Vaccine xxx (2018) xxx–xxx

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

National survey of pharmacy-based immunization services

Salisa C. Westrick [a], Brandon J. Patterson [b,*], Mohammad S. Kader [a], Sanuwar Rashid [a], Philip O. Buck [b], Mitchel C. Rothholz [c]

[a] Auburn University, 020 James E. Foy Hall, Auburn, AL 36849, USA
[b] GSK, Crescent Drive 5, Philadelphia, PA 19112, USA
[c] American Pharmacists Association, 2215 Constitution Ave, NW, Washington, DC 20037, USA

ARTICLE INFO

Article history:
Received 1 May 2018
Received in revised form 12 July 2018
Accepted 13 July 2018
Available online xxxx

Keywords:
Community pharmacy
Pharmacist
Immunization
Vaccine

ABSTRACT

Introduction: Pharmacists in the United States (U.S.) are authorized to administer vaccines. This study described: how and to what extent immunization services are offered, promoted, and documented in community pharmacies; reasons for referral to other locations for vaccination; and perceived barriers to immunization services.

Methods: A mixed-mode (mail/electronic) survey of a stratified random sample of 1999 nationally-representative community pharmacies in the U.S. was conducted in April-July 2017. Survey instrument development was informed by validated scales and 10 in-depth interviews with community pharmacists; content and face validity were ensured via pre- (n = 5) and pilot-tests (n = 26) among community pharmacists. Potential non-response bias was investigated and descriptive statistics were used to analyze survey responses.

Results: Of the 1999 community pharmacies, 119 pharmacies were deemed ineligible. Of those eligible pharmacies, complete responses were provided by 292 respondents, each representing a unique pharmacy (15.5% response rate). Respondents were evenly split male/female (52.5/47.5%) and about half were pharmacy managers (51.3%). The majority (79.5%) reported offering at least one type of vaccine in 2016, with the most commonly administered vaccine types (average doses in 2016) being: Influenza (484), Pneumococcal 13-valent conjugate (55), Herpes Zoster (41), and Pneumococcal polysaccharide (39). Two-thirds (66.7%) of immunizing pharmacies provided adolescent vaccinations. Most frequently reported referral reasons were patients' insurance not covering vaccine administration at the pharmacy and patients' age not within approved protocol, policy or state law. The majority of respondents did not perceive organizational and environmental factors as barriers; however, they reported patient-related factors, especially cost and insurance coverage, as important barriers.

Conclusions: The majority of U.S. community pharmacies reported offering at least one type of vaccine. The scope of pharmacy engagement in immunization services varied in terms of how and to what extent they were offered and documented. Addressing patient-related barriers is needed to further enhance pharmacy-based immunization services.

1. Introduction

Despite recommendations from the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP), immunization rates in the United States (U.S.) are sub-optimal compared with Healthy People 2020 goals [1–3]. Community pharmacists are well positioned to increase access to immunizations by providing convenient services to patients in non-metropolitan areas, those who are without a medical home, and others not easily cared for in traditional immunization settings [4,5].

Abbreviations: IIS, Immunization Information Systems; ACIP, Advisory Committee on Immunization Practices; APhA, American Pharmacists Association; CDC, Centers for Disease Control and Prevention; CMS, Centers for Medicare and Medicaid Services; DC, District of Columbia; HHS, U.S. Department of Health and Human Services; HPV, Human Papillomavirus (HPV); ACWY, meningococcal serogroups A, C, W and Y; NVAC, National Vaccine Advisory Committee; PCV13, Pneumococcal 13-valent conjugate; PPSV23, Pneumococcal polysaccharide; SD, standard deviation; Tdap, tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine; U.S., United States.

* Corresponding author.
E-mail addresses: westrsc@auburn.edu (S.C. Westrick), brandon.j.patterson@gsk.com (B.J. Patterson), mzk0089@tigermail.auburn.edu (M.S. Kader), mzr0034@tigermail.auburn.edu (S. Rashid), philip.o.buck@gsk.com (P.O. Buck), mrothholz@aphanet.org (M.C. Rothholz).

https://doi.org/10.1016/j.vaccine.2018.07.027
0264-410X/

The utilization of pharmacists as immunization providers has evolved rapidly in the past 20 years. At present, all 50 states, the District of Columbia (DC), and Puerto Rico allow for pharmacist-provided immunization in some capacity [6], and more than 320,000 pharmacists have been trained to administer vaccines [7]. This expanded role of U.S. pharmacists has also evolved in other countries including Canada, Australia, England, and beyond [8–11]. Widely accepted immunization services by pharmacists have demonstrated a significant impact, especially in influenza vaccinations; however, vaccination of adolescents and young and middle-aged adults (age 15–59 years) is not yet fully realized [12].

