Pediatricians' Attitudes and Practices Regarding Patient Immunization in Arizona

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DEDICATION

To my parents, who have been very supportive of all my endeavors.

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ABSTRACT

Background: Despite the widespread availability of vaccines, including to the uninsured, significant numbers of both children and adults, remain unvaccinated or undervaccinated. Many reasons, including an increasing financial burden on primary care practices, availability of access to healthcare, and beliefs regarding vaccine safety, have been implicated; however, increasing concern has arisen regarding insurance payments for vaccines to providers [2, 5, 8]. Due to these concerns, we conducted a survey to understand the attitudes, perceptions and practices of Arizona pediatricians regarding vaccines and their reimbursement by insurance companies.

Methods: In February 2011, 1407 standardized surveys were emailed, 87 surveys were faxed, and 216 surveys were mailed to AZ pediatricians who were listed in the Arizona Chapter of the American Academy of Pediatrics membership database.

Results: From the 138 (9.0% response rate) responses, we identified that about half of all provider respondents refer insured and uninsured

patients to public health or other outside clinics for vaccines. The most common reason for outside patient referral for vaccine is inadequate reimbursement by insurance companies, and approximately one-third of providers did not vaccinate a patient due to inadequate reimbursement. Additionally, the vast majority of providers were interested in participating in a buying group run by TAPI.

Conclusions: Based on our survey, inadequate reimbursement for vaccines by insurance companies negatively affects Arizona pediatricians' provision of immunizations. A provider buying group coordinated by a not for profit immunization coalition is one possible solution for this problem.

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INTRODUCTION

Immunizations are critical in preventing morbidity and mortality from a large number of diseases. Routine vaccination is estimated to prevent >14 million disease cases and 33,000 deaths over the lifetime of each birth cohort when children are vaccinated with recommended vaccines prior to 1999 [8]. Since 1999, more vaccinations have become available and have been added to the Advisory Committee on Immunization Practices (ACIP) recommendations [3].

Despite the clear benefits of vaccination for prevention of many diseases, such as measles, mumps, varicella, polio, and hepatitis B, many children remain unimmunized across the United States [11]. Every year, in the United States, approximately 42,000 adults and 300 children die from diseases for which vaccines are available [16]. In 2011, more than 200 cases of measles were reported to public health, which is nearly a two-fold increase from the previous years [7]. In 1993, only 43% of Arizona's two year olds were fully immunized for vaccine preventable diseases. This percentage has increased to 75% of children being fully immunized by the age of two [14].

There are many reasons why adults elect not to vaccinate their children or themselves. These include parental beliefs regarding vaccination safety, inadequate access to healthcare, and an increasing financial burden for primary care physicians [2, 8, 13]. Over the past few years, the number of vaccines recommended has increased, as has the cost to administer vaccinations [3]. State, local, and federal public health has attempted to subsidize immunizations for children and adolescents; however vaccine programs and funding have not been adequate to reach this entire population [8].

Recently, increasing concern has arisen regarding inadequate insurance payments to reimburse primary care providers for vaccines and their administration, threatening their ability to provide this important public health service [5, 8].

RESEARCH MATERIALS AND METHODS

The Arizona Vaccine Reimbursement survey was conducted in February 2011 by The Arizona Partnership for Immunization (TAPI). This is a not for profit coalition whose mission is to "foster a comprehensive, sustained community program for the immunization of Arizonans against vaccine preventable diseases" [14]. The survey was sent to 1,710 pediatricians, who were listed in the Arizona Chapter of the American Academy of Pediatrics (AzAAP) membership database. Based on the available contact information, 1,407 surveys were emailed, 87 surveys were faxed to those without an email address, and 216 surveys were mailed. Surveys were emailed or faxed again two weeks later as a reminder; however hard copies were not mailed again. The de-identified responses were stored in SurveyMonkey and analyzed using Survey Monkey software, Microsoft Excel 2007, and EpiInfo 7 [4, 10, 12]. Chi Square was used to determine statistical significance for comparisons between categorical variable and were considered significant if the p value was ≤ 0.05.

