vaccine for children and herpes zoster vaccine for adults. A significant proportion, however, reported referring elsewhere for some vaccines (44.1% for children and adolescent vaccines and 53.5% for adult vaccines), with the most frequent referral location being a public health department. A higher proportion of solo and 2-physician practices than larger practices reported referring patients. A lack of adequate payment was listed as the reason for referring patients elsewhere for vaccines by one-half of those who refer patients. One-half of responders do not participate in the VFC program.

CONCLUSIONS Provision of recommended vaccines by most family physicians remains an important service. Smaller practices have more difficulty offering a full array of vaccine products, and lack of adequate payment contributes to referring patients outside the medical home. The reasons behind the lack of participation in the VFC program deserve further study.

Ann Fam Med 2010;8:507-510. doi:10.1370/afm.1185.

INTRODUCTION

Vaccinations are an effective public health intervention, and most immunizations are provided in the medical home.¹ The societal value of childhood immunizations is reflected by public funding of the Vaccines for Children Program (VFC), which pays for vaccines for children who are in the Medicaid program, are Native American, or are uninsured and underinsured for vaccine coverage.² Currently about one-half of children vaccines are paid for by the VFC program.¹

Eight new recommendations for routine vaccination of children and adolescents have been added to the immunization schedules in the past decade by the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP). The increasing complexity and cost of adhering to the recommended immunization schedules have placed strains on the traditional method of providing vaccines in physician practices. These practices may need to maintain systems to handle vaccines from both the private and public sector. Payment practices and amounts paid by different payers vary considerably.³ Although most private plans cover most ACIP-recommended vaccines, not all vaccines are covered by all plans, and co-payments vary by plan.⁴ Many physician practices report that a significant proportion of payers do not adequately cover the costs of vaccine products and the associated costs of administration.^{5,6} Fifty-three

Conflicts of interest: Two authors (D.C.O., M.J.P.) participate in a study funded by Sanofi looking at administrative costs of vaccines. Four authors (D.C.O., H.F.Y., B.K.S., and P.C.S.) administer an AAFP vaccine fellowship for AAFP members that is funded by Merck & Co. One author (D.C.O.) presents educational seminars for The France Foundation, which receives funding from Wyeth and GlaxoSmithKline.

CORRESPONDING AUTHOR

Doug Campos-Outcalt, MD, MPA
Family and Community Medicine
University of Arizona College of Medicine,
Phoenix
550 E Van Buren
Phoenix, AZ 85004
dougco@email.arizona.edu

percent of physicians recently surveyed reported declining profit margins from providing vaccinations.⁵ Many physicians report delaying the introduction of new vaccines because of costs, and 21% of family physicians who currently provide vaccinations have stated that they seriously considered not doing so.⁵

If family physicians stop administering vaccines in their practices, it would have serious implications for the role of family medicine practices as a medical home, as well as for the nation's vaccine infrastructure. Twenty percent of visits by children to physicians are with family physicians, and one-third of parents name a family physician as the source of care for their child.⁷ In rural areas more than 40% of all physicians are family physicians,⁸ and they provide one-third of the medical care to children.

To document the extent to which family physicians are currently providing vaccinations as part of their routine set of services, the American Academy of Family Physicians (AAFP) conducted a survey of a randomly selected set of members annually from 2004 to 2009. This article reports the results of the 2008 survey. The results could not be combined for all years because of different questions used each year.

METHODS

In 2008 the AAFP conducted a survey among a random sample of its members who reported spending 80% or more of their time in direct patient care. This survey was funded by a cooperative agreement with the CDC with the objective of learning more about current immunization practices of family physicians. Two thousand members were selected from the AAFP membership roles to receive a mailed questionnaire with a stamped, return-addressed envelope. The membership role, maintained by the AAFP membership department, is updated as members report a change in their status. The sample, which included family physicians from all 50 states and the District of Columbia, represented those practicing in rural, urban, and suburban areas. Nonresponders were mailed another copy of the questionnaire approximately 5 weeks after the first mailing.

The questionnaire was designed by the authors and consisted of questions regarding practice demographics, vaccines provided at the physicians' clinical site, whether the practice refers patients elsewhere for vaccines, and participation in the VFC program. The AAFP institutional review board approved the survey methodology and tool.

