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Evaluation of Vaccination Policies Among Outpatient

Oncology Clinics in Utah: A Pilot Study

Sarah Louise Stocksdale

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Master of Science

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ABSTRACT

Evaluation of Vaccination Policies Among Outpatient Oncology Clinics in Utah: A Pilot Study

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Background: In Utah, all major hospital facilities have employee vaccination policies. However, the presence of health care worker vaccination policies in the Utah outpatient oncology setting was unknown.

Objectives: The objectives were to identify Utah oncology outpatient employee vaccination policies and to identify what consequences, if any, were present for unvaccinated employees.

Methods: This was a cross-sectional, descriptive study design in which clinic managers from outpatient oncology clinics in Utah were asked, via questionnaire, to describe the clinic's employee vaccination policy and the consequences for refusing the policy.

Findings: Most vaccination policies applied to employees primarily assigned to work in the back office area. Most commonly, influenza and Hepatitis B vaccines were required as part of the vaccination policy. Most managers offered free vaccinations to employees, although most managers also allowed employees to refuse to follow the vaccination policy for medical, religious, or personal reasons.

Keywords: oncology, immunization, health care worker, vaccination, cancer

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Evaluation of Vaccination Rates Among Outpatient

Oncology Clinics in Utah: A Pilot Study

Vaccines are one of the most important public health achievements of all time (Centers for Disease Control and Prevention [CDC], 2011). Recommended by the Centers for Disease Control and Prevention (CDC) (2013a), vaccines are an efficacious and cost-effective strategy for reducing health care costs associated with communicable illness. However, despite the success of vaccines in reducing vaccine-preventable diseases and, in some cases, eradicating disease, vaccination rates remain suboptimal in some communities in the United States (CDC, 2012a; Williams et al., 2014).

Although vaccines are commonly associated with childhood, the need for and importance of vaccinations continues into adulthood (CDC, 2012b). Currently, yearly influenza and regular tetanus vaccinations are routinely recommended for adults. In addition, adults should receive a one-time tetanus, diphtheria, and pertussis (Tdap) vaccination. Moreover, other additional vaccinations may be appropriate depending on the adult's age, employment, international travel and other risk factors (CDC, 2014a).

Adults employed as health care workers (HCW) are at an increased risk of spreading vaccine-preventable diseases to at-risk populations due to physical contact during patient care. As a result, it is increasingly important for HCWs to be fully vaccinated (CDC, 2013c). Mandatory vaccination policies for HCWs are recommended by the Infectious Diseases Society of America (2013), as well as the Advisory Committee for Immunization Practices, and the CDC. In addition, other organizations such as the American Academy of Family Physicians, American Academy of Pediatrics, American Hospital Association, and American Public Health Association have released policy statements recommending that health care facilities institute, at

a minimum, mandatory influenza vaccination of HCWs (Immunization Action Coalition, 2014). Despite recommendations and policy statements, currently there are no mandated or legal requirements for these policies (CDC, 2013b).

Acknowledging the importance of HCW vaccination, many hospitals have implemented mandatory vaccination policies even without legal requirement to do so (Babcock, Gemeinhart, Jones, Dunagan, & Woeltje, 2010). Likewise, several hospital systems in Utah have enacted vaccination mandates for employees. Furthermore, Intermountain Healthcare, the largest health care provider in the Intermountain West, implemented the Intermountain Healthcare Compulsory Immunization Program in 2011 to protect patients and employees from vaccine-preventable diseases. Intermountain Healthcare, in fact, requires vaccination of all employees, volunteers, students, vendors, and even temporary employees (Intermountain Healthcare, 2014). In addition, University Healthcare (University of Utah, 2011) and Mountain Star Healthcare (M. News, personal communication, June 4, 2014) hospital facilities in Utah have instituted mandatory vaccination policies for HCWs.