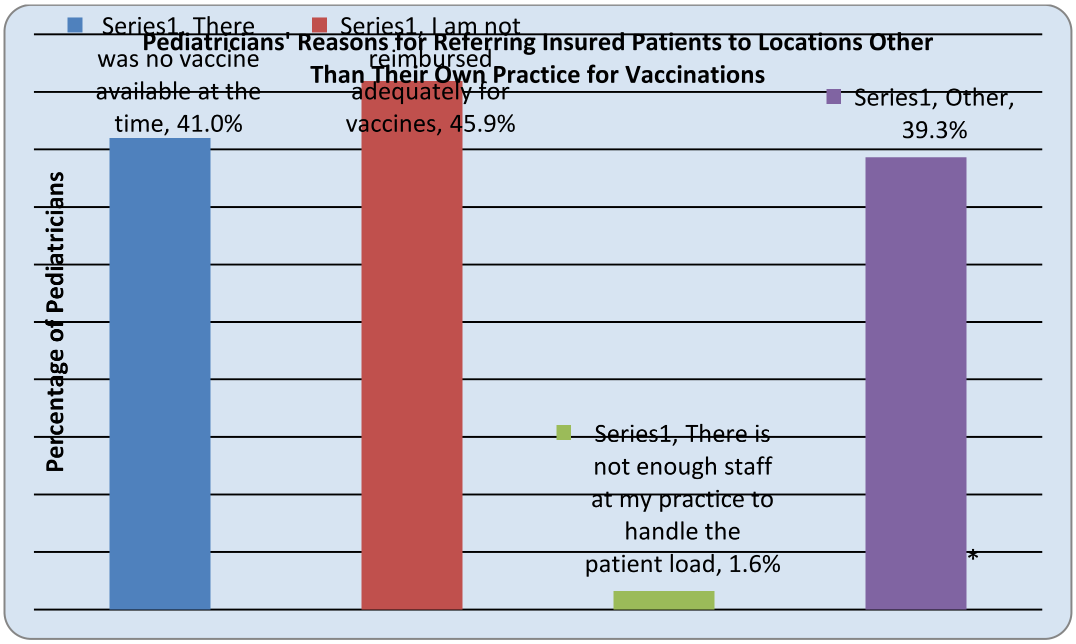
RESULTS

Of the surveys sent, 54 mail addresses and 122 email addresses were invalid leading to a total of 1,534 surveys being effectively distributed. Of the 1,534 providers to whom the survey was sent, 138 (9.0%) responded to the survey. Of respondents, 70.4% practice in a primary care group and 7.4% practice in a hospital-based clinic or hospital setting. Other settings represented by <2% of respondents include multispecialty group practice, medical school/university settings, and community health centers. Respondents reported practicing in a variety of geographic settings: 24.1% from urban inner city; 21.3% from urban non-inner city; 38.0% from suburban areas; and 13.9% from rural areas. About 93% of respondents participate in the Vaccines for Children (VFC) program.

About half of all provider respondents reported past referral of non-insured patients (52.2%) and insured patients (50.4%) to public health or other outside clinics for vaccines. Regarding the types of vaccines for which providers refer to outside clinics, the majority (66.2%) refer non-insured patients for all types of vaccines. In contrast, less than half (42.6%) of providers refer insured patients for all types of vaccines ($p<0.01$). Providers who reported outside referral of patients for vaccines most commonly referred patients for receipt of travel vaccinations and human papillomavirus, regardless of insurance status.

Among 67 providers who referred, the most common reason identified for outside referral of insured patients for vaccines was inadequate reimbursement for vaccines (45.9%) followed by lack of vaccine availability (41.0%) [Figure 1]. Approximately one-third (30.6%) of providers acknowledged that they did not provide a vaccine because they would not be adequately reimbursed. When stratified by whether the respondent reported referral of insured patients to outside clinics for vaccination, 45.9% of those who referred to outside clinics stated they did not provide the vaccine because of inadequate reimbursement compared with 12% of non-referring respondents ($p<0.01$). Ninety-one (83.5%) providers agreed that insurance payments are a barrier to high immunization rates in Arizona. This percentage is higher [54 (90%)] for those providers who refer patients for vaccinations compared with those who do not refer patients, 37 (75%) of whom believe that insurance payments are a barrier to high immunization rates in Arizona, but the difference was not statistically significant ($p=0.08$).

Figure 1



*Top Other Reasons (# of respondents) Include: Practice did not order/carry vaccine (9), Insurance does not cover or under covers vaccines (9), Patient could not afford/did not want to pay administration fee (3).

Of 111 respondents who answered the question, about two-thirds indicated that they have complained to an insurance company regarding inadequate payments for vaccines. The number of providers who complained to an insurance company was not significantly different based on whether the provider reported referral of insured patients for vaccines.