The responses were analyzed by size of practice (solo, 2-person group, family

medicine group, multispecialty group), age, and sex of physician. If a responding physician did not answer a particular question, that physician was not included in any analysis which involved that question. For analyses involving childhood vaccines and adult vaccines, we included only respondents who reported providing medical care to these age-groups. All statistical analyses were conducted using SPSS for Windows (SPSS version 15.0, SPSS Inc, Chicago, Illinois) using contingency tables and χ^2 analyses with a $P < .05$ significance level.

RESULTS

Questionnaires were completed and returned by 708 members for a response rate of 38.5%. Respondents that classified their practice type as "other" were deleted from the data set used for analyses because they were usually in practice locations, such as emergency rooms or urgent care centers, that did not reflect a true continuity, medical home practice. As a result, the number of respondents was reduced to 637, 31.8% of those surveyed. Table 1 lists the demographic characteristics for respondents by sex, age, and practice size and compares them with the AAFP active members.

Table 2 lists individual vaccines by antigen content for children and adolescents and the percentage of respondents who routinely provided the vaccine on site, referred patients for vaccination elsewhere, or neither provided vaccinations nor referred patients elsewhere. The response for rotavirus vaccine was markedly different from that for other vaccines.

Table 3 lists individual vaccines for adults and the percentage of respondents who routinely provided them in their practice. The vaccines the fewest respondents reported providing on site were hepatitis A and B combination (30.6%) and herpes zoster vaccine (59.1%). The vaccines recommended routinely for adults other than herpes zoster vaccine (influenza, pneumococcal

Table 1. Demographic Characteristics of Respondents Compared With Active AAFP Members

Demographic Characteristic	Respondents (N = 637)	Active AAFP Members (N = 24,794)
Female, %	33.3	31.5
Male, %	66.7	68.5
Age, mean (SD), y	49.8 (9.8)	49.4 (8.9)
In solo practice, %	27.1	20.4
In 2-person group, %	7.9	9.4
In family physician group, %	45.5	44.5
In multispecialty group, %	19.5	25.7

AAFP = American Academy of Family Physicians.

Note: percentages do not always add to 100 because of occasional missing values for the specific variable.

Table 2. Percentage of Respondents Routinely Providing Child and Adolescent Vaccines On Site, Referring Elsewhere, or Neither Providing nor Referring for Specific Vaccines (n = 582)

Vaccine	Provide in Practice	Sometimes or Always Refer	Neither Give nor Refer
DTaP	88.7	11.0	3.8 ^a
<i>Haemophilus influenzae</i> type b	80.6	16.0	6.0
Hepatitis A virus	79.6	18.0	5.5
Hepatitis B virus	90.1	10.6	3.4
Human papillomavirus	83.9	15.6	4.5
Inactivated poliovirus	79.2	16.6	6.5
Influenza	93.8	6.3	2.9
MMR	84.9	13.6	4.5
<i>Neisseria meningitidis</i> ^a	79.6	20.2	4.5
Pneumococcal	94.2	5.3	2.9
Pneumococcal polysaccharide vaccine	82.5	14.9	6.0
Rotavirus	45.5	33.8	22.0
Tdap	90.6	9.8	3.1
Varicella	81.6	17.0	5.0

DTaP = Diphtheria and tetanus toxoids and acellular pertussis; MMR = measles-mumps-rubella; Tdap = tetanus toxoid and reduced-strength diphtheria toxoid and acellular pertussis.

Note: row totals may add to more than 100% because respondents may have checked, for example, that they provide a vaccine in their practice, as well as that they sometimes refer it.

^a Did not specify between conjugate meningococcal vaccine and polysaccharide meningococcal vaccine.

to a pharmacy. The proportion of practices that at times referred to other locations for routine immunizations varied by size of practice, with smaller practices referring more frequently. When asked why they refer children and adolescents elsewhere for vaccines, 47.3% chose "not receiving adequate payment to cover costs." A similar percentage (48.1%) chose this response when asked why they refer adults.