While the majority of Utah inpatient facilities have vaccination policies for employees, little is known about Utah outpatient clinics' policies. Despite the less acute nature of patients in the outpatient clinic, a low employee vaccination rate still poses unwarranted risk to patients, especially those who are children, elderly, or immunocompromised. Oncology clinics, in particular, are areas in which vaccination of HCWs is vital to the health of the immunocompromised patients especially since some vaccinations are contraindicated in patients with cancer who are undergoing radiation or chemotherapy treatments (Foster, Short, & Angelo, 2013; Lindsey, 2008). Even among immunocompromised patients in whom vaccinations are not contraindicated, vaccines may not be effective (Foster et al., 2013). Consequently, vaccination

of those who have contact with oncology patients is of paramount importance. Therefore, the purpose of this study was to evaluate the vaccination policies of Utah oncology HCWs employed in the outpatient setting.

Research Questions

- 1) What are Utah oncology outpatient employee vaccination policies?
- 2) What consequences are included in the policy for unvaccinated employees?

Methods

Participants

Institutional Review Board approval was obtained for this study prior to data collection. The convenience sample included the managers of all 33 outpatient oncology clinics in the state of Utah. Managers of inpatient treatment facilities were excluded from participation. A list of Utah oncology clinics was generated by comparing data from a general Internet search, contact with a local cancer center, and a search of oncologists credentialed with two large insurance companies – Select Health and Altius. To be eligible for participation, the subject needed to be employed full-time or part-time as the manager of at least one Utah outpatient oncology clinic.

Setting

The study took place in the state of Utah, where vaccination rates are consistently below the national average (Utah Department of Health, 2014). In Utah the incidence rate for all cancers is 492.1 per 100,000 for males and 361.1 per 100,000 for females (American Cancer Society, 2015). Among all types of cancer reported in Utah, the six most common include breast, cervical, colorectal, prostate, lung, and melanoma (Utah Cancer Action Network, 2013).

Design

This was a cross-sectional, descriptive study design. All outpatient oncology clinic managers in Utah were contacted via telephone to explain the aims of the study, as well as eligibility requirements for participation. Following the initial telephone contact introducing and explaining the study, the outpatient oncology clinic managers received a packet through the mail. Each packet contained an informed consent document, a study questionnaire, an addressed and stamped return envelope, and \$1.00 as compensation for participation. Even without participation, the managers retained the \$1.00 incentive. Four weeks after the initial mailing, non-responders were sent a reminder packet that included another copy of the informed consent document, questionnaire, and addressed and stamped return envelope. No incentive was included in the second mailing. Eight weeks following the second mailing, the informed consent, questionnaire, and addressed and stamped return envelope was delivered by hand to the non-responders and left with the receptionist, along with a \$25 Visa gift card. The manager retained the \$25 Visa gift card regardless of participation in the study.

Instrument

The original instrument was developed by a group of Utah researchers and by a panel of public health experts for use among managers employed in Utah outpatient pediatric clinics. The panel of public health experts included representatives from local and state health departments, health care providers from government subsidized clinics, and vaccination experts. The original questionnaire, used in the pediatric outpatient clinics, was pre-tested with 12 clinic managers in urgent care and family practice clinics and then adjusted according to the feedback of the clinic managers. The original questionnaire was then adapted by the same group of Utah researchers

and public health experts to pilot in the outpatient oncology setting. The original instrument included two added questions for use in this study with oncology outpatient clinics. The adjusted two-page questionnaire included six demographic, eight multiple-choice, and four open-ended items.

Demographic items included questions on the clinic manager's age, gender, and years worked as the clinic manager in that specific clinic. Participants were also asked to respond to questions about the clinic they managed including location of the clinic (e.g. urban, suburban, or rural), average number of patients served per day, and percentage of clinic employees working directly with immunocompromised patients during a routine work day.

Multiple-choice questions related to the clinic's employee vaccination policy, included which positions required vaccinations (e.g. front office staff, back office staff, in-house billing staff, support staff, and clinic administrators). If employees were allowed to refuse vaccinations despite the presence of a clinic policy, clinic managers were asked to select the response that most closely resembled the circumstances under which refusals were allowed. Finally, clinic managers were asked if and when employee vaccinations were offered and whether or not the cost of employee vaccinations was paid by the employer. All multiple-choice questions offered an "other" category where the clinic manager could write in their own response. Some questions required selecting only one answer and others allowed the clinic manager to select all that applied.