When asked to rate their experience with specific insurers regarding reimbursement for vaccines, the insurer for whom the most providers described as adequately reimbursing for most or all vaccines was Blue Cross (51.4%) followed by Cigna (36.1%). The insurers that were described least commonly as providing adequate reimbursement for vaccines were Aetna (26.2%) and Tricare (26.7%). About 65% of respondents reported that the "break-even point" for insurance payments to reimburse vaccine costs was between 10 and 24% over the cost of vaccine. Almost all (92.7%) respondents agree that insurance companies would save in the end if they reimbursed more for vaccines. Lastly, only 48 (43.6%) agree that insurers recognize the important role that physicians play in vaccinating their clients, while 62 (56.3%) disagree with that statement.

When asked about participation in a vaccine buying group, 53 (49.1%) providers already participate in a buying group and 77 (73.3%) providers reported interest in participating in a buying group run by The Arizona Partnership for Immunization (TAPI). Support for a TAPI buying group is similar for providers who refer patients to outside clinics for vaccines (72.9%) and those who do not (73.9%). Despite this strong interest in buying group participation, 63.8% of respondents believe that buying groups limit the providers' choices of vaccine suppliers. However, of the 108 providers who answered, 53.8% agreed that the most important consideration when participating in a buying group was low prices followed by 36.8% who reported that availability of all vaccine products was the most important factor. Additionally, 9.4% of providers rated having one point of contact in the buying group as the most important factor for considering participation [Table 1].

Table 1

Aspects That Are Important When Pediatricians' Consider Buying Groups

Most Important Aspect	**# (%) of respondents**
Low Prices	57 (53.8%)
Availability of All Vaccine Products	39 (36.8%)
One Point of Contact	10 (9.4%)
Flu incentives	5 (4.8%)

DISCUSSION

This is the first survey characterizing the attitudes and practices of Arizona pediatricians regarding immunizations since the establishment of the Affordable Care Act in 2010 requiring all insurance companies to reimburse for vaccination in 2014. We identified that about half of responding pediatric providers are unable to provide immunizations to patients. Inadequate reimbursement by insurance companies for vaccination and unavailability of vaccine were identified as significant barriers to vaccination. Approximately one-third of providers reported denying vaccination to a patient due to inadequate reimbursement. Additionally, the vast majority of providers expressed interest in participating in a buying group run by TAPI.

Our findings have some similarities to those in the literature but differ significantly in regards to the referral of insured patients. Similar to our study, Zimmerman and colleagues who surveyed 164 Minnesota and Pennsylvania primary care physicians showed that providers are more likely to refer uninsured patients to public health clinics. However, while 60% of providers reported that they would refer an uninsured child whose parents are unable to pay, only 3% reported that they would refer a child with insurance that reimburses for immunizations [17], a stark contrast to the 50.4% who reported referral of insured patients to outside clinics, including public health, for vaccines in our study. The higher number of provider respondents who refer insured patients for vaccines in our study might reflect the decreasing rates of reimbursement by insurance companies for vaccines from 2006 to 2010. Zimmerman and colleagues also found that physicians who participated in a VFC program were less likely to refer patients, regardless of insurance status, to public health clinics. However, more than half of providers participating in a VFC program referred patients for vaccines [17]. Similarly, results from our investigation, which predominantly reflect practices of VFC providers, indicate that more than half of them refer uninsured patients for vaccines. Since VFC providers sign an agreement that they will not turn away a patient for vaccination based on inability to pay, this high rate of referral likely reflects providers inability to maintain a vaccine supply, especially for expensive vaccines (e.g. human papilloma virus vaccine) or those that they use only rarely, such as travel vaccines.

Our results reveal that the majority of pediatricians are dissatisfied with reimbursement for vaccines from insurance companies and many of them, 83.5%, believe that inadequate insurance payments are a barrier to high immunization rates in the state of Arizona. Other investigators have identified similar or even higher levels of dissatisfaction with insurance company reimbursement for vaccination among primary care physicians [2, 5, 8]. In one study from 2009, 21% of providers disagreed with the idea that reimbursement rates for vaccine purchase were adequate and 65% reported that they would not give a vaccine if the cost of the vaccine was more than the reimbursement received from insurers [5]. Additionally, Freed and colleagues show that primary care physicians have reported delaying the purchase of certain vaccines due to financial concerns and have considered stopping administration of vaccines to patients with private insurance because of inadequate payments by insurers [5]. Moreover, providers have stopped business with certain insurance companies due to inadequate reimbursement [6].

