Health Insurance Plans and Immunization: Assessment of Practices and Policies, 2005–2008

abstract

OBJECTIVES: The goals were to assess private health insurance plans' policies and practices regarding recommended immunizations in 2008 and to identify trends since the America's Health Insurance Plans (AHIP) 2005 Immunization Assessment.

METHODS: In May 2008, AHIP staff members e-mailed a survey containing 46 questions on immunization practices to 101 AHIP member private health insurance plans. Of those, 58 responded (representing 121 345 521 covered individuals) and 43 declined to participate, yielding a response rate of 57% (compared with 53% in 2005). Data are reported as proportions of enrollees (weighted data) or of responding plans (unweighted data).

RESULTS: In 2008, almost all enrollees (99.8%) represented in the survey were in health insurance plans that used Advisory Committee on Immunization Practices (ACIP) recommendations to determine coverage. The vast majority (≥99.0%) of enrollees were in plans covering all ACIP-recommended child and adolescent vaccines in ≥75% of the health insurance product lines offered, and ≥16.5% of enrollees were in plans covering these vaccines in all products. The majority of enrollees (≥83.3%) were in plans covering ACIP-recommended pediatric and adolescent vaccines without cost-sharing. Plans covering 95.5% of enrollees updated benefits to reflect changes in vaccine recommendations within ≤3 months, compared with 60.0% in 2005. In 2008, 96.7% of enrollees were in plans that could reimburse providers for vaccines within 3 months once the vaccines were included in benefit designs, compared with 59.2% in 2005.

CONCLUSION: The survey shows widespread private health insurance plan coverage of vaccines, consistent with, or better than, the coverage levels reported in the AHIP 2005 survey. *Pediatrics* 2009;124:S532–S539

AUTHORS: John Hunsaker, MPP,[a] German Veselovskiy, MPP,[a] and Julie A. Gazmararian, PhD, MPH[b]

[a]Department of Clinical Affairs and Strategic Planning, America's Health Insurance Plans, Washington, DC; and [b]Department of Epidemiology, Rollins School of Public Health, Emory University, Atlanta, Georgia

At the time this paper was prepared, Mr Hunsaker was at America's Health Insurance Plans (AHIP); he is now an MBA Candidate at Brandeis University.

KEY WORDS

coverage, health insurance, immunization, reimbursement, vaccine, vaccination

ABBREVIATIONS

ACIP—Advisory Committee on Immunization Practices
AHIP—America's Health Insurance Plans
AIS—Atlantic Information Services
CPT—Current Procedural Terminology

The findings and conclusions in this report are those of the authors and do not necessarily represent the views of America's Health Insurance Plans, its staff, or its member organizations. Respondents who participated in the survey described in this article expressed solely their views and not the official positions of their affiliated organizations or of America's Health Insurance Plans.

www.pediatrics.org/cgi/doi/10.1542/peds.2009-1542M

doi:10.1542/peds.2009-1542M

Accepted for publication Aug 25, 2009

Address correspondence to German Veselovskiy, MPP, America's Health Insurance Plans, 601 Pennsylvania Ave NW, South Building, Suite 500, Washington, DC 20004. E-mail: gveselovskiy@ahip.org

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

FINANCIAL DISCLOSURE: *All authors are either current or former staff members or paid consultants of America's Health Insurance Plans, which is a national trade association.*

In recent years, stakeholders invested in the vaccine financing and delivery system in the United States have expressed concerns about the system's ability to ensure that every individual in the United States receives the complete vaccine regimen recommended by the Centers for Disease Control and Prevention Advisory Committee on Immunization Practices (ACIP). These concerns arise from many changes affecting vaccine financing, such as the growing list of vaccines on the ACIP schedule, the relatively high price of many new vaccines, and increasing costs to store, to handle, and to administer these vaccines. One question that is raised often is how private health insurance plans are responding to these changes.[1]

In 2005, America's Health Insurance Plans (AHIP) surveyed member health insurance companies about their immunization practices and policies.[2] The 2005 survey established a baseline from which changes in health insurance plan immunization policies and practices could be measured. In 2008, AHIP conducted a similar survey to provide a robust picture of immunization coverage and reimbursement practices and policies and to identify trends, in comparison with the 2005 results.

