

# Text message quality improvement intervention to improve the influenza vaccination rate among pediatric patients with asthma

AUGUSTA MACQUEEN, BSN CANDIDATE 2016, JOHNS HOPKINS SCHOOL OF NURSING

ELIZABETH SLOAND, PHD, CRNP, FAAN, JOHNS HOPKINS SCHOOL OF NURSING

SARAH POLK, SC.M., M.D., JOHNS HOPKINS UNIVERSITY BAYVIEW MEDICAL CENTER, PEDIATRICS

JOHNS HOPKINS UNIVERSITY SCHOOL OF NURSING, BALTIMORE, MD; JOHNS HOPKINS UNIVERSITY BAYVIEW MEDICAL CENTER, PEDIATRICS, BALTIMORE, MD

## 1 Background

Providers at the Children's Medical Practice (CMP) at Bayview noticed that children with asthma seemed not to be reliably receiving the influenza vaccine. Low reliability of vaccination in this population is particularly problematic due to the increased risk of influenza virus to children with asthma.<sup>4</sup> The mechanism for flagging patients in this population was not being used due to alert fatigue and lack of a standard procedure, and there was not a primary reminder system. The system relied on providers advising influenza vaccination during all appointments for children with asthma, regardless of the reason for the appointment.

The CDC reports an 8.6% asthma prevalence within the pediatric population.<sup>8</sup> Literature review revealed that influenza vaccination rates peak at 30% in this population<sup>3</sup>, and 69-92% of opportunities to vaccinate during office visits are missed each fall.<sup>2</sup> Parents cite lack of physician recommendation and perceived low susceptibility to influenza as reasons why they do not vaccinate their children who have asthma.<sup>3</sup>

Without a feasible way to ensure all patients with asthma or their providers would receive a reminder in the office, and without guarantee that patients would come to the office for an appointment, other quality improvement measures were explored. All reminder/recall systems (including phone, text, postcard with follow up call, verbal, mailed, electronically-generated reminders, and year-round vaccine scheduling) are shown to have at least a moderately positive impact on influenza vaccination rates, with some studies showing vaccination rates as high as 92.8% within vulnerable pediatric populations who had the interventions.<sup>3,5,6,7</sup> Videos for asthma education are shown to improve caregiver knowledge and satisfaction.<sup>2</sup>

## 2 Objective

The objective of this Quality Improvement (QI) project was to:

- Learn about prevalence of asthma within the pediatric patient population at CMP;
- Analyze current system for mechanisms to ensure vaccination in this vulnerable population;
- Define and implement a QI intervention to increase the rate of vaccination

## 3 Methods

We queried Epic for a list of CMP patients in the past five years. Patient age and sex were analyzed to determine patient demographic base statistics. We also queried within the patient "Problem List" for inclusion of "asthma" as a (co)morbidity. A list of patients with asthma, their names, and telephone numbers was created, excluding patients under the age of 6 months who were ineligible for influenza vaccination.

A three-part text message was created in English and Spanish, and included a multimedia link to a public service announcement released by the CDC about influenza vaccination.

**From the Children's Medical Practice at Bayview (Para español, texto el número 3). Kids with asthma are at risk for serious complications from the flu. (1/3)**

