

Using Technology to Affect Influenza Vaccine Coverage Among Children With Chronic Respiratory Conditions

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ABSTRACT

Introduction: Influenza presents additional burdens for children with chronic respiratory conditions. Influenza vaccinations may reduce complications, yet approximately half of children remain unprotected. Evidence supports integration of text and e-mail into multicomponent strategies to increase influenza vaccination rates among children with chronic respiratory conditions.

Methods: A single text and e-mail message was sent to those with enabled preferences in the patient portal. A follow-up survey assessed aspects of message receipt. Surveys were completed without collection of demographics.

Results: A total of 3,206 messages were successfully delivered. Surveys were initiated by 107 recipients. Frequency analysis showed that text and e-mail messages were preferred forms of communication. A statistically significant relationship was found between receiving a message and receiving an influenza vaccination ($p = .027$).

Discussion: Text and e-mail messaging are cost effective and well received, and they can be easily integrated into existing systems. These methods are translatable across populations and can convey various types of messages. *J Pediatr Health Care.* (2016) ■, ■-■.

KEY WORDS

Asthma, influenza vaccination, pediatrics, prevention, text messaging

INTRODUCTION

Children with chronic respiratory conditions have compromised systems that greatly increase their risk of complications and mortality from influenza illnesses. Annual influenza vaccines have been shown to be beneficial in reducing complication and hospitalization rates for children with asthma and other chronic respiratory conditions (Murphy, 2014; Patria, Tagliabue, Longhi, & Esposito, 2013). This article discusses the use of current technology to affect influenza vaccination rates among these children.

BACKGROUND AND SIGNIFICANCE

Children with asthma and other respiratory conditions who acquire influenza often experience additional complications such as pneumonia and are more likely to require hospitalization (Centers for Disease Control and Prevention, 2013). These children have greater use of health care resources with increased financial expense. The annual cost of treating children with asthma and influenza is approximately \$3.2 billion (Jones Cooper & Walton-Moss, 2013). Asthma

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exacerbations often result in reduced quality of life, missed days of school, and lost work days for parents (Ong, Forester, & Fallot, 2009). In 1964, the Advisory Committee on Immunization Practices first issued a recommendation that everyone over the age of 6 months receive an annual influenza vaccine (Murphy, 2014). Since then, the committee has designated children with asthma as one of five high-risk groups that should be specifically targeted for an increase in annual vaccine coverage (Dombkowski et al., 2014). For more than 50 years, annual influenza vaccinations have been the standard of care for all children, yet compliance is low, with approximately half of children remaining unprotected (Centers for Disease Control and Prevention, 2013). Providers and health care systems have taken various approaches to improving the vaccination rate. Reminder and recall systems have been used for many years in pediatric offices, but the exact process used varies widely among providers (Jones Cooper & Walton-Moss, 2013). Offices with a reminder/recall system have higher influenza vaccination rates than those without any recall system, but rates remain below recommended levels (Dombkowski, Davis, Cohn, & Clark, 2006). An innovative and effective approach using technology has shown promise in helping these high-risk children benefit from influenza vaccine coverage.

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SUMMARY OF EVIDENCE

It is estimated that at least 92% of the U.S. population has a cell phone and that 70% of the population uses text messaging on a regular basis (Stockwell & Fiks, 2013; Stockwell, Kharbanda, Martinez, Vargas, et al., 2012; Stockwell et al., 2014). The permeation of cell phone technology into all socioeconomic populations makes it a useful tool for health care providers. Few authors have conducted research using text messaging specifically for the population of children with respiratory conditions and the variable of influenza vaccination rates. Data from one study show that preschool-age children whose caregivers received a text message about influenza vaccination received the flu shot 16 days earlier, on average, than the children of caregivers receiving a mailed letter (Coleman, 2014). Other particularly effective studies using text messaging to increase compliance and attendance are the Text4baby and the TEXT 4 HEALTH pro-

grams (Jordan, Bushar, Ingersoll, & Goodman, 2014; Stockwell, Kharbanda, Martinez, Lara, et al., 2012). These studies show efficacy in other populations that should be easily translatable.

Additional studies examined the perception and acceptance of text messaging in the health care sector. Parents report high interest in receiving text-messaged immunization reminders and appointment confirmations (Ahlers-Schmidt et al., 2012; Hofstetter, Vargas, Kennedy, Kitayama & Stockwell, 2013). Parents, providers, and staff were all supportive of the use of text messaging, and parents reported preferring personalized, interactive messages (Hofstetter et al., 2013).

PURPOSE STATEMENT

The purpose of this project is to reach caregivers with a multicomponent strategy to encourage the uptake of influenza vaccinations among children with chronic respiratory conditions. Key stakeholders are the practice providers and the patients and their families. The providers will reach more caregivers with the message that influenza vaccinations are important for their children and gain additional insight into communication delivery preferences of the patients served. The greatest benefit, according to synthesis of evidence, will occur when vaccination rates are improved and patients experience reduced corticosteroid use, decreased hospitalizations, and improved quality of life (Murphy, 2014; Patria, Tagliabue, Longhi, & Esposito, 2013).

PROJECT METHODS

Ethics

Protection of human subjects was ensured through appropriate training of investigators through the Collaborative Institutional Training Initiative. There was no collection of identifying patient information during the intervention or the follow-up survey. The survey was completed anonymously, and only aggregate data were reported. A separate recruitment protocol was not necessary to complete the intervention, because routine office procedure dictates that all patients are requested to enable the patient portal and set up delivery preferences. Consent to receive messages from the practice is obtained when participants enroll in the patient portal. A statement was added to the survey that explained to participants that completion of the survey implies consent to use the results in summary form.

Permission to implement the intervention was obtained from the practice site. Approval for the project was received from the Arizona State University Institutional Review Board on August 8, 2015.

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