METHODS

Sample Population

Sampling frames for both surveys were developed from a population of private, independent, health insurance companies offering commercial health insurance in the United States and listed in the Atlantic Information Services (AIS) *Directory of Health Plans* (each survey was based on the directory current to the year in which it was conducted). Each year, the AIS collects information for its directory from the government agency in each US state that licenses and regulates health insurance plans and from the Centers for Medicare and Medicaid Services.[3] In the survey, health insurance plans were defined as private companies that offer commercial health insurance, bear the risk of the costs (both expected and unexpected) incurred by enrollees who receive health care, and use management techniques to contain costs and to encourage the delivery of high-quality, effective, health care. The AIS *Directory of Health Plans* listed 631 plans in the volume used in the 2008 survey and included both AHIP members and non-AHIP members. For the data and analysis reported in this article, health insurance plans without commercial enrollment, subsidiary plans, and non-AHIP members listed in the AIS *Directory of Health Plans* were excluded from the sampling frame, which reduced the number of plans to 101, all of which were invited to participate in the survey. Parent companies were asked to respond on behalf of subsidiaries. The only difference in the sampling frame between the 2005 and 2008 surveys was that, in 2005, 3 AHIP members that did not meet the survey criteria responded; to make data comparable between 2005 and 2008, those plans were not included in this report.

AHIP staff members asked medical directors of the health insurance plans in the sampling frame to identify the employee best suited to answer questions regarding immunization. Whenever possible, AHIP staff members also contacted plan employees known to be involved in immunization activities, on the basis of their responses to previous AHIP surveys or their participation in AHIP member advisory groups.

Survey Instrument

The 2005 and 2008 survey instruments were identical with 2 exceptions: (1) the 2005 questionnaire was Internet-based, whereas the 2008 questionnaire was a document sent through e-mail; and (2) some questions in the 2008 survey (20 of 46 questions) were modified on the basis of findings from the 2005 survey; the remaining 26 questions were identical. New or modified questions were developed with guidance from key volunteer leaders representing AHIP members and representatives of the National Vaccine Advisory Committee Vaccine Financing Working Group. New questions were designed to collect more-robust information than the 2005 survey and to detect trends in health insurance plan immunization practices and policies. Most questions were closed-ended and multiple-choice, with the option of providing more information if the choice "other" was selected. The questionnaire was tested by representatives from several AHIP member health insurance plans, and the final version was e-mailed to the confirmed contacts in each of the 101 health insurance plans in May 2008, with completed responses accepted no later than October 2008.

Analyses

Responses were evaluated for completeness; data were cleaned and recoded and, if necessary, respondents were contacted for clarification. Comparisons between 2005 and 2008 weighted data were made by using the *z* test for 2 independent proportions, to determine the significance level of the difference between the 2 populations; the finite population factor (an adjustment used to define the SEM and proportion when the sample is >5% of the population) also was used.[4] When the number of respondents selecting a particular response was low (on the basis of assumptions typically used for *z* tests), Fisher's exact test was used. The threshold for statistical significance in this article was $P \leq .05$ (2-tailed) and applied to weighted data. SPSS 16.0 (SPSS Inc, Chicago, IL) was used to perform all statistical analyses.

Respondents were asked to complete the survey on the basis of the immunization policies and practices applicable to either their entire enrollment (if there was no difference in the immunization policies and practices among the product lines offered) or their best-selling product (if there were differences among the products offered), and results reported in this article represent the combined information provided by all respondents. For reporting of information on benefits affecting the greatest number of enrollees, most of the data reported were weighted according to enrollment (ie, the proportion of people enrolled in the responding health insurance plans for whom the selected response applied, with 121 345 521 individuals [total enrollment for all plans and products reported] as the denominator). Data reported as unweighted refer to the proportion of respondents selecting a response, with 58 respondents as the denominator. Wherever possible, both weighted and unweighted statistics are presented.

Data were analyzed to describe (1) the types of products respondents offered, (2) how plans determined which vaccines to cover, (3) how broadly plans covered vaccines, (4) processes plans used to establish vaccine reimbursement, (5) timing of reimbursement, (6) information on vaccine administration coverage and reimbursement processes, and (7) how plans improved immunization rates among enrollees. For this project, pediatric vaccines were defined as all routine, ACIP-recommended vaccines for children up to and including the age of 6 years. Adolescent vaccines were defined as all routine, ACIP-recommended vaccines for children 7 to 18 years of age (inclusive).