Providers' perception of which insurance companies adequately reimburse for most or all vaccines varies. We found that BlueCross and Cigna were most commonly perceived to adequately reimburse for most or all vaccines, while Aetna and Tricare were least commonly reported to adequately reimburse for most or all vaccines. This was in contrast to the ratings in the Insurer Ratings Report of 2011, where physicians across the United States rated various insurers [9]. In the report, physicians reported Blue Plans and Aetna as the best insurers. Interestingly, Blue Plans, along with United Healthcare were also reported as the worst insurers. These varying results may reflect the different reimbursement rates that providers receive from the same insurance companies, depending on the amount or method of vaccine purchase. Further emphasizing the importance of reimbursement, the majority of physician respondents reported that the level of payment was the most important factor in having a positive opinion of an insurance company [9].

Buying groups are an option for providers to help lower the purchase cost of vaccines for their practices. In our survey, almost half of pediatricians reported that their practice already participates in a buying group, and almost three-quarters expressed interest in participating in a buying group run by TAPI. This option would allow providers who only immunize a small number of patients to both purchase vaccine at a lower price and avoid wasting expensive unused vaccine. Some state health departments have set up their own buying group to purchase vaccines for healthcare providers in the state for exactly this purpose.

Another important issue that the information from this survey raises is the cost burden placed on public health when providers are unable to vaccinate their insured patients. Public health has long been relied upon to vaccinate those who are uninsured or on Medicaid, however recently, public health has been relied upon to vaccinate insured patients, often without a mechanism to bill their insurance for reimbursement. Further, with the Affordable Care Act requiring all insurance companies to reimburse for vaccination beginning in 2014, the limited federal funding available for public health to vaccinate insured patients is being eliminated [1, 15]. If neither public health nor their private providers are able to provide vaccination services to insured patients, this population is likely to be inadequately vaccinated, which could threaten herd immunity.

Several considerations should be taken into account when interpreting the data and results. The most obvious is the low response rate of 9%, however, pediatricians from all geographic areas in the state responded. Additionally, the vast majority of respondents were VFC providers, which is comparable to Arizona pediatricians [TAPI, unpublished data]. Second, the survey was completed by Arizona pediatricians and may not represent other specialty groups who provide immunizations, such as those who are board certified in Family Practice and Internal Medicine. However, due to the populations they treat, non-pediatric specialties likely vaccinate fewer patients than pediatricians making them more likely to refer outside their facility for vaccinations. Lastly, as with any survey, the reported data are subject to recall bias, however, pediatricians provide immunizations on a daily basis in their practice reducing the likelihood that this would occur.

This study highlights the difficulty that pediatricians experience with providing both their insured and uninsured patients with vaccination and the burden it places on public health. Despite the belief by healthcare providers that adequate reimbursement for vaccines will save money for insurers in the long run, the majority of insurers are not perceived to adequately reimburse physicians for vaccinations. Additionally, it is unclear how the requirement of the Affordable Care Act [1, 15] for insurance companies to pay for all vaccinations will affect reimbursement to physicians. Lastly, strategies should be considered to decrease vaccine costs for providers such as utilizing local vaccine coalitions, to form buying groups to assist private providers in purchasing vaccine at lower prices.

FUTURE DIRECTIONS

This study reveals dissatisfaction among pediatricians in Arizona regarding insurance reimbursement for vaccines. One option for providers to help lower the purchase cost of vaccines for their practices is buying groups. In our survey, almost half of pediatricians reported that their practice already participates in a buying group, and almost three-quarters expressed interest in participating in a buying group run by TAPI. Some state health departments have set up their own buying group to purchase vaccines for healthcare providers in the state for exactly this purpose. Better understanding of what physicians require to participate in such buying groups might assist physicians with participation. Additionally, further investigation into factors that contribute to successful buying groups, including those run by government entities like state health departments would be useful.

Another important issue that needs to be addressed is the cost burden placed on public health when providers are unable to vaccinate their insured patients. Public health has long been relied upon to vaccinate those who are uninsured or on Medicaid, however recently, public health has been relied upon to vaccinate insured patients, often without a mechanism to bill their insurance for reimbursement.

