Evolution of Clinical Decision Support to Increase Influenza Vaccination

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Abstract. Over three influenza seasons spanning four years we evaluated the effect of standing orders, reminders, and iterations of Clinical Decision Support (CDS) to increase influenza (flu) vaccination among inpatients. Using CDS, coverage increased over each season: (0%, 12%, 35%). However, success was realized only after integration of the electronic medication administration record (E-MAR). Standing orders and reminders were ineffective.

Background. There is suboptimal adherence to flu vaccination guidelines.1 Since we had low coverage levels, we followed recommendations to implement standing-orders and electronic CDS orders.1

Materials and Methods. During three flu seasons, we evaluated patients admitted to internal medicine, which is divided into three similar firms. Before using CDS, we randomly sampled patients to determine how often patients met criteria1 for vaccination. Year1: '03–’04 season. There was no standing orders policy and no medication CPOE. We compared: 1) A pre-selected order (triggered by “Discharge Patient” order) for influenza vaccine, we routed the order to a nursing station printer, 2) an electronic prompt to order vaccine (triggered by the “Discharge Patient” order), 3) usual care. Year2: ’05–’06 season. A standing-orders policy for nurses to administer vaccine was implemented and nurses used an electronic patient-care activities list. We compared: 1) A pre-selected order (triggered by “Discharge Patient” order) for flu vaccine, the nurses’ activity list was populated, 2) an electronic reminder to follow the standing orders policy populated nurse’s task list, 3) usual care. Year3: ’06–’07. CPOE introduced and orders were routed to the pharmacy and the nurses’ E-MAR. We compared pre-selected flu vaccine orders triggered by different clinical events and the nurses’ E-MAR was populated: 1) triggered by “Discharge Patient” order, 2) triggered by “Admission to Bed” order, 3) triggered by both Admission and Discharge orders, unless the vaccine had been ordered on admission. During all seasons, pre-selected orders required the physician to de-select influenza vaccination orders.

Results. Most patients met criteria for flu vaccination (95%; 95% CI, 87-99%). Over time, as the process became increasingly electronic, physicians were more likely to accept pre-selected orders and nurses were more likely to administer vaccine (Figure). Standing orders and physician reminders were unsuccessful.

Discussion. We found that evolution of our medication administration process was an important factor in the successful application of CDS to increase patient receipt of flu vaccine. Since most medicine patients met criteria for flu vaccine, sophisticated logic to identify high-priority patients was unnecessary and may have been detrimental. Our findings illustrate that addressing local impediments to CDS is necessary for CDS to be successful.2,3 Also, full implementation of our E-MAR improved vaccination rates. At our hospital, an inpatient standing orders protocol was ineffective, even after using an electronic reminder for nurses. We achieved meaningful increases in flu vaccination coverage by using CDS-triggered orders that automatically populated the nurses’ E-MAR.

References