To determine whether immunization policies and practices might be affected by the enrollment size of plans, we compared small health insurance plans (enrollment of <100 000 individuals; 15 of 58 respondents) with larger plans. The main difference found was that smaller plans tended to cover all ACIP-recommended vaccines in all of their products, whereas larger plans (offering more products) covered those vaccines in most products. As might be expected for organizations with fewer resources, smaller plans reviewed immunization policies less frequently, required more time to adjust coverage after changes in ACIP recommendations, collaborated with other organizations less often, and integrated their health care effectiveness data and information set into quality improvement programs for immunization less often.

TABLE 1 Survey Response Rates and Enrollment Characteristics in 2005 and 2008

Characteristics	2005 ($N = 59$)	2008 ($N = 58$)
Response rate, %	53	57
Enrollment in reported products of responding plans, *n*	57 756 036	121 345 521
Average enrollment in reported products, *n*	978 916	2 092 164
Median enrollment in reported products, *n*	239 529	289 914
Maximal enrollment, *n*	11 000 000	35 400 000
Minimal enrollment, *n*	4420	6582

RESULTS

Response Rates and Plans

Of the 101 plans from which responses were solicited in 2008, 58 plans (57%) responded, compared with 59 (53%) of 111 in 2005 (Table 1). The average plan size of the survey participants increased from 978 916 to 2 092 164; this might be because respondents in 2005 could report only on their best-selling commercial product, whereas respondents in 2008 could report on all products if their immunization practices were uniform across all product lines. In addition, more of the top 10 plans, according to enrollment, responded in 2008, compared with 2005. According to the 2007 AIS *Directory of Health Plans*, enrollment in the 58 responding plans in 2008 (121 345 521 individuals) accounted for 79% of the total commercial enrollment in the United States (153.5 million individuals).

Most enrollees (63.6%) were in plans that offered different immunization policies across product lines, whereas 36.4% were in plans with the same policies across all product lines. The proportion of plans with the same immunization practices and policies across all product lines was 70.7%, which suggests that larger plans offered more product lines or were more likely to vary policies across product lines.

Respondents were employed by health insurance plans that offered a variety of health insurance products; 72% offered ≥3 products. Most enrollees were in plans that offered an entire range of product options included as answer choices (Table 2). Most enrollees (85.6%) were in plans that operated in multiple states and determined immunization coverage at the corporate level (up from 51.3% in 2005), 9.7% were in plans that operated in 1 state, and 4.7% were in plans that operated

TABLE 2 Health Insurance Products Offered by Health Plans in 2008

Health Insurance Product	Weighted Proportion, % (*n*) ($N = 58$)
Health maintenance organization	96.5 (49)
Point of service	90.9 (39)
Preferred-provider organization	98.0 (40)
High-deductible health plans	97.5 (42)
Health savings accounts	96.6 (32)
Other	40.3 (12)

Plans could select >1 response category. Responses were weighted according to plans' enrollment, to represent the proportions of enrollees in the plans that selected the response category in question.

TABLE 3 Factors That Influence Vaccine Coverage According to Health Plan in 2008

Coverage Determinants	Weighted Proportion, % (*n*) (*N* = 58)
ACIP recommendations	99.8 (56)
State laws requirements	62.2 (39)
American Academy of Pediatrics/American Academy of Family Practitioners recommendations	55.1 (29)
FDA approval	47.2 (23)
Review by internal pharmacy and therapeutics committee	24.6 (29)
Determined by employer/purchaser	24.3 (12)
Cost-benefit analysis	7.3 (8)
HEDIS reporting requirements	4.3 (14)

Plans could select >1 response category. Responses were weighted according to plans' enrollment, to represent the proportions of enrollees in the plans that selected the response category in question. FDA indicates Food and Drug Administration; HEDIS, Healthcare Effectiveness Data and Information Set.

in multiple states and determined coverage at the state level.