There were four open-ended questions. The first question asked how long the clinic vaccination policy, if any, had been in effect. Additionally, the clinic manager was asked how often the employee vaccination records were reviewed. A question about description of the most significant barrier to having an employee vaccination policy was also included. At the end of the

questionnaire there was also a space where clinic managers could write in any additional comments. The open-ended questions regarding the most significant barrier to having an employee vaccination policy and the additional comments are not included in this report due to a lack of saturation in responses.

Data Analysis

Data were entered into an SPSS 21 (SPSS Inc., Chicago, IL, 2012) database. Two independent researchers ensured the accuracy of data entry – one researcher read the questionnaire responses and the other researcher reviewed the entered data. The primary investigator examined unclear responses to determine the correct response. For all quantitative items, frequencies, measures of central tendency and dispersion were calculated. Responses to open-ended items were analyzed by two independent researchers, each of whom conducted a content analysis.

Results

Of the 33 questionnaires, 24 were returned for a response rate of 73%. Of those who responded, 11 (55%) worked in an urban setting, 5 (25%) in a rural setting, and 4 (20%) in a suburban setting. The number of patients seen per day ranged from 25-700 with a median of 100 and a mean of 104.4 (SD = 159.9). The mean was large because some of the managers supervised several clinic sites simultaneously. Of those who responded, 18 (90%) reported that at least 50% of the clinic employees had direct patient contact during a routine work day. Managers indicated that current policies had been in place ranging from 2-28 years with a mean of 4 years.

Demographic data were also collected from the managers who completed the survey. Of those who responded, 22 (95.7%) were female and one (4.3%) was male. Manager ages ranged

from 25-64 with a mean of 45.6 (SD = 11.9). The manager's length of employment at the clinic ranged from 1-28 year(s) with a mean of 13.3 (SD = 7.9). Demographic results reported in Table 1.

Vaccination Policy

Data regarding the specific employees to which the vaccination policy applied were collected. Of those who responded, 18 (75%) clinic managers reported the vaccination policy applied to employees working in the back office. Fourteen (58.3%) clinic managers reported the vaccination policy requirements applied to front office employees. Clinic administrators were also included in the vaccination policy, as reported by 12 (50%) clinic managers. Remaining data are reported on Table 2.

Managers were asked to describe the vaccination policy, reporting which specific vaccinations were mandated. Of those who responded, 19 (79.2%) managers had policies requiring the influenza vaccine. The hepatitis B vaccine was required as part of the vaccination policy by 15 (62.5%) clinic managers. The Tdap vaccine and the measles, mumps, and rubella vaccines were included in the vaccination policy by 10 (41.7%) managers. Remaining data are reported on Table 3.

Additional data regarding the logistics of the vaccination policy were obtained. Of those who responded, 23 (95.8%) clinic managers reported offering vaccinations at no cost to the employees. When asked to specify how often vaccination records were reviewed, 18 (75%) managers reported evaluating records on an annual basis or more frequently than every year. Fifteen (62.5%) clinic managers indicated they also provided employee education on the risks/benefits of vaccination. Another 15 (62.5%) clinic managers reported tracking employee

vaccinations on a regular basis, albeit the vaccination tracking took place less frequently than every year. Remaining data are reported on Table 4.

When asked to describe the clinic's vaccination policy, 9 (39.1%) managers reported there was no consequence for noncompliance and 4 (17.4%) reported there was a consequence for noncompliance, although the consequence was something other than termination/resignation. Only 7 (30.4%) managers reported that noncompliance with the vaccination policy resulted in the termination/resignation of the employee. Two managers (8.3%) reported that the clinic had no vaccination policy.

Vaccine Refusal Process

Managers were also asked to report what type of vaccine refusals HCWs were allowed by the clinic policy. Of the responding clinic managers, 17 (70.8%) allowed HCWs to refuse vaccination for medical reasons when accompanied by a written excuse from the employee's health care provider. HCWs were allowed to refuse vaccines for religious reasons, as reported by 14 (58.3%) managers. Refusal of vaccines based upon the HCW's personal beliefs was permitted by 10 (41.7%) managers. Vaccine refusal for medical reasons, as self-reported by the employee, were allowed by 9 (37.5%) managers. Only one manager (4.2%) reported that HCWs were not allowed to refuse vaccines without termination (see Table 5).

