STATEMENTS

Deficiencies in Immunization Education and Training in Pharmacy Schools: A Call to Action

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Approximately 38% of US pharmacy schools provide immunization education and training to pharmacy students as part of their core curricula. These deficiencies in immunization education and training may contribute to low immunization rates for some groups of people, particularly hard-to-reach consumers and those with misconceptions about vaccinations. In this paper, we call upon all pharmacy schools to mandate immunization education and training as part of their core curricula, not just as an elective course. In doing so, we encourage pharmacy schools to adopt the Pharmacy-Based Immunization Delivery program developed by the American Pharmacists Association. We recognize that implementation of these recommendations will require sufficient resources and that it will take time to change the curricula in colleges and schools of pharmacy.

Keywords: immunization, vaccine, health care barriers, disease prevention, curriculum

In most US pharmacy school curricula, emphasis on prevention has never been equal to that on treatment. Nationwide, approximately 38% of pharmacy schools provide immunization education and training to all pharmacy students as part of their core curricula; some colleges and schools offer immunization education and training as an elective course (personal communication, American Pharmacists Association, January 15, 2009). As a result, considerable variation exists in the preparation of pharmacists and many newly graduated pharmacists are not ready to provide immunization services.[1] These deficiencies in immunization education and training in colleges and schools of pharmacy may contribute to low immunization rates in the United States.

PHARMACISTS' INVOLVEMENT IN IMMUNIZATIONS

Pharmacists' involvement in immunizations, although not new, has changed considerably in recent times.[2] Over the past decade, there has been a marked increase in the number of states that allow pharmacists to administer vaccines. About 10 years ago, only 11 states allowed pharmacists to administer vaccines. As of June 2008, 49 states have granted authority to pharmacists to immunize people,[3] thanks to lobbying by national and state pharmacy associations and changes in state pharmacy practice acts. Nevertheless, the scope and breadth of pharmacists' authorities varies widely, with some states (eg, North Carolina) limiting the type of immunization services that pharmacists can provide and others (eg, Virginia) being less restrictive.

The potential role of pharmacists in addressing the problem of low immunization rates has been recognized not only by state governments, but also by the federal government.[4] In 1996, the American Pharmacists Association (APhA) established its Pharmacy-Based Immunization Delivery program (www.pharmacist.com/imz), which the Centers for Disease Control and Prevention (CDC) endorsed. Later, the CDC granted APhA a liaison position on the Advisory Committee on Immunization Practices (ACIP).[4]

Prior to January 1, 2006, when Medicare Part D was initiated, vaccination coverage started and ended with Medicare Part B. The advent of Medicare Part D ushered in a new policy that increased vaccine coverage for Medicare beneficiaries and improved the recognition of pharmacists as vaccination providers. While Medicare Part B will continue to cover influenza virus vaccine, pneumococcal vaccine, hepatitis B vaccine for beneficiaries at high or intermediate risk, and other vaccines (eg, tetanus toxoid) when directly related to the treatment of an injury or direct exposure to a disease or condition, as of January 1, 2008, the Centers for Medicare and Medicaid Services

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(CMS) allowed pharmacists to be reimbursed for both the vaccine cost and the administration fee for a Medicare Part D-covered vaccine.[5] The specific vaccines covered and the level of reimbursement are set by individual Part D plans. In general, Part D plan formularies will cover commercially available vaccines that are indicated for the Medicare population but not available for reimbursement under Part B. Pharmacists should contact the Part D plans for more information about coverage and reimbursement for vaccines.

There are about 100 US-based colleges and schools of pharmacy with accredited (full or candidate status) professional degree programs.[6] These colleges and schools enrolled approximately 53,000 students in fall 2007, reflecting an increase in enrollment of 4.3% from the previous year. In the United States, there are an estimated 220,000 licensed pharmacists.[7] Since its inception, approximately 40,000 pharmacists and student pharmacists have been trained through the APhA Pharmacy-Based Immunization Delivery program.[8] Notwithstanding this important achievement, this is only a fraction of the licensed pharmacists and pharmacy students in the United States, indicating that this voluntary program is underutilized considerably.

In spite of the proven effectiveness and widespread availability of vaccines and tremendous efforts by the APhA and federal and state governments, immunization rates remain below the Healthy People 2010 objectives for a substantial portion of the US population. According to data recently released by the CDC, only 2% of adults between the ages of 18 and 64 years have received the new tetanus-diphtheria-pertussis (Tdap) vaccine, only 2% of adults 60 years and older have received the zoster vaccine, and only about 67% of elderly people have benefited from the influenza and pneumococcal vaccines.[9] Furthermore, the influenza vaccination rate of high-risk adults between the ages of 18 and 64 years, including health care workers, continues to be well below 50%.[9]