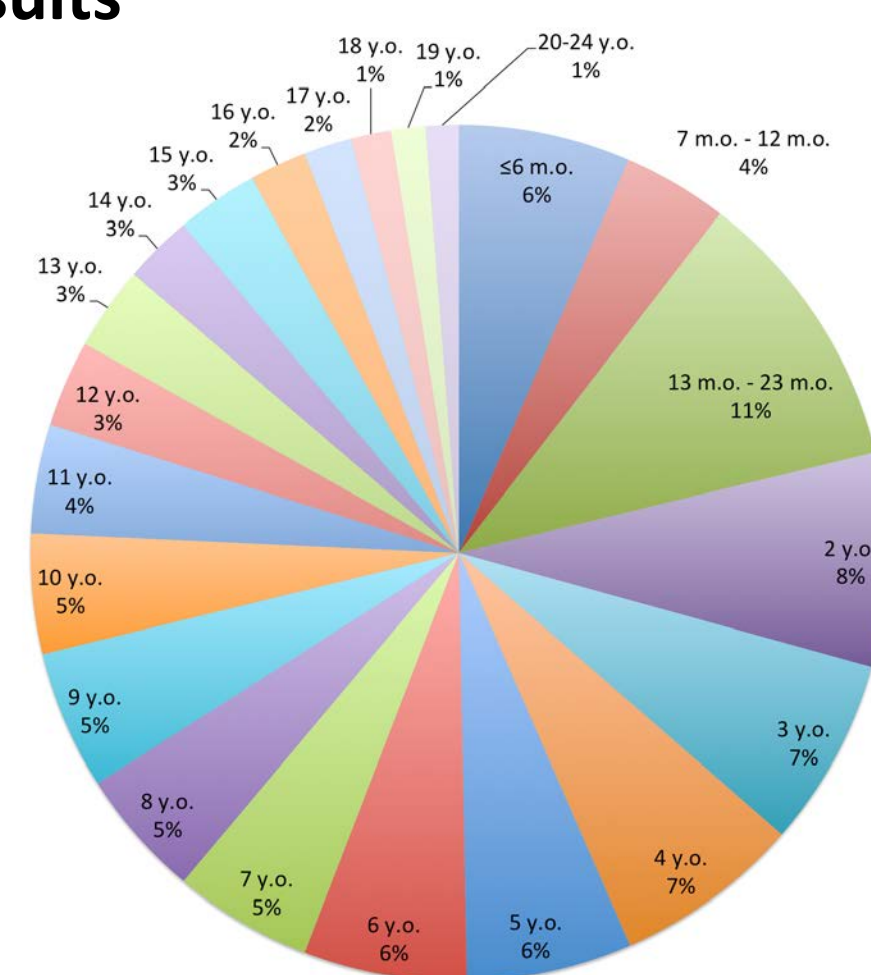
**Has your child gotten the vaccine yet this season? Text back 1 for YES; 2 for NO. (2/3)**

**If no, call us at (410) 550-0967 to make an appointment for all your kids that are seen at the clinic. <http://tinyurl.com/00flushots>. (3/3)**

It was not possible to query Epic for primary language within the medical record, so a best guess was used to identify English and Spanish speakers.

The text message series was sent on February 16, 2016 using EZ Texting, Responses were tallied and we followed up with a phone call to each phone number that denied or was unsure of the child(ren)'s vaccination status. Phone calls were made in either English or Spanish as appropriate, and a script was used to emphasize the importance of vaccination and schedule an appointment at CMPB.

## 4 Results



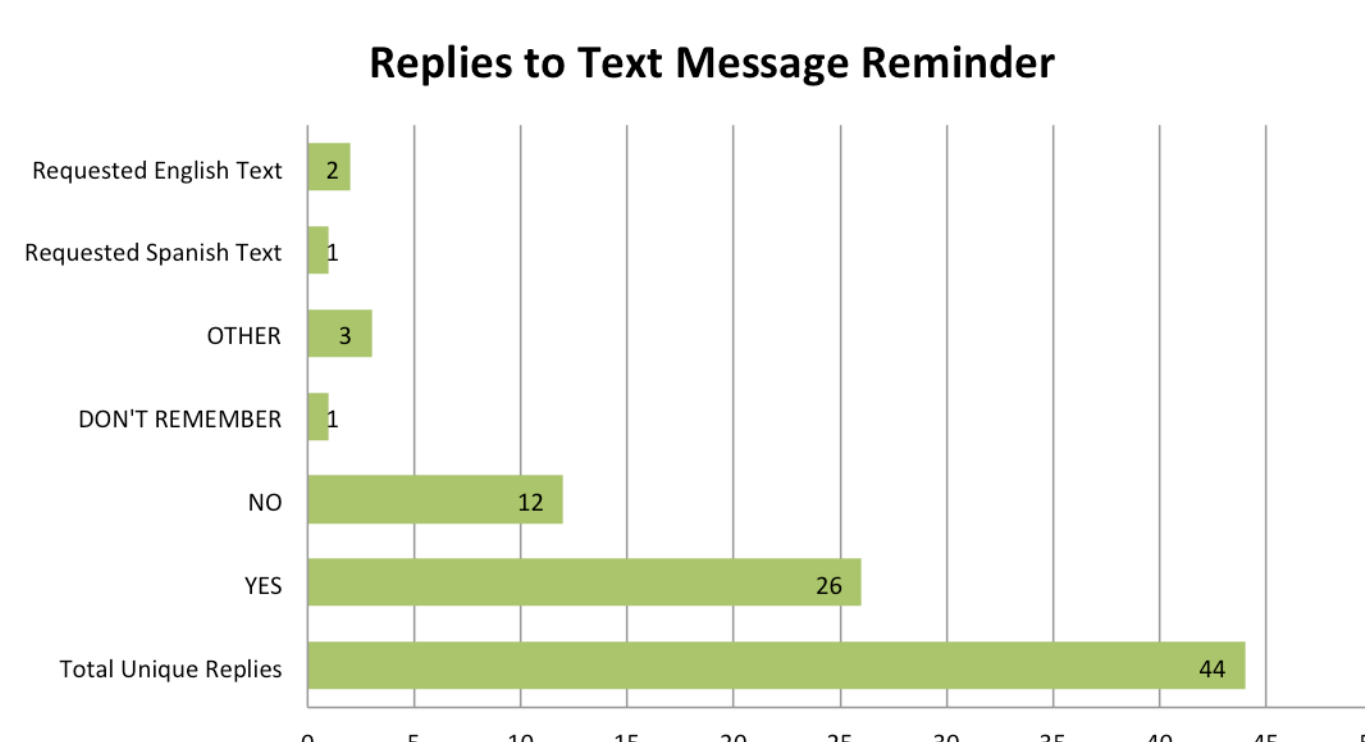
Patient Base by Age, Last 5 Years (02/2011-02/2016)