Coverage

Almost all enrollees (99.8%) were in health insurance plans that referred to ACIP recommendations to determine which vaccines to cover, which is higher than the rate found in the 2005 survey (92.3%). Since the 2005 survey, several vaccines have been added to the ACIP schedule (ie, rotavirus and meningococcal vaccines for children and human papillomavirus, meningococcal, and inactivated poliovirus vaccines for adolescents). All of those vaccines were covered in ≥75% to 99% of the products offered by plans that accounted for 99.3% of enrollees in 2008. Furthermore, 67.7% of enrollees were in plans that acted on provisional ACIP recommendations, and 32.1% were in plans that waited until recommendations were made official (ie, published in the *Morbidity and Mortality Weekly Report*); many other factors also apply (Table 3). Information about factors influencing coverage are not directly comparable between the 2005 and 2008 surveys, because different answer options were available to respondents; for example, the 2005 survey response option for ACIP recommendations made no distinction between provisional and official recommendations and included the phrase, "review by a pharmacy and therapeutics committee." Most enrollees (75.5%) were in health insurance plans that reviewed vaccine coverage policies after each ACIP meeting (Table 4). The overwhelming majority of enrollees (99.0%) were in health insurance plans that covered all routine, ACIP-recommended child and adolescent vaccines in more than three fourths of their products; ≥16.7% were in plans that covered all such vaccines in all product lines (Table 5).

TABLE 4 Review of Vaccine Coverage Policies in 2008

Frequency of Review	Weighted Proportion, % (*n*) (*N* = 58)
Quarterly	3.5 (8)
After every ACIP meeting (held 3 times per year)	75.5 (22)
Semiannually	0.5 (2)
Annually	17.2 (20)
As needed	3.4 (6)

Responses were weighted according to plans' enrollment, to represent the proportions of enrollees in the plans that selected the response category in question.

Results indicated that most enrollees had benefits in which the purchaser relied, at least in part, on recommendations from the health insurance plan. However, the influence of employers in determining which vaccines to include in benefits is increasing (Table 6).

Reimbursement-Related Issues

Most enrollees were in plans that offered first-dollar coverage (no deductible, copayment, or coinsurance) of vaccines. An overwhelming majority of enrollees (≥96.0%) were in plans that did not require deductibles to be met for vaccine coverage to begin (Table 7). The time it takes to modify or to update vaccine coverage benefits is decreasing. In 2008, 95.5% of enrollees were in plans for which it took ≤3 months to include a vaccine in a benefit design once a decision to cover the vaccine was made, compared with 60.0% in 2005; 58.4% of enrollees in 2008 were in plans for which it took ≤1 month, compared with only 11.9% in 2005 (Table 8). The time it takes to reimburse providers for vaccines newly added to benefits also is decreasing. In 2008, 96.7% of enrollees were in plans that could reimburse providers for newly covered vaccines in ≤3 months, compared with 59.2% in 2005; 39.2% were in plans that could do so in ≤1 month in 2008, up from 29.9% in 2005 (Table 8). It was also found that health insurance plans that cover 43.3% of enrollees reimburse providers for vaccines retroactively to an ACIP recommendation.

The main factors affecting reimbursement for the purchase of vaccines were market conditions, average wholesale prices listed in the American Academy of Pediatrics *Red Book* or similar sources, and geographic location (Table 9). The main factors affecting vaccine administration reimbursement were the price of provider services related to immunization administration, market conditions, and geographic location (Table 9).

Vaccine Administration

Virtually all enrollees (99.9%) were in plans in which vaccines and vaccine administration during routine preventive service visits were covered. The proportion of enrollees in plans that covered these services during other types of office visits was 70.2%, with 29.2% indicating that it depended on the region or benefit package. Enrollees in plans that reimbursed for vaccine administration for each pediatric vaccine administered during an office visit accounted for 97.3% of all enrollees.

TABLE 5 Coverage of Child and Adolescent Vaccines in Various Health Insurance Products Offered by Respondents in 2008