Managers were asked to specify which information was included on the HCW vaccine refusal form. Twelve managers (50%) indicated that information regarding personal risk of vaccine refusal was included as part of the refusal form. Additionally, 12 managers (50%) also indicated that an employee signature was required along with an explanation for refusing the vaccine. Information regarding the risk of unvaccinated HCWs to patients' health was included on the HCW vaccine refusal form as reported by 11 (45.8%) clinic managers. Nine (37.5%)

managers reported that the HCW vaccine refusal form included educational rationale for the required vaccines according to clinic policy. Remaining data are reported in Table 6.

When reporting on documentation of employee vaccination refusal, 14 (70%) clinic managers reported they kept a record of the refusal in paper form. The next most frequently selected response was that the employee's refusal of vaccinations was not formally documented (n = 3; 12.5%). Remaining data are reported in Table 7.

Of those who responded, 6 (25%) clinic managers reported having no additional work requirements for ill employees who refused the clinic policy vaccinations. Eleven (45.8%) managers required ill employees who were also unvaccinated to wear a mask at work. When asked to specify the symptoms for which additional requirements applied, 9 (37.5%) managers required the unvaccinated employee to wear a mask when cough was present, 7 (29.2%) managers required unvaccinated employee to wear a mask when fever was present, and 4 (16.7%) required the unvaccinated employee to wear a mask when rash was present.

Although a little less than 50% of managers reported that employees must wear masks when ill, some unvaccinated employees were restricted from patient care duties if ill with a cough, fever, or rash. In fact, 6 (25%) managers restricted employees from contact with patients when fever was present and 4 (16.7%) managers restricted employees from patient care when they were ill with a rash. Only 1 (4.2%) manager reported placing unvaccinated employees on temporary suspension or unpaid leave when the unvaccinated employee was ill with a cough, fever, or rash (see Table 8).

Discussion

Despite the proven efficacy of vaccines in preventing the spread of infectious diseases, vaccination rates among HCWs remains suboptimal even with strong recommendations from the

Centers for Disease Control and Prevention and multiple other professional health care associations (Rakita, Hagar, Crome, & Lammert, 2010). Optimal influenza vaccination rates among HCWs, in particular, have proven to be especially challenging (Caban-Martinez et al., 2010). As a result, there is less than optimal protection for the spread of disease in some clinical environments. Even with knowledge of suboptimal protection, and acknowledging the benefit of vaccines, many HCWs still go unvaccinated (Sullivan, 2009).

In this study, most (75%; n = 18) oncology clinic managers reported the vaccination policy applied to HCWs employed in the back office, primarily referring to those with direct patient contact such as clinicians, medical assistants, and nurses. While HCWs with direct patient contact likely have the most physical contact with patients and, arguably, the most opportunity to spread infectious diseases to immunocompromised patients, they are not the only employees with whom vaccination can prevent the spread of disease. In fact, the CDC (2014b) defines HCWs as any person working in a health care setting that could have exposure to patients or any infectious agents. While the CDC (2014b) definition of HCW includes nurses, health care providers, and medical assistants it also includes others such as therapists, technicians, lab personnel, billing staff, custodians, clerical staff, laundry staff, administrators, students, and volunteers. Therefore, it is important for all HCWs to be fully vaccinated regardless of the number and duration of direct patient encounters.

According to findings in this study, vaccinations most frequently included in the oncology clinic vaccination policies were influenza and Hepatitis B. While these vaccinations are both imperative, the CDC (2014c) also strongly recommends HCWs receive additional vaccinations, such as MMR, varicella, pertussis, and meningococcal. Cases of measles, chickenpox, whooping cough, and meningitis occur every year in the United States and pose a

direct threat to patients who are immunocompromised. In fact, during 2014 measles cases peaked at its highest level for the past 20 years (CDC, 2014d). Information on cases of chickenpox in the United States is limited (CDC, 2013d), and while whooping cough cases are underreported in the United States, 28,660 cases were definitively diagnosed during 2014 (CDC, 2015). Meningococcal disease affects 800-1,500 individuals each year in the United States (CDC, 2014e). Because these diseases are still present in the United States and have potential to cause severe illness in immunocompromised patients, HCWs employed in oncology clinic settings should be fully vaccinated, thus reducing their risk of contracting illness themselves and then transmitting illness to patients.