Only 35% of solo physicians participated in the VFC program, which is significantly lower than the other size practices (58.1% for 2-person groups, 64% for family physician groups, and 58.3% for multispecialty groups). The reasons for not participating were "record keeping too difficult" (40.7%), "too burdensome" (45.3%), and "difficulty keeping stocks separate" (42.8%). These responses did not differ by size of practice.

None of the analyses showed any differences by age or sex of the respondent.

Table 3. Percentage of Respondents Routinely Providing Adult Vaccines On Site (n = 612)

Vaccine	Providing On Site
Hepatitis A virus	65.3
Hepatitis A and B combination	30.6
Hepatitis B virus	83.6
Human papillomavirus	77.4
Influenza	91.9
MMR	73.0
Meningococcal ^a	70.5
Pneumococcal pneumonia	92.7
Td	85.7
Tdap	81.9
Herpes zoster	59.1

MMR = measles-mumps-rubella; Td = tetanus toxoid/reduced-strength diphtheria toxoid; Tdap = tetanus toxoid/reduced-strength diphtheria toxoid and acellular pertussis.

^a Did not specify meningococcal conjugate vaccine or meningococcal polysaccharide vaccine.

pneumonia, tetanus toxoid/reduced-strength diphtheria toxoid [Td], tetanus toxoid/reduced-strength diphtheria toxoid and acellular pertussis [Tdap]) were provided by a high percentage of respondents.

Table 4 displays the percentage of respondents who referred patients elsewhere for some routinely recommended vaccines. The referral location was predominantly a public health clinic (87.2% for children, 65.8% for adults), with 34.2% of responders referring adults

DISCUSSION

These results show the vaccine practices of family physicians at one point in time, 2008. At this time a high proportion of respondents (80% or more) reported providing most routinely recommended child, adolescent, and adult vaccines at their practice sites. The exceptions were rotavirus vaccine for children and herpes zoster vaccine for adults. A relatively large proportion reported referring elsewhere for some vaccines, however, with the most frequent referral location being a public health department. A higher proportion of solo and 2-physician practices reported referring than larger practices, which may reflect that smaller practices had more difficulty maintaining stocks of all vaccines.

The findings regarding rotavirus vaccine are consistent with a study conducted in 2007, which found that less than 50% of family physicians offered rotavirus vaccine and only 22% strongly recommended it compared with 85% and 70% of pediatricians.⁹ The reason for this lower proportion is unknown. In previous studies family physicians have been slower to adopt Tdap recommendations for adolescents and less likely to recommend all vaccines for their child patients.^{10,11}

The low rate of offering herpes zoster vaccine may be related to payment. This vaccine is covered by Medicare Part D, which creates uncertainty about payment because it is dependent on the policies of each individual drug plan. This uncertainty may result in

Table 4. Percentage of Respondents Who Refer Patients to Other Locations for Some Routinely Recommended Vaccines, by Practice Size

Practice Size	Refer Children and Adolescents ^a (n = 551)	Refer Adults ^b (n = 574)
Solo practice	60.6	62.0
2- Person group	52.4	57.8
Family physician group	38.2	52.1
Multispecialty group	34.5	43.0
Total	44.1	53.5

^a P <.001.^b P ≤.05.

increased rates of referral to pharmacies, which are better prepared to handle Part D plan payment practices.

One-half of those who refer patients elsewhere listed a lack of adequate payment as the reason. Concern about payment for vaccines and associated costs has been documented previously among both family physicians and pediatricians.¹ In one study, nearly one-fourth of family physicians had not purchased human papillomavirus and meningococcal conjugate vaccines.⁵ Both are newer, more expensive vaccines with higher up-front costs to stock. Family physicians may be affected more by the costs of newer vaccines because of the wide age range of patients they serve along with the larger number of vaccine products that need to be stocked to serve all age-groups. In addition, the large variation in prices paid by insurance plans for vaccine products and administration may be more difficult for family physicians. It may be harder to negotiate favorable rates because of the smaller volume of vaccines for children administered by small practices.