CMP patient demographic analysis revealed:

- 4,674 patients aged 91 hours – 24 years;
- 50% male (2,322)/50% female (2,352);
- 9.1% of CMP patients >6 months old were diagnosed with asthma at the time of the campaign.

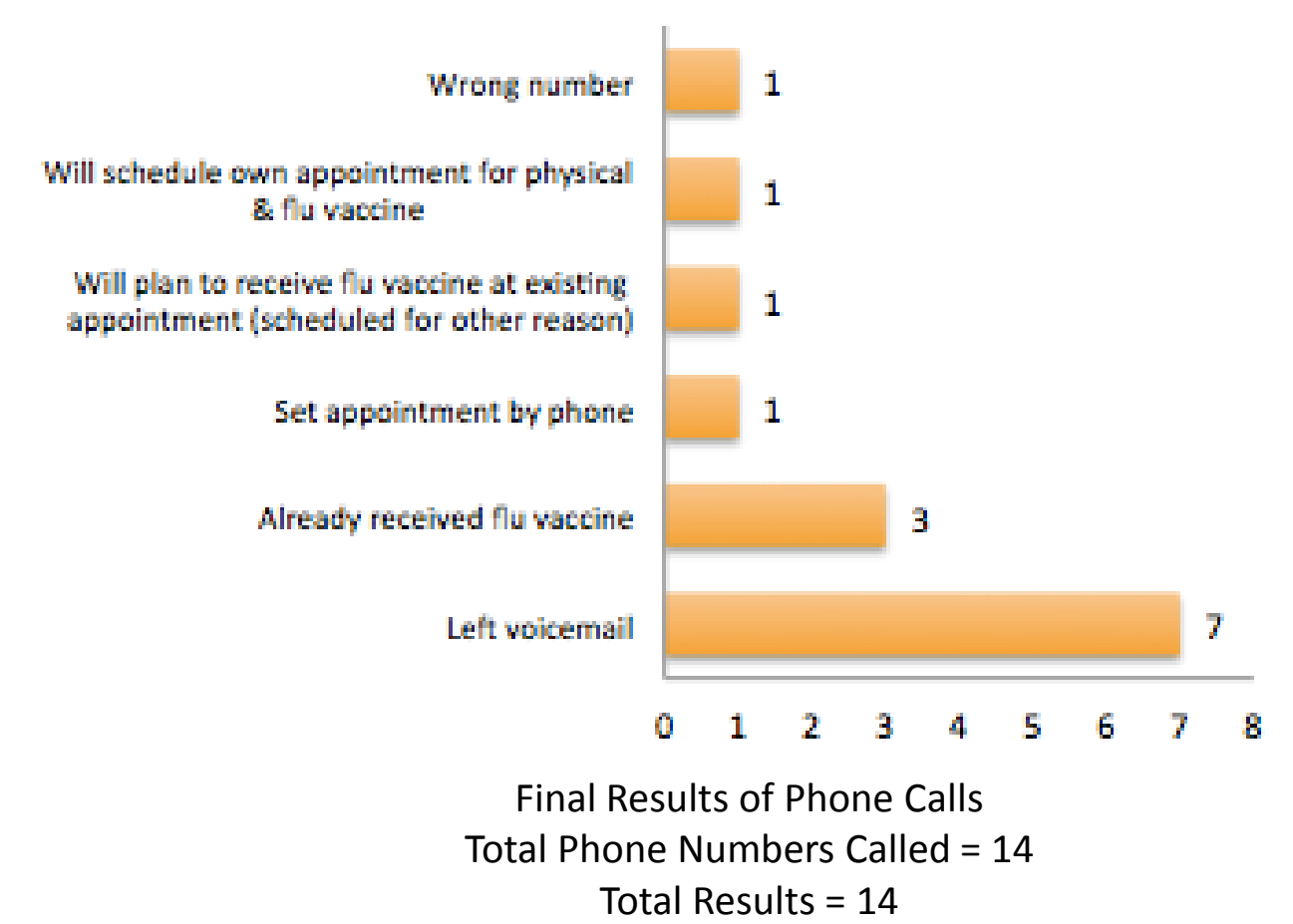
For the text message campaign, 381 unique phone numbers were identified for the 399 patients with asthma.