There is substantial evidence vaccination rates are significantly improved with the presence of a workplace policy (Sullivan, 2009). However, discussion continues as to which elements included in policies will definitively and consistently result in improved HCW vaccination rates. Many call for mandating vaccination of HCWs due to the direct benefit to HCWs and patients, but are contrasted by arguments for HCW personal liberty and personal belief. For example, Sullivan (2009) reported voluntary HCW influenza vaccination programs were just as effective as mandated programs, some of which attained vaccination rates as high as 90%. In contrast, Podczervinski et al. (2015) found that HCW influenza vaccination rates were highest when policies included voluntary HCW vaccination with a penalty for noncompliance, namely completion of an education module. Some facilities, however, such as Children's Hospital of Philadelphia (CHOP), opted to institute a mandatory influenza vaccination policy for HCWs with a noncompliance penalty of termination. In the first year of CHOP's implementation of this new policy, HCW vaccination rates for influenza surpassed 99% (Johnson & Talbot, 2011).

Some facilities require HCWs who refuse influenza vaccination to wear a mask during influenza season. However, such a penalty for noncompliance may be ineffective. According to Aiello et al. (2010), there is no statistical significance in reduction of respiratory illness transmission, even in HCWs wearing a mask during the entire influenza season. Additionally, wearing a mask was found to be ineffective in protecting either patients or HCWs from transmitting influenza (Ng, Lee, Hui, Lai & Ip, 2009). Rationale for failure of masks to prevent transmission of influenza include issues with HCW noncompliance and episodes of unanticipated patient contact during the work day. Hence, HCW vaccination against communicable diseases, such as influenza, remains superior in controlling transmission of vaccine-preventable diseases.

Implications for Practice

In 2011, the Institute of Medicine released their landmark document *The Future of Nursing: Leading Change, Advancing Health*. In the document, nurses are called to lead change and advance the health of patients and improve the practice environment (Institute of Medicine, 2011). Facilitating a clinic/institution vaccination policy for HCW is one strategy nurses can employ to advance the health of patients and improve the practice environment. In addition to preventing the spread of communicable disease and improving the practice environment, nurses also have an ethical and professional obligation to be fully vaccinated and to promote vaccinations to protect the health of nurses, patients, and communities (American Nurses Association [ANA], 2015). Nurses are, in fact, “front-line providers within the health care system...[and] can substantially [contribute to] comprehensive vaccine delivery strategies...”(ANA, 2015, para. 4).

Oncology nurses, in particular, have a special charge to lead practice change and influence and shape policy relating to the health care environment (Oncology Nursing Society, 2015). As powerful advocates for patient safety, oncology nurses can be instrumental in shaping vaccination policies in their respective institutions/clinics, thus positively influencing the health and safety of oncology patients. Oncology nurses may want to begin by outlining the HCW vaccine recommendations by the CDC on the type of vaccines HCWs need in the health care environment. In addition, oncology nurses should recommend that clinics/institutions enact strict vaccination policies and discourage HCW refusal of vaccines for personal reasons. Clinic policies could easily be adapted from accepted policies in local hospital settings with minimal effort. Furthermore, oncology nurses should educate clinic policymakers on the lack of evidence supporting the use of masks as a penalty for unvaccinated HCWs who refuse vaccinations.

Study Limitations

This pilot study was limited in that participants were selected by convenience sampling. All participating clinics were located in Utah. Despite the inclusion of all Utah oncology clinics in the pilot study and a response rate of 73%, the sample size was small. As a result, the sample may not accurately represent outpatient oncology clinic facilities nationwide and may not be generalizable.

Conclusion

Low vaccination rates among HCWs continues to be problematic in outpatient settings, thus putting both patients and HCWs at risk for unnecessary and preventable illnesses. Low HCW vaccination rates in the oncology setting is especially problematic because these HCWs care for immunocompromised patients. To protect the health of patients undergoing oncology

treatments, HCWs have an ethical and professional obligation to be fully vaccinated and to lead policy change that positively influences the health and safety of patients, especially those who are immunocompromised.

