



Factors associated with herpes zoster vaccination status and acceptance of vaccine recommendation in community pharmacies



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ARTICLE INFO

Article history:

Received 25 April 2014

Received in revised form 31 July 2014

Accepted 15 August 2014

Available online 27 August 2014

Keywords:

Herpes zoster

Zostavax[®]

Education

Shingles

Pharmacy

Vaccination

ABSTRACT

Objectives: 1. Identify patient characteristics, awareness and knowledge associated with herpes zoster (HZ) vaccination status. 2. Identify self-reported reasons for not receiving Zostavax[®]. 3. Assess the impact of a patient education program by measuring post-intervention interest in obtaining the Zostavax[®] vaccine across reasons for being unvaccinated.

Methods: A cross-sectional design with patients aged 60 years or older in 51 community pharmacies in Alabama and Florida was utilized. During the Introductory Pharmacy Practice Experience in summer 2013, 137 immunization-certified student pharmacists provided patient education on HZ and Zostavax[®] to unvaccinated patients using the Shingles Vaccine Information Statement. An interviewer-administered questionnaire assessed patient awareness of HZ, receipt of recommendations to receive Zostavax[®], and patient characteristics as well as vaccination status, reasons for being unvaccinated and interest in obtaining Zostavax[®] after the educational session.

Results: A total of 681 patients participated in a conversation with a student pharmacist regarding their HZ vaccination status. The majority were female (57.6%), white (84.6%), and unvaccinated (73.6%). Results from logistic regression suggest that participants were more likely to be vaccinated if they received a recommendation from a healthcare provider (OR = 5.15), received the influenza vaccine during the previous year (OR = 3.56), or knew that Zostavax[®] was recommended for individuals over 60 years of age (OR = 3.55). The most frequently provided reasons for being unvaccinated were “haven’t gotten around to it/forgot” (27.2%) and “didn’t know it was needed” (27.1%). After the educational session, the majority (72.5%) of unvaccinated patients were interested in speaking with their pharmacist or physician about receiving Zostavax[®]. Analysis suggests that interest differed across initial reason for being unvaccinated ($\chi^2 = 64.44$; $p < 0.01$).

Implications/conclusions: Recommendations from healthcare providers are valued by patients and can improve vaccination rates. The patient education program increased interest in receiving Zostavax[®] and this interest differed depending on the reason provided for being unvaccinated.

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1. Introduction

Herpes zoster (HZ) results from the reactivation of the latent varicella zoster virus that affects the sensory nerve ganglion and the peripheral nerve and its branches. Patients with HZ infection

typically present with a painful, pruritic skin condition on the affected dermatomes that usually develops into a vesicular rash. In the United States, an estimated 1.1 million cases of HZ occur annually, most commonly among older adults, with a 30% lifetime risk of developing HZ. Approximately 10–25% of patients with HZ will experience complications such as persistent pain for weeks to years post infection, known as postherpetic neuralgia (PHN), or ocular involvement, known as herpes zoster ophthalmicus (HZO) [1,2]. In 2005, an estimated \$566 million was spent on treatment of HZ and this healthcare burden can only be expected to increase as the population ages and thus incidence of HZ increases [2].

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The zoster vaccine, Zostavax[®], was licensed in 2006 by the U.S. Food and Drug Administration for prevention of HZ, as well as prevention and treatment of PHN. Since 2008 the Advisory Committee on Immunization Practices (ACIP) has recommended a one-time single dose for all persons aged 60 years of age or older who have no contraindications [1]. Cost-effectiveness of Zostavax[®] varies depending on patients age and is most cost-effective for patients older than 70 years [3].

Despite the availability of HZ vaccine, a low vaccination rate for HZ is a public health concern. In 2011, only 15.8% of adults aged 60 or older reported having had HZ vaccination [4]. Several studies have explored factors and barriers associated with patients' Zostavax[®] vaccination status. The most commonly found rationale for non-receipt of Zostavax[®] was lack of awareness of zoster vaccine existence and the most common rationale for receipt of the vaccine was recommendation of Zostavax[®] by a health-care provider [5–9]. Even though Zostavax[®] is likely to be recommended by physicians [10], it has the lowest rate of on-site administration of all adult vaccines provided by physicians due to referrals to pharmacies to handle Medicare Part D reimbursements [8,11]. Medicare Part D is the only portion of Medicare that provides coverage of Zostavax[®] but the reimbursement must be done by pharmacies [8]. While literature on pharmacy-based HZ vaccination services is still in an early stage of development, evidence suggests some success of pharmacy interventions to remove barriers to vaccination and increase Zostavax[®] vaccination rates [12–15]. Because of Part D reimbursement structure, convenience of pharmacy locations and hours, and pharmacists' established roles as vaccination providers, pharmacists are in an optimal position to identify, educate, and vaccinate eligible patients against HZ [12].