- 190 numbers were sent the English texts;
- 191 numbers were sent the Spanish texts.



14 phone numbers received one or two follow up phone call(s):

- Spanish-speaking "No" – 5
- Spanish-speaking "I don't remember" – 1
- Spanish-speaking other response – 1
- English-speaking "No" - 7



The overall response rate to the text messages was 11.5% (44 unique responses from 381 unique phone numbers).

## 5 Conclusions

While there were barriers to maximizing the efficacy of this intervention, we successfully reached at least 11.5% of the pediatric population with asthma at CMPB, as evidenced by responses. One guardian/family scheduled an appointment on a follow up phone call to their "No" text response; two guardians/families who responded "No" via text verbally stated that they would plan to have their children vaccinated at existing upcoming appointments. The text message intervention had at least a moderately positive impact on guardians' education and intent to vaccinate.

## 6 Future Directions

Now that the path has been paved, this intervention can be repeated earlier in the influenza season next year.

Additionally, systematic review of patient charts can be used to collect data on influenza vaccination rates in this population for the 2014-2015 season, 2015-2016 season (first year of the intervention), and 2016-2017 season to determine statistical significance. Ex: chart review for every 4<sup>th</sup> patient.

## 7 References

1. Bailey, S. J. (2006). Missed Opportunities for Influenza Vaccination in Children With Chronic Medical Conditions. *Pediatrics*, 118(Supplement\_1), doi:10.1542/peds.2006-0900iii
2. Bloch, S. A., & Bloch, A. J. (2013). Using Video Discharge Instructions as an Adjunct to Standard Written Instructions Improved Caregivers' Understanding of Their Child's Emergency Department Visit, Plan, and Follow-Up. *Pediatric Emergency Care*, 29(6), 699-704. doi:10.1097/pec.0b013e3182955480
3. Cooper, S. N., & Walton-Moss, B. (2013). Using Reminder/Recall Systems to Improve Influenza Immunization Rates in Children With Asthma. *Journal of Pediatric Health Care*, 27(5), 327-333. doi:10.1016/j.pedhc.2011.11.005
4. Flu and People with Asthma. (2015). Retrieved from <http://www.cdc.gov/flu/asthma/>
5. Britto, M. T., Pandik, G. M., Meeks, C. S., & Kotagal, U. R. (2006, August). Combining evidence and diffusion of innovation theory to enhance influenza immunization. *The Joint Commission Journal on Quality and Patient Safety*, 32(8), 426-432. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/16955861>
6. Daley, M. F., Barrow, J., Pearson, K., Crane, L. A., Gao, D., Stevenson, J. M., ... Kempe, A. (2003). Identification and Recall of Children With Chronic Medical Conditions for Influenza Vaccination. *Pediatrics*, 113(1), doi:10.1542/peds.113.1.e26
7. Jordan, E. T., Bushar, J. A., Kendrick, J. S., Johnson, P., & Wang, J. (2015). Encouraging Influenza Vaccination Among Text4Baby Pregnant Women and Mothers. *American Journal of Preventive Medicine*, 49(4), 563-572. doi:10.1016/j.amepre.2015.04.029
8. Summary Health Statistics: National Health Interview Survey (Rep.). (2014). Retrieved [http://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/NHIS/SHS/2014\\_SHS\\_Table\\_C-1.pdf](http://ftp.cdc.gov/pub/Health_Statistics/NCHS/NHIS/SHS/2014_SHS_Table_C-1.pdf)



**JOHNS HOPKINS**  
SCHOOL of NURSING

Funding Source:

The Helene Fuld Leadership Program for the Advancement of Patient Care Quality and Safety