For communities to increase overall immunization rates, pharmacies and pharmacists need to coordinate, collaborate and communicate with other healthcare providers as part of the "immunization neighborhood", a term coined by the American Pharmacists Association [13]. Together, pharmacists and other health professionals can expand efforts beyond influenza vaccination and increase access for broader patient populations [14]. Successful implementation of this concept will allow pharmacists to meet the U.S. Department of Health & Human Services (HHS) National Vaccine Advisory Committee (NVAC) Adult Immunization Standards and proactively identify and immunize patients who are eligible for vaccination and, thereby, have a positive impact on patients' health [13]. Several key areas must be explored to inform future strategies to facilitate the immunization neighborhood concept. First, current immunization practices should be explored including administered vaccine types and doses, promotion and patient recommendation strategies, and documentation methods. Second, understanding key reasons for referring patients elsewhere for vaccination is needed to effectively facilitate the integration and coordination of adult immunizations between physicians' offices and community pharmacies. Lastly, understanding the barriers to stocking and administering vaccines will also help inform programs needed to support community pharmacists, enabling them to increase the breadth of their adult immunization offerings to eligible patients.

Since the context of adult and adolescent immunizations has changed in recent years, including the recommendation of new vaccines and lower (or no) patient cost-sharing, a new study describing the level of pharmacy engagement in immunization services is warranted. This study was to describe: how and to what extent immunization services were offered, promoted, and documented in community pharmacies; reasons for referral to off-site locations; and pharmacists' perceived barriers to immunization services.

2. Methods

2.1. Study design and sample

This study utilized a cross-sectional survey of community pharmacies (both independently- and corporately-owned pharmacies) in 50 states and DC. The unit of analysis was at the pharmacy level. One key informant represented each pharmacy; they included pharmacy owners, managers, or staff pharmacists. All procedures were approved by the first author's Institutional Review Board as an expedited review.

A sampling frame of community pharmacies was obtained using Hayes' Directory, a database of community pharmacies in the U.S [15]. This database provided names, mailing addresses, and telephone numbers for a total of 60,316 community pharmacies throughout the nation. Pharmacies that did not serve the typical public (i.e., walk-in customers) or dispense medications were excluded from participation. Pharmacies were not required to provide immunization services in order to participate in this study. Using a projected 20% response rate, a margin of error of 5%, and a confidence level of 95%, a minimum sample size of 1910 was required. Therefore, a stratified random sample of 1999 nationally-representative community pharmacies in all 50 states and DC was selected for survey distribution.

2.2. Data collection

A mixed-mode survey (paper and electronic format) was distributed in April-July 2017 based on a modified version of Dillman's Tailored Design Method [16]. Four mail contacts, addressed to the pharmacy manager, were used, including a pre-notification postcard, a survey packet, a reminder postcard, and a replacement survey packet; all were delivered via postal services. The pharmacy manager could participate in the survey or pass the questionnaire to another pharmacist who was more knowledgeable about the immunization service at that pharmacy. A URL was provided on each contacting medium that led to an online version of the survey for those who preferred to complete the survey electronically. In addition to the mail contacts, reminder calls (up to 3 attempts) were made from the Center for Survey Research, Indiana University to non-respondents prior to sending the replacement survey packet. To ensure that multiple pharmacists from one location did not complete the survey, a unique identifier was assigned to each pharmacy, which was required to access the electronic survey. No direct financial incentive was offered to respondents. Each survey packet included a consent form attached at the top of the questionnaire that was perforated and removable. To maintain confidentiality, the signed consent form was separated from the survey packet upon receipt. The separated consent forms were kept in a locked cabinet accessible only by the first author.

2.3. Survey variables and questionnaire pretest/pilot test

The questionnaire used in this study was developed in two stages. The first stage was to conduct in-depth interviews with 10 community pharmacists who have been highly committed in providing immunization services. The purpose of this stage was to identify possible promotion strategies, referral reasons, and barriers to providing immunization services. We then used this information to inform refinement of the existing preliminary survey questions. Preliminary survey questions, obtained from existing studies, assessed the types/doses of vaccines administered [17,18], the strategies used to promote immunization services [17], the referral reasons with response categories ranging from 1 (=never) to 4 (=often/always) [19], the barriers to stocking and administering vaccines with response categories ranging from 1 (=not a barrier) to 4 (=major barrier) [19], and the demographic information [18]. After the questionnaire was developed, it was pre-tested with 5 community pharmacists to ensure the content validity and subsequently pilot-tested with 26 community pharmacists to ensure the face validity of the measures. All 5 pharmacists in the pre-test phase were engaged in immunization services, while 24 of 26 pharmacists in the pilot phase were. Pharmacists who pre- or pilot-tested the survey questionnaire were excluded from study participation.

2.4. Data analysis

Potential non-response bias was investigated to determine if respondents differed from non-respondents in terms of: geographical region (Midwest, Northeast, Southeast, Southwest, and West), pharmacy ownership (corporately-owned vs independent), and immunization service status. Haye's Directory provided the location and ownership information, while the call center that conducted reminder calls obtained information about pharmacies'

Please cite this article in press as: Westrick SC et al. National survey of pharmacy-based immunization services. Vaccine (2018), https://doi.org/10.1016/j.vaccine.2018.07.027