One-half of respondents did not participate in the VFC program. The VFC program, although federally funded, is administered by states with varying requirements for documentation and vaccine storage. In addition, an administration fee cannot be charged to the uninsured who cannot afford to pay.¹ Administrative requirements were listed as a reason for nonparticipation by a large proportion of those not participating. The costs of these requirements may be particularly hard for small practices to absorb. This lack of VFC participation may explain some of the findings regarding referral to other locations for some vaccines, especially to public health clinics, as participation in VFC has been found to reduce such referrals.^{8,12,13}

Nonparticipation in VFC has implications for family physicians' role as a medical home for children and adolescents. Participation in VFC reinforces the use of the medical home³ and adolescents who are referred to public health clinics for vaccines have lower rates of

adherence to recommended vaccinations.¹⁴ Given the importance of family physicians in providing health care to children, especially in rural areas, the issue of VFC nonparticipation, the reasons for it, and how it affects other vaccine practices deserves further study.

To read or post comments in response to this article, see it online at <http://www.annfam.org/cgi/content/full/8/6/507>.

Key words: Vaccines; immunizations; family physicians

Submitted May 5, 2010; submitted, revised, July 7, 2010; accepted August 24, 2010.

Funding support: This article was supported by award No. IU66IP000119 from the Centers for Disease Control and Prevention (CDC).

Disclaimer: The contents of this article are solely the responsibility of the authors and do not necessarily represent the official views of CDC.

References

- Lindley MC, Shen AK, Orenstein WA, Rodewald LE, Birkhead GS. Financing the delivery of vaccines to children and adolescents: challenges to the current system. *Pediatrics*. 2009;124(Suppl 5):S548-S557.
- Santoli JM, Rodewald LE, Maes EF, et al. Vaccines for children program, United States, 1997. *Pediatrics*. 1999;104(2). <http://www.pediatrics.org/cgi/content/full/104/2/e15>.
- Freed GL, Cowan AE, Gregory S, Clark SJ. Variation in provider vaccine purchase prices and payer reimbursement. *Pediatrics*. 2009;124(Suppl 5):S459-S465.
- Hunsaker J, Veselovskiy G, Gazmararian JA. Health insurance plans and immunization: assessment of practices and policies, 2005-2008. *Pediatrics*. 2009;124(Suppl 5):S532-S539.
- Freed GL, Cowan AE, Clark SJ. Primary care physician perspectives on reimbursement for childhood immunizations. *Pediatrics*. 2009;124(Suppl 5):S466-S471.
- Glazner JE, Beaty B, Berman S. Cost of vaccine administration among pediatric practices. *Pediatrics*. 2009;124(Suppl 5):S492-S498.
- Phillips RL, Doodoo MS, McCann JL, et al. Report to the task force on the care of children by family physicians. Robert Graham Policy Center. Washington DC. <http://www.graham-center.org/online/etc/medialib/graham/documents/publications/mongraphs-books/2005/rgcmo-care-children.Par.0001.File.tmp/rgcmo-care-children.pdf>.
- Zimmerman RK, Mieczkowski TA, Mainzer HM, et al. Effect of the Vaccines for Children program on physician referral of children to public vaccine clinics: a pre-post comparison. *Pediatrics*. 2001;108(2):297-304.
- Kempe A, Patel MM, Daley MF, et al. Adoption of rotavirus vaccination by pediatricians and family medicine physicians in the United States. *Pediatrics*. 2009;124(5):e809-e816.
- Dempsey AF, Cowan AE, Broder KR, Kretsinger K, Stokley S, Clark SJ. Adolescent Tdap vaccine use among primary care physicians. *J Adolesc Health*. 2009;44(4):387-393.
- Gust D, Weber D, Weintraub E, Kennedy A, Soud F, Burns A. Physicians who do and do not recommend children get all vaccinations. *J Health Commun*. 2008;13(6):573-582.
- Fairbrother G, Friedman S, Hanson KL, Butts GC. Effect of the vaccines for children program on inner-city neighborhood physicians. *Arch Pediatr Adolesc Med*. 1997;151(12):1229-1235.
- Szilagyi PG, Humiston SG, Pollard Shone L, Kolasa MS, Rodewald LE. Decline in physician referrals to health department clinics for immunizations: the role of vaccine financing. *Am J Prev Med*. 2000;18(4):318-324.
- Smith PJ, Lindley MC, Shefer A, Rodewald LE. Underinsurance and adolescent immunization delivery in the United States. *Pediatrics*. 2009;124(Suppl 5):S515-S521.