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Table 1

Demographics

	Frequency	Percent	Mean	SD
Clinic Demographics				
Outpatient oncology clinic location				
Urban	11	55		
Rural	5	25		
Suburban	4	20		
No response	4	20		
Number of patients seen per day			104.4	159.95
Employees with direct patient contact		90		
Manager Demographics				
Female	22	95.7		
Male	1	4.3		
No response	1	4.3		
Average age of office manager			45.6	11.987
Average number of years worked			13.3	7.892
Total questionnaires returned	24	100		

Table 2
*Employees included in the facility's policy**

	Frequency	Percent
Back office staff (e.g. clinicians, medical assistants, nurses)	18	75
Front office staff (e.g. receptionist, scheduler)	14	58.3
Clinic manager/administrator	12	50
In-house billing staff	10	41.7
Support staff (e.g. custodians, IT support)	10	41.7
Other	3	12.5
Total questionnaires returned	24	100

*Participants were instructed to check all that apply

Table 3
*Vaccinations included in the facility's policy**

	Frequency	Percent
Influenza	19	79.2
Hepatitis B	15	62.5
Tetanus, diphtheria, and pertussis (Tdap)	10	41.7
Measles, mumps, and rubella (MMR) or proof of disease	10	41.7
Hepatitis A	6	25
Chickenpox (Varicella) or proof of disease	5	20.8
Other	4	16.7
Don't know	0	0
Total questionnaires returned	24	100

*Participants were instructed to check all that apply

Table 4

*Vaccine policy logistics**

	Frequency	Percent
Vaccinations free to employees	23	95.8
Vaccination rates tracked annually	18	75
Education on risks/benefits of vaccination provided	15	62.5
Vaccination rates tracked routinely (but not annually)	15	62.5
Vaccination rates reported to administrators/owners	9	37.5
Vaccinations provided during nights/weekends	6	25
Vaccinations provided at employee meetings	6	25
Other	2	8.3
Incentives for employee vaccination provided	0	0
Don't know	0	0
Total questionnaires returned	24	100

*Participants were instructed to check all that apply

4BTable 5

Refusals allowed by the vaccination policy*

	Frequency	Percent
Refusal for medical reasons with a written excuse from a healthcare provider	17	70.8
Refusal for religious reasons	14	58.3
Refusal for personal beliefs	10	41.7
Refusal for medical reasons as reported by the employee	9	37.5
Refusals not allowed	1	4.2
Other	0	0
Total questionnaires returned	24	100

*Participants were instructed to check all that apply

Table 6
*Information included on vaccination refusal form**

	Frequency	Percent
Personal health risk (of vaccine refusal)	12	50
Employee signature statement (hand or electronic)	12	50
Employee explanation for refusing vaccination	12	50
Risk to patients (of vaccine refusal)	11	45.8
Facility rationale for requiring the vaccine	9	37.5
Don't know	3	12.5
Other	0	0
Total questionnaires returned	24	100

*Participants were instructed to check all that apply

Table 7
Documentation of employees refusing vaccinations

	Frequency	Percent
Standardized paper form	14	70
Refusal not formally documented	3	12.5
Don't know	2	8.3
Other	1	4.2
No response	4	5
Total questionnaires returned	24	100

Table 8

Requirements for ill and unvaccinated HCWs*

	Frequency	Percent
No additional requirements	6	25
Employees required to wear mask with the presence of a cough, fever, or rash	11	45.8
Cough	9	37.5
Fever	7	29.2
Rash	4	16.7
Employees restricted from patient care duties with the presence of a cough, fever, or rash	6	25
Cough	3	12.5
Fever	6	25
Rash	4	16.7
Employees temporarily suspended or put on unpaid leave with the presence of a cough, fever, or rash	1	4.2
Cough	1	4.2
Fever	1	4.2
Rash	1	4.2
Don't know	2	8.3
Other	2	8.3
Total questionnaires returned	24	100

*Participants were instructed to check all that apply