



Published in final edited form as:

Vaccine. 2014 December 12; 32(52): 7040–7042. doi:10.1016/j.vaccine.2014.10.028.

## Enhancing Engagement of Clinicians in Adult Immunizations: Reflections on a decade and a half of research

Richard K Zimmerman, MD MPH

University of Pittsburgh School of Medicine, 3518 Fifth Ave, Pittsburgh PA 15261, 412 383 2354,  
zimmer@pitt.edu

The United States has a national adult immunization problem of modest rates that are relatively flat over time. For instance, pneumococcal immunization rates in the United States in 2012 among adults 65 years of age and older were 59.9%, and among high-risk adults were 20.0%, significantly below Healthy People 2020 vaccination goals of 90% and 60%, respectively. Influenza vaccination rates in 2012–13 were also modest at 31% among 18–49 year-olds, 45% among 50–64 year-olds, and 66% among those 65 years; overall, a nine-point racial disparity in rates was noted[1].

The US immunization rate problem is multifactorial and includes barriers in the patient, provider, pharmaceutical manufacturer, and system spheres. For this essay, I focus on a segment of the problem: insufficient motivation in the primary care setting. Although most clinicians support and provide immunizations, they lack the commitment to maximize rates in the primary care setting. This is demonstrated by the variability in rates between practices, in the high rate of missed vaccination opportunities that occur when a patient visits their primary care clinician but is not vaccinated, in patient reports about openness to vaccination if their clinician so recommended, and in variable effects of intervention studies. In reviews of vaccination rates according to the electronic medical record, I have seen rates range from 2% to 100% (personal communication, C. Lin PhD, 2014). Some practices achieve high rates, which can be attributed in part to use of standing orders programs (SOPs) [2]. In a study of primary care medical records over 3.25 years, missed opportunities at medical visits occurred 3.4 times for influenza vaccine and 10.7 times for PPV[3]. Another study found missed opportunities in 38% to 94% of office visits, depending on the vaccine and setting [4]. Furthermore, adults report being 12 times more likely to have received PPSV if someone in the clinician's office recommended it [5]. Finally, intervention studies provide further insight. One study found that brief staff training, provision of forms and two reminders of the intervention were *insufficient* to significantly change office practices under SOPs, showing the impact of unmotivated staff [6]. In another intervention study, actual implementation of a toolkit and vaccination rates varied by practice PPSV rates increased significantly overall for high-risk adults (18–64 years; 25% vs. 40%) but not for older adults (44% vs. 52%) and in two of four practices among both high-risk and older adults ( $p < .05$ ) [7]. Influenza vaccination rates increased significantly in three of four sites and overall by 11%.

I suggest three major reasons for the motivational hindrances to increasing immunization rates. First, having high immunization rates is not consistent with the internal motivators of

some clinicians. For instance, if a clinician experiences his or her primary satisfaction from performing a procedure successfully, from the excitement of treating an emergency, or from rescuing a patient from a serious acute illness, motivation to prevent a future illness may not be a high priority. Second, higher rewards are typically available for curative care and procedures, namely in profit and other productivity rewards. Problems in reward systems are common[8] and may actually discourage preventive services such as vaccination. Indeed, longer visit times are associated with higher vaccination rates [5] although longer visits are thought to correlate with fewer patients seen per day and lower overall revenue. Third, inertia is a hindrance. In a qualitative evaluation of barriers to standing order program, primary hindrances were lack of interest in changing the status quo, a physician-dominated hierarchy, and fear of malpractice whereas facilitators included having an electronic medical record and a practice culture that was open to change[9].

I suggest several changes to overcome motivational barriers and to increase rates; ideally, they should include both external (i.e., rewards) and intrinsic factors. Changing external reward systems from profit via productivity as defined by number of patients seen per day to quality or to a measure of health protection or promotion is key. Indeed, health insurers are now offering quality bonuses based on high immunization rates and pharmaceutical manufacturers are beginning to offer rebates for increasing immunization rates. Health care employers are changing the environment for clinicians by tracking and comparing the immunization rates of a provider's patient panel. Cheering and external recognition of progress are important extrinsic motivators; positive feedback may enhance HCW sense of competence [10].

Intrinsic motivation is often more powerful than extrinsic motivation and is consistent with the reasons that many clinicians chose a medical career. Indeed, seeing a patient struggle to breathe due to pneumonia, cry due to the pain of zoster, or seize following pertussis are powerful motivators that many clinicians have witnessed. The vision to prevent suffering provides meaningfulness, the sense that one is pursuing a worthy purpose and taps into intrinsic motivation [10]. A second power motivator is modeling. Modeling of pro-vaccination efforts by leaders within a clinic can set the example for the whole team and is consistent with "master-modeling" that is suggested by social cognitive theory [11]. Indeed, two clinicians in one of our studies prominently placed posters of themselves with their families in their waiting room that specifically promoted vaccination as family protection (personal communication, T Nowalk PhD 2014). Third, teamwork enhances intrinsic motivation [10] and is necessary for some of the most evidence-based methods to raise rates to actually work, such as standing orders [12].

A fourth area for intrinsic motivation is setting goals for vaccination[11]. Goal setting is particularly useful during influenza vaccination. I recommend that practices set a goal that is a 20% to 25% higher than the amount of doses that they used in the past year. Then, their immunization champion should monitor the doses given each week, plot that towards the goal, and share with office colleagues the progress or challenge remaining, depending on the results thus far (Figure 1). Such recording keeping provides feedback for corrective action and enhances the sense of progress, both of which are key components of intrinsic motivation [10]. This can be enhanced by milestone reference points and celebrations when

milestones are achieved [10]. Furthermore, such progress may overcome the sense of burnout that can occur when substantial energy is expended with few visible results. A combination of intrinsic and extrinsic motivators may be particularly successful, such as goal setting, competition, and awards for the team or practice in a network with the highest post-intervention rates.