Vaccines	Weighted Proportion, % (*n*)				
	Covered in All Products	Covered in 75%–99% of Products	Covered in 50%–74% of Products	Covered in 1%–49% of Products	Not Covered
Child vaccines ($N = 56$)					
Diphtheria-tetanus-pertussis	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Hepatitis A	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Hepatitis B	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Haemophilus influenzae type b	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Influenza	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Inactivated poliovirus	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Meningococcal	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Measles-mumps-rubella	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Pneumococcal	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Rotavirus	16.5 (42)	82.8 (12)	0.1 (1)	0.5 (1)	0.0 (0)
Varicella	16.7 (43)	82.8 (12)	0.0 (0)	0.5 (1)	0.0 (0)
Adolescent vaccines ($N = 56$)[a]					
Hepatitis A	17.3 (41)	82.1 (13)	0.0 (0)	0.5 (1)	0.1 (1)
Hepatitis B	17.4 (42)	82.1 (13)	0.0 (0)	0.5 (1)	0.0 (0)
Human papillomavirus	17.1 (39)	82.3 (15)	0.0 (0)	0.5 (1)	0.1 (1)
Influenza	17.3 (41)	82.2 (13)	0.0 (0)	0.5 (1)	0.0 (0)
Inactivated poliovirus	17.3 (41)	82.1 (13)	0.0 (0)	0.5 (1)	0.1 (1)
Meningococcal	16.8 (40)	82.6 (13)	0.0 (0)	0.5 (1)	0.1 (1)
Measles-mumps-rubella	17.4 (42)	82.1 (13)	0.0 (0)	0.5 (1)	0.0 (0)
Pneumococcal	16.8 (40)	82.6 (13)	0.0 (0)	0.5 (1)	0.1 (1)
Tetanus-diphtheria-pertussis	17.4 (42)	82.1 (13)	0.0 (0)	0.5 (1)	0.0 (0)
Varicella	17.3 (41)	82.1 (13)	0.0 (0)	0.5 (1)	0.1 (1)

Responses were weighted according to plans' enrollment, to represent the proportions of enrollees in the plans that selected the response category in question.
[a] For meningococcal, pneumococcal, and influenza vaccines, $N = 55$.

TABLE 6 Role of Employer Groups/Purchasers in Determining Vaccine Coverage in 2005 and 2008

Role	Weighted Proportion, % (*n*)	
	2005 ($N = 59$)	2008 ($N = 56$)
Purchasers/employer groups determine whether benefit is included in benefit designs	0.0 (0)	10.1 (6)[a]
Purchasers rely on benefit design recommendations from health insurance plan	53.8 (42)	52.1 (34)
Shared roles by purchaser and health insurance plan in determining benefit design	21.4 (14)	37.8 (16)[a]
Other	24.8 (3)	0.0 (0)[a]

Responses were weighted according to plans' enrollment, to represent the proportions of enrollees in the plans that selected the response category in question.
[a] Differences between 2005 and 2008 were compared by using weighted data and were statistically significant at the .05 level.

Respondents indicated that several Current Procedural Terminology (CPT) code categories for immunization administration are available for providers to use when submitted claims for reimbursement. CPT codes for vaccine administration are accepted in health insurance plans accounting for 98.0% of all enrollees, codes for vaccine administration with counseling in plans representing 55.6% of enrollees, and codes for evaluation and management or preventive service office visits in plans representing 81.0% of enrollees. Health insurance plans representing 95.4% of enrollees use either immunization with counseling or evaluation and management CPT codes, and plans representing 41.2% use both.

Plans (unweighted data) reported that, on average, claims for reimbursement indicated that vaccines were administered on the same day as regular preventive service office visits 85.2% of the time for children (median: 90%; minimum: 54%; maximum: 100%) and 67.4% of the time for adolescents (median: 67%; minimum: 25%; maximum: 100%). This question, however, elicited a lower response rate (children, $n = 26$; adolescents, $n = 25$), which indicates that this information may be more difficult to collect than data on other questions, perhaps because it necessitates retrieval of claims information that is not readily available or interpretable.

Immunization Improvement Activities and Collaborations

Health insurance plans improve immunization rates through many quality-improvement techniques and through collaboration with other organizations. The most-common quality-improvement techniques for both pediatric and adolescent age groups were enrollee education, physician education, data collection/analysis, and reminders/recalls. More enrollees were in health insurance plans that participated in immunization collaborations aimed at in-