Further, the Affordable Care Act requires all insurance companies to reimburse for vaccination beginning in 2014,which is leading to the elimination of the limited federal funding available for public health to vaccinate insured patients [1, 15]. Additional research into effective methods for public health to bill insurance companies for reimbursement of vaccination will assist public health with sustaining their capability to vaccinate insured children. Cost-effectiveness studies demonstrating the cost savings for insurance companies to provide vaccine to public health ahead of time, particularly when it is required in a timely manner such as for influenza season, might also strengthen public health's ability to maintain herd immunity. Lastly, studies will be needed to investigate reimbursement rates paid by insurance companies once they are required to reimburse for all vaccinations by the Affordable Care Act.

CONCLUSIONS

The majority of pediatricians are dissatisfied with reimbursement for vaccines from insurance companies and believe that inadequate insurance payments are a barrier to high immunization rates in the state of Arizona. Despite the belief by healthcare providers that adequate reimbursement for vaccines will save money for insurers in the long run, the majority of insurers are not perceived to adequately reimburse physicians for vaccinations.

Almost half of pediatricians reported that their practice already participates in a buying group, and almost three-quarters expressed interest in participating in a buying group run by TAPI. Additional research into establishment of successful buying groups and other strategies to make vaccination affordable to primary care physicians need to be investigated to maintain immunization rates and herd immunity in Arizona.

REFERENCES

1. American Academy of Pediatrics. State Implementation of the Patient Protection and Affordable Care Act (ACA). Accessed January 1, 2012. Available at: http://www.aap.org/en-us/advocacy-and-policy/state-advocacy/Documents/ACA_SLR.pdf.

2. Coleman M.S., Lindley M.C., Ekong J., & Rodewald L. (2009). Net financial gain or loss fryom vaccination in pediatric medical practices. *Pediatrics, 124*(Suppl 5), S472-S491.

3. Centers for Disease Control and Prevention. 2011. MMWR Weekly: General Recommendations on Immunization. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm?s_cid=rr6002a1_e. Accessed January 24, 2012.

4. Epi Info. (2011). Epi Info 7 software. Atlanta, GA: Centers for Disease Control and Prevention.

5. Freed G.L., Cowan A.E., & Clark S.J. (2009). Primary care physician perspectives on reimbursement for childhood

immunizations. *Pediatrics, 124*(Suppl 5), S466-S471.

6. Freed G.L., Cowan A.E., Gregory S., & Clark S.J. (2008). Variation in provider vaccine purchase prices and payer reimbursement. *Pediatrics, 122*(6), 1325-31.
7. Hampton, T. (2011). Outbreaks Spur Measles Vaccine Studies. *JAMA, 306*(22), 2440-2442.

8. Lindley M.C., Shen A.K., Orenstein W.A., Rodewald L.E., & Birkhead G.S. (2009). Financing the delivery of vaccines to children and adolescents: challenges to the current system. *Pediatrics, 124*(Suppl 5), S548-S557.

9. Medscape. (2011). Insurer Rating Report 2011. Accessed January 1, 2012. Available at: http://www.medscape.com/features/slideshow /insurerreport?src=ptalk.

10. Microsoft. (2007). Microsoft Excel 2007 software. Redmond, WA: Microsoft.

11. Roush, S.W., Murphy, T.V., & the Vaccine-Preventable Disease Table Working Group. (2007). Historical Comparisons of Morbidity and Mortality for Vaccine-Preventable Diseases in the United States. *JAMA*, *298*(18), 2155-2163.

12. SurveyMonkey. (2011). SurveyMonkey software. Palo Alto, CA: SurveyMonkey.

13. Taylor J.A., Darden P.M., Brooks D.A., Hendricks J.W., Wasserman R.C., & Bocian A.B. (2002). Association between parents' preferences and perceptions of barriers to vaccination and the immunization status of their children: a study from Pediatric Research in Office Settings and the National Medical Association. *Pediatrics, 110*(6), 1110-1116.

14. The Arizona Partnership for Immunization. Vaccine Reimbursement Project. Accessed January 1, 2012. Available at: http://www.whyimmunize.org/about-us.

15. U.S. Department of Health and Human Services. The Healthcare Law & You. Accessed January 13, 2011. Available at: http://www.healthcare.gov/law/index.html.

16. U.S. Department of Health and Human Services. Understanding Immunization and Infectious Diseases. Accessed January 1, 2012. Available at: http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicId=23.

17. Zimmerman R.K., Tabbarah M., Janosky J.E., Bardenheier B., Troy J.A., Jewell I.K., & Yawn B.P. (2006). Impact of vaccine economic programs on physician referral of children to public vaccine clinics: a pre-post comparison. *BMC Public Health, 6*(7).