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Impact of the Raising Immunizations Safely and Effectively (RISE) Program on Healthcare Worker Influenza Immunization Rates in Long-Term Care Settings

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Abstract

Introduction and Rationale—National influenza immunization rates for healthcare workers (HCW) in long-term care (LTC) remain unacceptably low. This poses a serious public health threat to residents. Prior work has suggested high staff turnover rates as a contributing factor to low immunization rates. There is a critical need to identify and deploy successful models of HCW influenza immunization programs to LTC facilities. This report describes one potential model that has been successfully initiated in a network of LTC facilities.

Methods—All facilities served by a single regional LTC pharmacy were invited to participate in a HCW influenza immunization program. This voluntary immunization program began in 2005 and continues to the present. As part of the program, the pharmacy promoted organizational change by assuming oversight and control of HCW immunization policies and processes for all facilities. Primary and secondary outcomes are the number of facilities reaching HCW influenza immunization rates of 60% and 80%.

Results—Fourteen of the sixteen LTC facilities participated. Facilities were diverse and included both nursing and assisted living facilities; unionized and nonunionized facilities; and urban, suburban and rural facilities. The pharmacy provided educational and communication materials, centralized data collection using a standardized definition for HCW immunization rates, and facility feedback. All fourteen LTC facilities achieved the primary goal of 60% and nearly two

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thirds reached the secondary goal of 80%. Twenty percent reached the new Healthy People 2020 goal of 90%.

Discussion—It is possible for LTC facilities to improve HCW immunization rates using a pharmacy based, voluntary HCW influenza immunization approach. Such an approach may help attenuate the negative influence of staff turnover on HCW immunizations. Attainment of the new Health People 2020 goals still remains a challenge and may require mandatory programs.

Keywords

healthcare workers; healthcare worker immunization; immunization programs; long-term care; nursing homes; immunizations; influenza

Introduction and Rationale

Influenza remains a serious public health threat with as many as 225,000 hospitalizations and roughly 24,000 deaths annually in the United States.^{1, 2} Over 90% of the deaths from seasonal influenza occur in older adults, particularly frail elders such as those residing in long-term care (LTC) settings.¹ While annual vaccination of older adults is recommended, vaccine efficacy is reduced among elders.^{1, 3-6} Potential reasons may include age-related immunosenescence, immunosuppression, and malnutrition.⁷⁻¹¹ Thus, it is not surprising that influenza outbreaks in LTC settings continue to occur regularly, and are associated with significant case fatality rates.¹²⁻¹⁴

Frequently, healthcare workers (HCW) are potential vectors for influenza transmission in LTC.^{15, 16} Immunization of HCW is promoted as a patient safety practice, and may also protect employees against the spread of influenza. Several studies support the practice of HCW influenza immunization by showing a reduction in influenza illness and resident mortality in LTC facilities.¹⁷⁻²¹ The Centers for Disease Control and Prevention (CDC) established Healthy People 2010 and 2020 goals of 60% and 90% for HCW influenza immunization respectively.^{22, 23} Despite persistent efforts by multiple organizations to improve HCW immunization, HCW influenza immunization rates remain unacceptably low.^{1, 24-26}

While several studies have shown it is possible to improve HCW immunization rates at single facilities, there is a public health need to develop approaches to improving rates across groups or networks of facilities.²⁷⁻²⁹ Published studies of such efforts to date have shown only modest impact.^{30, 31} We recently reported on efforts to deploy a successful HCW immunization program to a network of facilities.³² Like other studies, the outcomes of this pilot intervention were modest, but we were able to identify a previously unrecognized barrier to HCW immunization: staff turnover. High staff turnover in LTC is well-documented and may result in decreased compliance with policies and hence measured quality.³³⁻³⁵ A potential strategy to circumvent the impact of staff turnover on immunization rates is to assign responsibility and oversight of HCW immunizations at each facility to the LTC pharmacy.

To test this strategy, we initiated a quality improvement (QI) project in which HCW immunizations were overseen and managed by the LTC pharmacy. Specifically, the goal of this QI project was to achieve a 60% HCW influenza immunization rate across a network of independently-owned LTC facilities in Western PA. This report summarizes our experience to date.

Methods

In 2001 the University of Pittsburgh Medical Center formed the Raising Immunizations Safely and Effectively (RISE) program, a QI network aimed at improving immunization rates in a group of LTC facilities in western Pennsylvania. Initially focusing on resident immunization rates, the program was expanded in 2004 to address low HCW influenza immunization rates (RISE-HCW).