There are many reasons cited for low immunization rates in the United States. The most common reasons adults tend to cite for not getting vaccinated include concern about vaccine-associated side effects or vaccine-acquired illness, disbelief that the vaccine works, lack of awareness that the vaccine was needed, and lack of healthcare provider recommendation for the vaccine.[10-12] The most common reasons noted for vaccine declination among healthcare professionals include concern about side effects or vaccine safety, disbelief that the vaccine works, and inconvenience.[13-15] The most consistent reason for vaccine declination among parents on behalf of their children is concern about vaccine risks, most notably concern that vaccines can cause autism.[16] Other frequently cited reasons for not receiving vaccinations are specific to the particular vaccine.[10]

Vaccination misconceptions and barriers to immunization exist at all levels in the public and private sectors and among healthcare professionals.[11] The first step to increasing vaccination rates is to recognize these misconceptions and barriers, yet most pharmacists are not educated to do so, nor are they trained to develop strategies to overcome them. This further perpetuates the problem of low immunization rates in the United States.

A ROAD TO IMPROVEMENT

Pharmacists are in an ideal position to advance patient care to help the nation achieve the objectives for immunization. First, pharmacists are the most accessible healthcare professionals.[17] They are widely disseminated within neighborhoods and communities and they regularly encounter people failing to get vaccinated, including hard-to-reach consumers and those skeptical about vaccines. Empowered with knowledge, pharmacists can be trained to screen people for vaccine coverage and counsel people on vaccine decisions, including providing information on immunizations to counter inaccurate statements about vaccine risks in the context of full vaccine benefits.

Second, pharmacists are highly regarded by the public and by most healthcare providers as drug information specialists, and often sought by people for medical advice. The value of a pharmacist's advice is only limited by his/her knowledge base and training. Without standardized training, the advice that a particular person receives from a pharmacist is often determined by the person's geographic location and the pharmacist he/she has access to at the time. This variation contributes to people's lack of awareness and misconceptions about vaccines, people's lack of access to qualified healthcare providers, and the tremendous toll that suboptimal immunization rates create in the United States. It is precisely because of this variation that immunization education and training in all colleges and schools of pharmacy is needed.

Third, various organizations and thought leaders support and advocate for the role of pharmacists as vaccinators and for retail pharmacies to supplement the vaccination activities of the traditional medical home, particularly for hard-to-reach consumers.[18,19] Moreover, many people are quite satisfied with (and some people prefer) pharmacist-delivered immunization and vaccinations provided in retail-based clinics.[20,21] However, other patients and some providers do not regard pharmacists as qualified vaccinators.[22-24] Requiring immunization education and training for pharmacists would demonstrate to providers and the public that immunization is important to

the pharmacy profession and strengthen pharmacists' credibility as vaccinators.

Finally, pharmacists are willing to provide immunization services, but lack of education is a major barrier. For example, many pharmacists do not know their state's laws regarding immunizations. In one survey, only 53% of respondents knew whether their states allowed pharmacists to administer vaccines.[25] Concerns about legal liability, primarily resulting from lack of information, is another obstacle to pharmacists providing immunization services.[2] Conversely, pharmacists who attended immunization-related educational programs were more willing to become vaccination providers than non-attendees.[25] Requiring immunization education in colleges and schools of pharmacy would ensure that all graduating pharmacists have baseline knowledge of the scope of immunization practices and liability as well as more targeted information about state-specific laws governing immunizations. This would help address some of the major barriers that pharmacists have to providing immunization services and further boost pharmacists' willingness to get involved in providing vaccinations.

A CALL TO ACTION

Pharmacists should take a leading role in promoting and improving public health by educating people about immunization recommendations, identifying a large number of people who are eligible for vaccination, encouraging healthcare professionals to get immunized, and administering vaccines when allowed by state laws. Colleges and schools of pharmacy have a responsibility to improve the education of pharmacy students and harness the skills of pharmacists-in-training in order to prepare pharmacists for this role. We call upon all colleges and schools of pharmacy to mandate immunization education and training as part of their core curricula, not just as an elective course. In doing so, colleges and schools of pharmacy should consider adopting the CDC-approved, APhA Pharmacy-Based Immunization Delivery program. This policy would result in the highest number of pharmacists becoming educated and trained about immunization practices, delivery, liability, payment, initiation, and promotion of immunization services. Ultimately, this would improve immunization rates in the United States and prevent a substantial amount of morbidity from vaccine-preventable diseases in the future. With this enormous opportunity, now is the time for pharmacy schools to help reach the national goals for immunization.

SUMMARY

Vaccines are one of the most cost-effective preventive measures and one of the top 10 public health achievements of the 20th century. Vaccines will not reach large numbers of people and save countless lives in the future without mechanisms to promote their use. The APhA has helped to pave the way for the future of vaccination delivery in the United States. Some pharmacies have implemented policies that require their pharmacist vaccinators to complete training in the APhA Pharmacy-Based Immunization Delivery program.[26] Pharmacy schools can take this policy one step further by mandating immunization education and training in their curricula. We recognize that implementation of these recommendations will require sufficient resources and that it will take time to change the curricula in colleges and schools of pharmacy.