Two threats to implementation of motivational changes bear mentioning. First, an organization's environment can limit implementation[11]. For instance, some environments so highly stress revenue generation, an extrinsic motivator, that clinicians lack adequate time for prevention. The average physician time to complete a health promotion activity is 1.35 minutes [13] which offers hope for increasing preventive services if the environment is supportive. Second, the perception of a clinician or staff person about their inability to implement changes, called self-efficacy [11] can throttle motivation that persons lacks the confidence that their efforts can make a difference.

I believe that motivation is so important to increasing immunization rates that I placed it as the fourth of our four pillars in our toolkit to increase adult immunization rates (see <http://4pillarstoolkit.pitt.edu/>). We propose that each practice should have an immunization champion who is charged with monitoring implementation and tracking progress towards a goal (see Figure 1). Indeed, the management literature shows that engagement increases productivity [14].

## Acknowledgement

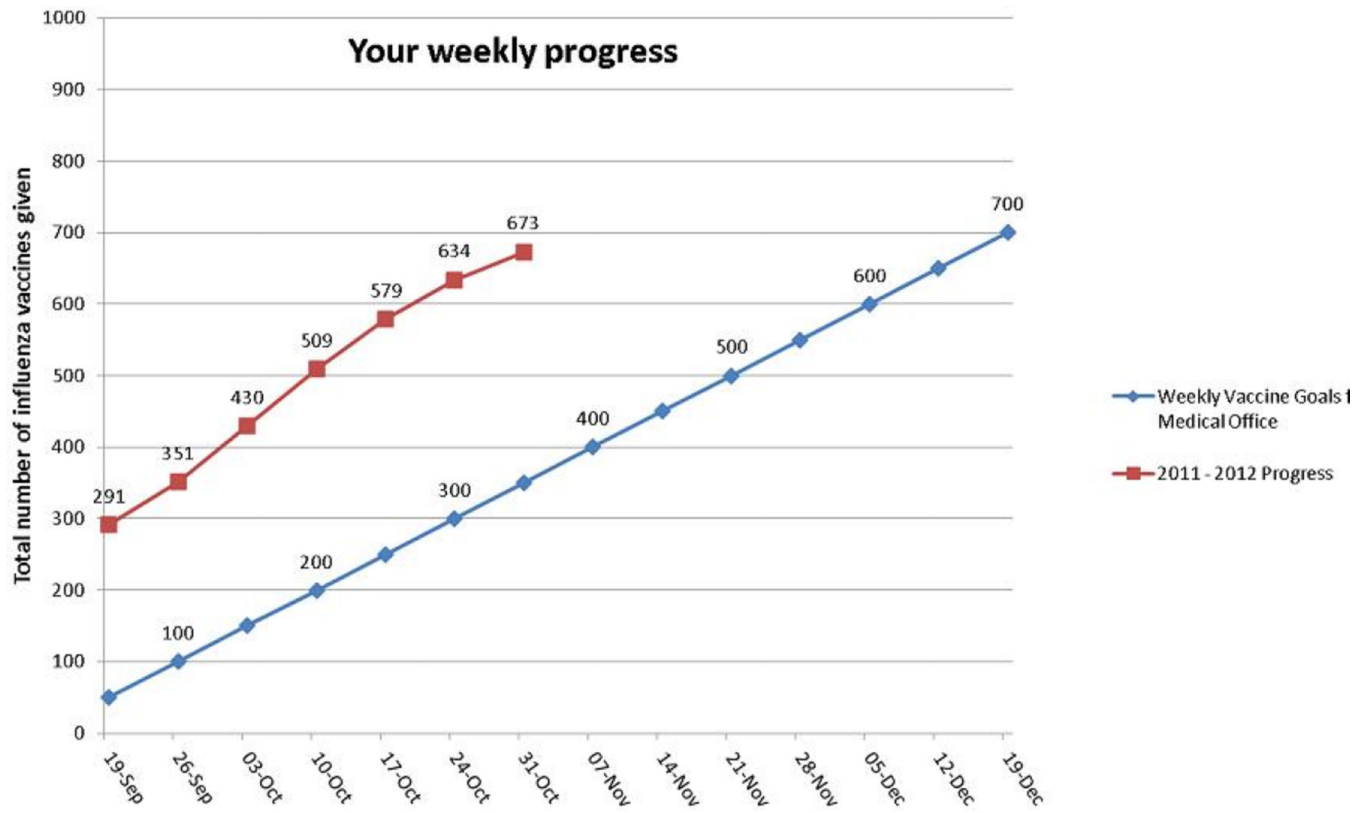
This paper was funded in part by the cooperative agreement U01 IP 000662 from the Centers for Disease Control and Prevention. The views expressed do not necessarily reflect the official policies of the Department of Health and Human Services.

Potential Conflicts: Dr. Zimmerman received research grant funding from Sanofi Pasteur SA, Merck & Co., and Pfizer Inc.

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**Figure 1.**

Weekly progress graph with goal and actual doses administered to motivate practices to administer influenza vaccine. Doses administered each week are plotted versus straight line goal that reflects a 25% increase from doses administered the previous year.