Facilities invited to participate in the RISE-HCW network included both nursing and assisted living facilities served by a single regional LTC pharmacy. Participating facilities had to agree to change their current HCW immunization processes and adopt the RISE-HCW program. In doing so, facilities had to specifically transfer the location of HCW immunization policies and procedures from the domain of nursing (Nursing Policy and Procedure Manual) to that of the pharmacy (Pharmacy Policy and Procedure Manual). In addition, facilities had to agree to work collaboratively with the pharmacy to address issues of vaccine supply and ordering, revision of HCW consent processes, vaccine administration and record keeping, data collection, and staff feedback. Facilities were expected to designate an immunization champion, participate in educational activities and ensure leadership support. Educational materials were provided by the RISE-HCW program (available upon request from the authors).

The primary outcome of the program was the number of facilities reaching the Healthy People 2010 HCW influenza immunization rate of 60% and a secondary outcome measure was the number of facilities reaching a stretch goal of 80% HCW influenza immunization rate. Influenza immunization rates were collected annually from participating facilities using a standardized definition for HCW influenza immunization rates adopted by all facilities. The HCW influenza immunization rate was defined as all persons, regardless of level of patient contact, receiving a paycheck from the facility between October 1 and April 1 of each influenza season who received influenza vaccination divided by all persons employed at the facility for any length of time between October 1 and April 1 of each season, multiplied by 100. Volunteers, physicians, and contracted non-employees were not included in the calculation owing to the inability to track these individuals at each facility.

For this project, the baseline (pre-intervention) period included the 2001-2002 through 2003-2004 seasons. A national influenza vaccine shortage occurred during the 2004-2005 season which delayed the start of the RISE-HCW program to the subsequent season (2005-2006). Annual immunization rates are reported for each influenza season starting in 2001-2002 as available: not all facilities had monitored HCW immunization rates prior to the 2004-2005 season, and not all were not using the definition adopted for this project. Data is not shown for the 2004-2005 season given the national vaccine shortage during that period. The organizational structure and information on bed size, location, and number of employees is presented. Since this is a QI project, more detailed demographic information concerning the facilities is not available and information on influenza outbreaks for each of the facilities was not tracked as part of this project.

This program was reviewed by the UPMC QI Committee and approved as a QI project. As this project does not meet the definition of human subject research, it was exempted from review by the University of Pittsburgh Institutional Review Board.

Results

Of the sixteen facilities served by the LTC pharmacy, fourteen agreed to participate in the RISE-HCW program. Two facilities did not participate in the QI project because they felt that their current HCW immunization policies and processes were effective. Nine of the

fourteen facilities were part of the UPMC Senior Communities network and the remaining five were independently owned and operated. All were of non-profit status. Table 1 describes the characteristics of the facilities. Facilities included rural, suburban and urban sites. The facility bed-size ranged from 45 to 440 beds and the number of staff varied from 38 to 527 as of 2010. Two of the facilities employed unionized staff during all or part of the intervention period.

A steering committee oversaw the operations of the RISE-HCW program. The steering committee was comprised of representatives from the participating facilities and includes pharmacy, nursing, administrative, and medical disciplines. The organizational structure of the RISE-HCW program is available online in the Appendix. The steering committee initially met five times a year, but by 2009-2010 reduced the meeting frequency to annually.

The LTC pharmacy implemented a HCW influenza immunization program at each facility utilizing insights and strategies gained from our past work and the work of others.^{27, 32, 36, 37} Specifically, the pharmacy provided written immunization policies, educational flyers and posters, a standard declination form, and data collection forms. These intervention components were made available to all sites. Immunization policies emphasized immunization of all staff employed at the facilities, allowed for no cost vaccination of HCW, provided for vaccination of HCW during all shifts both on and off work units, and utilized standing orders. The policies also addressed resident vaccinations, influenza surveillance and outbreak response. Written consent documents were eliminated as they are not required by state or federal legislation, represent a time consuming barrier, and are not considered a standard of care.^{38, 39} The pharmacy assisted in providing in-service training programs for staff members, established a HCW vaccination clinic “kick-off” event for each facility each season, and tracked immunization rates. Facilities were provided with the AMDA training video “Immunization and the HCW” that they could use for HCW in-service sessions. Feedback to facilities on immunization rates was provided including individual facility performance and benchmark data for the group. Also, an email distribution list was created and utilized to assist with questions, provide performance feedback, and update members on influenza prevention and management topics. Facilities were not required to use all of the educational materials. Initially, not all facilities used the declination forms, but by the last two seasons, all facilities were using declination forms. No facility disciplined unvaccinated HCW for failing to sign a declination form. Like-wise, no facility required unvaccinated HCW to wear a mask during flu season.

Annual HCW influenza immunization rates for each facility are shown in Figure 1. As a group, rates of HCW immunization for influenza increased steadily over time from approximately 58% in 2005-2006 to 76% in 2010-2011. Figure 1(a) compares HCW immunization rates pre- and post-intervention for those facilities providing baseline immunization rates (seasons 2001-2002 through 2003-2004). Post-intervention results from all fourteen facilities are shown in Figure 1(b). As seen in Figure 1(c), of the fourteen facilities, all facilities reached a 60% HCW immunization rate by the last season. Eight (57%) achieved an 80% or better rate, and three exceeded 90%.