TABLE 7 Vaccine Cost-Sharing in 2008

Vaccines	Weighted Proportion, % (*n*)	
	No Annual Deductible Requirements Apply ($N = 52$)	First-Dollar Coverage ($N = 52$)
Child vaccines		
Diphtheria-tetanus-pertussis	96.7 (47)	84.0 (28)
Haemophilus influenzae type b	96.7 (47)	84.0 (28)
Hepatitis A	96.7 (47)	84.0 (28)
Hepatitis B	96.7 (47)	84.0 (28)
Inactivated poliovirus	96.7 (47)	84.0 (28)
Influenza	96.7 (47)	84.0 (28)
Measles-mumps-rubella	96.7 (47)	84.0 (28)
Meningococcal	96.0 (43)	83.3 (24)
Pneumococcal	96.7 (47)	84.0 (28)
Rotavirus	96.2 (45)	83.4 (27)
Varicella	96.7 (47)	84.0 (28)
Adolescent vaccines		
Hepatitis A	96.7 (45)	83.9 (27)
Hepatitis B	96.7 (45)	83.9 (27)
Human papillomavirus	96.4 (44)	83.6 (25)
Inactivated poliovirus	96.7 (45)	83.9 (27)
Influenza	96.7 (46)	83.9 (27)
Measles-mumps-rubella	96.7 (45)	83.6 (25)
Meningococcal	96.4 (44)	83.6 (25)
Pneumococcal	96.7 (45)	83.6 (25)
Tetanus-diphtheria-pertussis	96.7 (46)	83.9 (27)
Varicella	96.7 (45)	83.9 (27)

Responses were weighted according to plans' enrollment, to represent the proportions of enrollees in the plans that selected the response category in question.

TABLE 8 Time Needed to Respond to Changes in ACIP Recommendations and to Begin Reimbursing Providers

Time Needed	Weighted Proportion, % (*n*)			
	To Respond to Changes in ACIP Recommendations[a]		To Start Reimbursing Providers After Changes in Vaccination Benefit Design	
	2005 ($N = 53$)	2008 ($N = 56$)	2005 ($N = 59$)	2008 ($N = 56$)
≤1 mo	11.9 (10)	58.4 (24)[b]	29.9 (29)	39.2 (34)
2–3 mo	48.1 (27)	37.1 (20)	29.3 (17)	57.5 (16)[b]
4–6 mo	6.0 (7)	0.9 (8)	8.0 (4)	0.4 (3)
>6 mo	0.8 (4)	0.0 (0)	8.3 (2)	0.0 (0)[b]
Beginning of new contract with health care purchaser	5.2 (1)	0.2 (1)	0.5 (1)	0.2 (1)
Other	28.0 (4)	3.4 (3)[b]	24.4 (6)	2.7 (2)[b]

Responses were weighted according to plans' enrollment, to represent the proportions of enrollees in the plans that selected the response category in question.

[a] All data are only for plans that follow ACIP recommendations in their coverage decisions.

[b] Differences between 2005 and 2008 were compared by using weighted data and were statistically significant at the .05 level.

creasing immunization rates in 2008 (94.0%), compared with 2005 (76.7%). In 2008, the most-common types of organizations with which health insurance plans collaborated were community coalitions, public health agencies, community service agencies, vaccine manufacturers, employers, and provider coalitions.

DISCUSSION

Most vaccines have been found to be both clinically effective and cost-effective, especially when compared with other medical interventions; this may explain the level of private health insurance plan support.[5,6] This support for vaccines has a positive impact on other segments of society. People with private health insurance are more likely to be vaccinated.[7,8] Private health insurance, funded by employers and individuals, pays for nearly one half of the vaccine doses provided to children each year in the United States.[9] The policy of most responding plans to cover all ACIP-recommended vaccines is similar to an "advance purchase commitment," helping to ensure that manufacturers have financial incentives to produce vaccines and to invest in vaccine research and development.[10] Pediatricians benefit from private payer coverage of vaccines. One study in this supplement found that Georgia practices with >70% privately insured patients realized vaccine revenue exceeding their vaccine expenditures, whereas practices with ≥61% Medicaid-enrolled patients had vaccine expenses exceeding their vaccine revenue.[11] This suggests that, without private payers, many physician practices would lose money on vaccines, and it raises concerns that private payers, compared with public payers, may be bearing a disproportionate share of the costs needed to ensure that all US individuals receive appropriate vaccines. Recent studies showed that, on average, surveyed physician practices saw a net financial gain from the reimbursements from their 3 largest private payers on all of the vaccine doses they purchased.[12,13]

Although the United States is experiencing the highest immunization rates ever, the effects of more-expensive vaccines added to the ACIP schedule, and the related cost to administer them, may be testing the limits of the current vaccine delivery infrastructure.[14,15] Private health insurance plans, the employers who purchase their products, the physician practices with which they work to deliver high-quality health care, and the recipients of health insurance benefits also are affected by these changes. An