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REFERENCES

1. Knapp KK, Ray MD, Feldman S. Education and training of pharmacists: comments on sustaining continuous improvement. *J Am Pharm Assoc.* 2008;48(4):544-9.
2. Kamal KM, Madhavan SS, Maine LL. Pharmacy and immunization services: pharmacists' participation and impact. *J Am Pharm Assoc.* 2003;43(4):470-82.
3. Immunization Action Coalition. Vaccination Information for Healthcare Professionals. Available at: http://www.immunize.org/laws/pharm.asp. Accessed May 1, 2009.
4. Foster SL. Pharmacy is the future of immunization. *Pharmacy Today.* 2008;14(Suppl 1):1.
5. Stefanacci RG. Vaccination access today. *Medicare Patient Manage.* 2008;3(1):38-40.
6. American Association of Colleges of Pharmacy. Academic Pharmacy's Vital Statistics. Available at: http://www.aacp.org/. Updated April 2008. Accessed August 20, 2008.
7. Gershon SK, Cultice JM, Knapp KK. How many pharmacists are in our future? The Bureau of Health Professions Projects Supply to 2020. *J Am Pharm Assoc.* 2000;40(6):757-64.
8. Olenak JL. MTM and immunizations. *Pharmacy Today.* 2008;14(8):29.
9. Centers for Disease Control and Prevention. The National Immunization Survey. Available at: http://www.cdc.gov/nis/. Accessed May 1, 2009.

10. Johnson DR, Nichol KL, Lipczynski K. Barriers to adult immunization. *Am J Med.* 2008;121(Suppl 2):S28-35.
11. National Foundation for Infectious Diseases. Saving Lives: Integrating Vaccines for Adults into Routine Care. Bethesda, MD, 2008. Available at: http://www.nfid.org/pdf/publications/adultimmcta.pdf. Accessed May 1, 2009.
12. Zimmerman RK, Santibanez TA, Janosky JE, et al. What affects influenza vaccination rates among older patients? An analysis from inner-city, suburban, rural, and Veterans Affairs practices. *Am J Med.* 2003;114(1):31-8.
13. Nichol KL, Hauge M. Influenza vaccination of healthcare workers. *Infect Control Hosp Epidemiol.* 1997;18(3):189-94.
14. Martinello RA, Jones L, Topal JE. Correlation between healthcare workers' knowledge of influenza vaccine and vaccine receipt. *Infect Control Hosp Epidemiol.* 2003;24(11):845-7.
15. Lester RT, McGeer A, Tomlinson G, Detsky AS. Use of, effectiveness of, and attitudes regarding influenza vaccine among house staff. *Infect Control Hosp Epidemiol.* 2003;24(11):839-44.
16. Field RI. Vaccine declinations present new challenges for public health. *P&T.* 2008;33(9):542-3.
17. U.S. Bureau of Health Professions. *Report on Health Professional Accessibility.* Washington, DC: Government Printing Office; 1996.
18. American Society of Health-System Pharmacists. ASHP guidelines on the pharmacist's role in immunization. *Am J Health-Syst Pharm.* 2003;60(13):1371-7.
19. Schaffer SJ, Fontanesi J, Rickert D, et al. How effectively can health care settings beyond the traditional medical home provide vaccines to adolescents? *Pediatrics.* 2008;121(Suppl 1):S35-45.
20. Grabenstein JD, Guess HA, Hartzema AG. People vaccinated by pharmacists: descriptive epidemiology. *J Am Pharm Assoc.* 2001;41(1):46-52.
21. Ernst ME, Bergus GR, Sorofman BA. Patients' acceptance of traditional and nontraditional immunization providers. *J Am Pharm Assoc.* 2001;41(1):53-9.
22. Blake EW, Blair MM, Couchenour RL. Perceptions of pharmacists as providers of immunizations for adult patients. *Pharmacotherapy.* 2003;23(2):248-54.
23. Welch AC, Ferreri SP, Blalock SJ, Caiola SM. North Carolina family practice physicians' perceptions of pharmacists as vaccinators. *J Am Pharm Assoc.* 2005;45(4):486-91.
24. American Academy of Pediatrics. AAP principles concerning retail-based clinics. *Pediatrics.* 2006;118(6):2561-2.
25. Madhavan SS, Rosenbluth SA, Amonkar M, Borker RD, Richards T. Pharmacists and immunizations: a national survey. *J Am Pharm Assoc.* 2001;41(1):32-45.
26. California Department of Public Health, Immunization Branch. Vaccination delivery by chain pharmacies in California: results of a 2007 survey. Available at: http://www.cdph.ca.gov/programs/immunize/Documents/pharma%20vaccinators%20report%20FINAL5-08.pdf. Accessed May 1, 2009.