Discussion

In this study, we demonstrated it is possible to improve HCW influenza immunization rates in a network of LTC facilities served by a single LTC pharmacy. Facilities participating in the RISE program were able to reach the primary goal of 60%, almost two thirds reached the secondary goal of 80% or better, and 20% reached the new Healthy People 2020 goal. The rates demonstrated here are some of the highest reported for a network of independent LTC

facilities using a voluntary approach. The impact of this program is significant, affecting over 2400 HCW and over 1800 LTC residents.

By having the LTC pharmacy oversee and administer the program, we were able to standardize the emphasis on HCW influenza immunizations across all facilities. In addition, we believe we were able to overcome some of the issues related to staff turnover and competing demands on staff attention. In prior work, we found that despite educational interventions and centralization of immunization policies at the facility level, we were unable to achieve national immunization goals.³² High staff turnover is a pervasive issue in LTC and is linked to lower quality of care.³³ When turnover is high, consistent application of facility policies may suffer. This may be particularly true with influenza immunization as nursing staff frequently view immunization as a personal choice rather than as an organizational evidence-based intervention.⁴⁰ In contrast, LTC facilities do not typically change their LTC pharmacy provider annually and so enjoy a stable presence. Administering the immunization program via the LTC pharmacy should result in a more consistent effort across years. Our current findings support this, and in addition correlate with immunization programs using pharmacists in acute care settings.⁴¹

We believe the structure of the RISE program contributed to its success. The RISE program makes use of a LTC pharmacy network serving multiple different facilities, a model consistent with most LTC facilities across the country. The RISE program is structured similarly to that described by Babcock and co-workers at their health system.⁴² In that study, a representative from each facility in the health system participated in a system-wide council that planned and coordinated education, policies and procedures relating to HCW immunizations. Use of a central steering group promotes coordination across sites. Our study is unique in that not all of the participating facilities were part of the same health system and thus were individually managed.

Our program has several limitations. First, all facilities participating in the RISE program were non-profit organizations which limits generalizability. Participating facilities had to transfer oversight of the immunization program to the LTC pharmacy. This may not be possible for some chain facilities in which immunization policies are standardized centrally. In such facilities, it may not be possible to gain the necessary permission to shift location of immunization policies to the LTC pharmacy. Secondly, the RISE program requires significant ongoing efforts to ensure sustainability. While the number of steering group meetings were reduced over time to just one per year, the RISE program still relies heavily on the efforts of each facility's leadership and champions. Thirdly, we did not track immunization rates for volunteers, physicians, or contracted non-employees. Immunization of these groups is a significant challenge to most LTC facilities. Fortunately, these groups represent only a fraction of the total HCW population of the facilities. Lastly, the RISE program is a voluntary program. While all facilities currently utilize declination forms for HCW declining influenza immunization, no facility imposes any form of disciplinary action for noncompliance, and no facility requires non-immunized HCW to wear masks during the active influenza season. Mandatory immunization programs have been associated with substantially higher HCW immunization rates, and there are strong ethical arguments for their use.⁴²⁻⁴⁵ Several organizations including AMDA now advocate for mandatory immunization programs.⁴⁶ As shown in Figure 1, there appears to be a plateau occurring in HCW immunization rates for this group of facilities. We believe it is unlikely that most facilities will be able to reach the Healthy People 2020 HCW immunization goal of 90%.

Strengths of our program include the use of standardized declination forms, immunization policies, data collection tools, and importantly, a standard definition of HCW immunization

rate. We also provided evidence-based educational materials, an email communication process, and performance feedback.

In summary, we show that through collaborative efforts, LTC facilities sharing a common pharmacy provider can improve their HCW immunization rates. By having the LTC pharmacy oversee and administer the HCW immunization program, it may be possible to reduce the negative impact of high staff turnover in these settings. While nearly two thirds of the facilities reached 80% or better, only 3 exceeded 90% despite detailed, iterative efforts. If we hope to reach the 90% Healthy People 2020 goal, facilities may need to consider exploring mandatory programs.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Appendix

Appendix:

Organizational Structure of the RISE-HCW Program

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(c)

Figure 1. Percent of HCW Immunized (a) for Facilities with Pre- and Post-Intervention Data and (b) Post-Intervention in All Facilities. Figure 1(c) shows immunization rates for all facilities as of the 2010-2011 season.

Table 1

Facility Characteristics

Facility	Bed Size	# Staff	Urban/Suburban/Rural
A	440	527	Suburban
B	234	215	Urban
C	100	140	Rural
D	150	239	Suburban
E	100	80	Suburban
F	60	85	Rural
G	145	204	Urban
H	178	219	Suburban
I	80	67	Suburban
J	45	340	Suburban
K	80	57	Rural
L	140	162	Rural
M	60	38	Rural
N	80	70	Suburban