In order to achieve the United States HZ vaccination goal of 30% [16], more research focusing on identifying effective interventions to increase HZ vaccination rate is imperative. Hence, this study implemented and evaluated a brief patient education program in community pharmacies. Specific study objectives were to: (1) identify factors associated with HZ vaccination status among pharmacy patients, (2) identify self-reported reasons for not receiving Zostavax[®], and (3) assess post-intervention interests following the patient education program across different reasons for not receiving Zostavax[®].

2. Methods

The Zostavax[®] vaccine education intervention was implemented in 51 community pharmacies in Alabama and Florida in May–July 2013 as part of an introductory pharmacy practice experience (IPPE) for second year student pharmacists. To ensure consistency across students and pharmacy sites, students attended a 1-hour orientation, completed assigned readings, watched a demonstration video of patient–student interactions, and practiced patient interviews using the structured questionnaire and the HZ vaccine information statement (VIS) [17] prior to participating in the summer IPPE program. The protocol received an expedited review status from the authors' Institutional Review Board.

2.1. Data collection

A convenience sample of patients aged 60 or older were identified by 137 immunization-certified student pharmacists when picking up their medications from their pharmacy. This group of patients was selected because it is recommended by ACIP that all individuals aged 60 or older with no contraindications receive Zostavax[®]. Using a structured interviewer-administered questionnaire, students assessed patients' HZ vaccination status, HZ awareness, and whether they ever received a Zostavax[®] vaccine

recommendation. Patients who stated that they had not received the vaccine were asked to specify in their own words their reason for not being vaccinated. Students transcribed each patient's reason verbatim. After transcribing their response, the students proceeded with the Zostavax[®] vaccine education intervention for unvaccinated patients.

The vaccine education intervention consisted of 2 steps. First, the student pharmacist utilized the HZ VIS to inform the patients about the severity of HZ, Zostavax[®] vaccine effectiveness and contraindications. The HZ VIS is a two-page document provided by the Centers for Disease Control and Prevention. VISs provide information about the risks and benefits of the vaccines, contraindications, what to do if there is an adverse reaction, and where to find additional information about the disease or vaccine. Second, after providing the education intervention, students assessed the patients' post-intervention interest in discussing getting vaccinated with their pharmacist or physician. Lastly, the supervising pharmacist talked with the patients who were interested in obtaining the Zostavax[®] vaccine; this last step was not documented, however. Each student was instructed to interview at least 5 patients and their supervising pharmacist preceptor signed off after the interviews.

2.2. Measures and data analyses

To identify factors associated with HZ vaccination status (Objective 1), this study measured patient characteristics, pharmacy characteristics and patients' HZ knowledge and awareness. Chi-square analyses were used to explore relationships between these factors and vaccination status. Next, factors that had statistically significant relationships with the dependent variable were then entered into a logistic regression model with vaccination status as the dependent variable. For the second objective, which was to report patients' reason for not being vaccinated, an open-ended question was asked and students recorded verbatim patients' reason for not receiving the vaccine. The research team then classified the responses into different unique reasons and reported the frequency for each reason. For the third objective, after the vaccine education intervention was completed, students assessed patient post-intervention interests in speaking with their physician or pharmacist about getting the Zostavax[®] vaccine. Chi-square analysis was conducted to examine differences in the effect of the education intervention on the post-intervention interests among patients across reasons for not vaccinating. An *a priori* alpha of <0.05 was chosen for significance testing.

3. Results

A total of 688 patients aged 60 or older participated in the IPPE program. Seven participants were excluded from the sample because they reported being “not sure” if they had received the Zostavax[®] vaccine and therefore analyses included the remaining 681 participants. Of the 137 students who participated, 100 students reported the number of patients they approached and agreed to participate. The overall cooperation rate was 81.3% (615 patients were approached by 100 students, 500 agreed to participate). No information as collected from those who refused to participate.

3.1. Objective 1: Participant characteristics, knowledge and awareness, and vaccination status

Table 1 (first column) shows the demographic characteristics of the participants and their knowledge and awareness of HZ and the Zostavax[®] vaccine. The majority were female (57.6%) and white (84.6%). Almost all participants reported having a primary care physician (96.8%) and the majority had Medicare Part D for their

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