TABLE 9 Factors That Influence Health Plan Reimbursement Rates in 2008

Factors	Weighted Proportion, % (*n*)
Reimbursement rates for vaccine purchase ($N = 53$)	
Market conditions	51.6 (14)
Average wholesale price listed in *Red Book* and/or similar publications	49.5 (36)
Geographic location	38.8 (9)
Manufacturer's price of vaccine	24.2 (21)
Discounted average wholesale price	15.0 (23)
Provider-reported acquisition prices	6.4 (15)
Vaccines for Children vaccine price list	4.3 (10)
Physician feedback	4.1 (14)
Cost-benefit analysis	3.2 (7)
Public payer reimbursement	3.1 (7)
Historic rates	2.2 (2)
Average sales price	1.2 (1)
Other	0 (0)
Reimbursement rates for vaccine administration ($N = 51$)	
Price of provider services related to immunization administration	55.4 (20)
Market conditions	52.8 (18)
Geographic location	43.0 (14)
Resource-Based Relative Value Scale Update Committee fee schedule	24.1 (28)
Historic rates	16.6 (11)
Medicare reimbursement rates	12.7 (24)
Physician feedback	8.5 (15)
Medicaid reimbursement rates	0.2 (2)
Other (please specify)	23.6 (2)

Plans could select >1 response category. Responses were weighted according to plans' enrollment, to represent the proportions of enrollees in the plans that selected the response category in question.

October 2008 report prepared by Milliman, a consulting firm specializing in actuarial research, found that, from 2000 to 2006, new immunizations recommended by the Centers for Disease Control and Prevention increased per-member, per-month costs by 6.0%; between 2007 and 2008, Milliman estimated a 13.0% per-member, per-month increase. The study also showed that vaccine administration is increasing as a proportion of the total cost associated with covering vaccines, increasing from 15.0% in 2001 to 22.0% in 2006.[16]

In recent years, significant attention has been given to the question of whether health insurance plans are contributing enough to ensuring that all US individuals receive ACIP-recommended vaccines. Judging by coverage levels and cost-sharing, the answer seems to be yes. However, coverage levels and cost-sharing are not the only measures for assessing the value health insurance plans (or individuals) place on vaccines. Studies based on the landmark Rand Health Experiment have shown that, even when vaccination is offered free to individuals, immunization levels remain below recommended levels.[17] Other factors influence people's decisions to be immunized, and health insurance plans recognize this by working with providers, employers, recipients of health care, public health officials, manufacturers, and immunization coalitions to increase immunization rates.

This study and its 2005 counterpart represents a systematic assessment of the immunization practices of health insurance plans in the United States. It provides valuable information on health insurance plans that account for the majority of the US commercial enrollment. Despite yielding important information, there are several limitations of the survey. First, participation was voluntary, which raises the possibility of response bias. Plans that responded previously to AHIP surveys, plans with the resources to respond, and perhaps plans with extensive vaccination coverage might have been more likely to respond. Although smaller health insurance plans may be underrepresented, they account for a very small share of the total commercial enrollment, which may correct for some of the effects of their lower response rate. Results presented in this article are based on responses only from AHIP members; public health insurance plans were excluded from data collection. Lastly, although it is unlikely that respondents reported on the "self-insured" plans that some AHIP members administer for major employers, we cannot determine from the responses whether they did so.

CONCLUSIONS

The results of the 2008 survey, directly and in comparison with the 2005 survey, suggest that health insurance plans value the use of vaccines as an essential preventive benefit. Evidence for this is demonstrated through broad vaccine coverage in almost all product lines and in the number of enrollees receiving these benefits. By far, most enrollees face no cost-sharing for vaccines, and almost no enrollees were in plans that counted vaccine charges toward a deductible for the vaccines they receive. The results suggest that vaccines are seen as part of overall preventive health, with vaccines administered primarily during routine visits to the doctor's office. Health insurance plans also work to improve vaccine performance through measurement, quality improvement and incentive programs, collaborations with other vaccine stakeholders, and support of the vaccine delivery infrastructure.

As policy solutions are developed to ensure that all individuals in the United States continue to have access to ACIP-recommended vaccines, it is important to recognize that private health insurance plans provide key support for this

crucial intervention that affects both individual and public health. This survey, along with its predecessor, demonstrates that, on many levels, health insurance plans are committed to improving immunization rates and the delivery of vaccines and that commitment seems to be growing.

ACKNOWLEDGMENTS

Support for conducting this survey was made possible through an unrestricted educational grant from Merck Vaccines Division.

We thank members of the AHIP Vaccines and Immunization Working Group, especially Dr Alan Rosenberg of WellPoint, and our colleagues at the AHIP, Carmella Bocchino and Barbara Lardy, all of whom who provided invaluable assistance in developing, implementing, and analyzing the AHIP 2008 Immunization Survey, as well as the authors of and contributors to the AHIP 2005 Immunization Assessment.

REFERENCES

1. Lindley C, Orenstein WA, Shen A, Rodewald L, Birkhead GS. *Assuring Vaccination of Children and Adolescents Without Financial Barriers: Recommendations From the National Vaccine Advisory Committee (NVAC), U.S. Department of Health and Human Services*. Washington, DC: National Vaccine Advisory Committee Vaccine Financing Working Group; 2009. Available at: www.hhs.gov/nvpo/nvac/NVACVFWGReport.pdf. Accessed May 1, 2009
2. McPhillips-Tangum C, Rehm B, Hilton O. Immunization practices and policies: a survey of health insurance plans. *AHIP Cover*. 2006;47(1):32–37
3. Atlantic Information Services. *Directory of Health Plans: 2007*. Washington, DC: Atlantic Information Services; 2007
4. Foreman E. *Survey Sampling Principles*. New York, NY: Marcel Dekker; 1991:45–47
5. Maciosek MV, Coffield AB, Edwards NM, Flottemesch TJ, Goodman MJ, Solberg LI. Priorities among effective clinical preventive services: results of a systematic review and analysis. *Am J Prev Med*. 2006;31(1):52–61
6. Zhou F, Santoli J, Messonnier ML, et al. Economic evaluation of the 7-vaccine routine childhood immunization schedule in the United States, 2001. *Arch Pediatr Adolesc Med*. 2005;159(12):1136–1144
7. Smith PJ, Stevenson J, Chu SY. Associations between childhood vaccination coverage, insurance type, and breaks in health insurance coverage. *Pediatrics*. 2006;117(6):1972–1978
8. National Committee for Quality Assurance. *The State of Health Care Quality* 2008. Washington, DC: National Committee for Quality Assurance; 2008
9. Birkhead G. National Vaccine Advisory Committee, Vaccine Financing Working Group White Paper. Presented at the America's Health Insurance Plans 2008 Vaccines and Immunization Roundtable; July 15, 2008; Arlington, VA
10. Kremer M. *Creating Markets for New Vaccines, Part I: Rationale*. Washington, DC: National Bureau of Economic Research; 2000. Working paper W7716
11. Coleman MS, Lindley MC, Ekong J, Rodewald L. Net financial gain or loss from vaccination in pediatric medical practices. *Pediatrics*. 2009;124(suppl 5):S472–S491
12. Freed GL, Cowan AE, Clark SJ. Primary care physician perspectives on reimbursement for childhood immunizations. *Pediatrics*. 2008;122(6):1319–1324
13. Freed GL, Cowan AE, Gregory S, Clark SJ. Variation in provider vaccine purchase prices and payer reimbursement. *Pediatrics*. 2008;122(6):1325–1331
14. Centers for Disease Control and Prevention. National, state, and local area vaccination coverage among children aged 19–35 months: United States, 2007. *MMWR Morb Mortal Wkly Rep*. 2008;57(35):961–966
15. Centers for Disease Control and Prevention. Vaccination coverage among adolescents aged 13–17 years: United States, 2007. *MMWR Morb Mortal Wkly Rep*. 2008;57(40):1100–1103
16. Randles M, White C. *Medical Immunization Trends in the United States: 2008*. Seattle, WA: Milliman; 2008
17. Lurie N, Manning WG, Peterson C, Goldberg GA, Phelps CA, Lillard L. Preventive care: do we practice what we preach? *Am J Public Health*. 1987;77(7):801–804

Health Insurance Plans and Immunization: Assessment of Practices and Policies, 2005–2008

John Hunsaker, German Veselovskiy and Julie A. Gazmararian

Pediatrics 2009;124;S532
DOI: 10.1542/peds.2009-1542M

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Health Insurance Plans and Immunization: Assessment of Practices and Policies, 2005–2008

John Hunsaker, German Veselovskiy and Julie A. Gazmararian

Pediatrics 2009;124;S532
DOI: 10.1542/peds.2009-1542M