Assessment of healthcare worker influenza vaccination program in French geriatric wards: a cluster-randomized controlled trial

Monique Rothan-Tondeur1,2, Younès Filali-Zegzouti1,4, Joël Belmin1,5, Benoist Lejeune1,6, Jean-Louis Golmard7, Benoî de Wazières1,8, Fabrice Carrat3, François Piette1,9, Christian Mouala1,9 and Gaëtan Gavazzi1,10, on behalf of ORIG association

1ORIG, Charles Foix Hospital, Ivry sur Seine, France, 2Public Health French School, Rennes, Ivry sur Seine, France, 3INSERM UMR-S707, Faculté de Médecine Saint-Antoine, Saint-Antoine Hospital, Paris, France, 4Department of Biology, University My Ismail, FST Errachidia, Morocco, 5Geriatric Medicine, Charles Foix Hospital, Ivry sur Seine, France, 6Department of Public Health, Brest Teaching Hospital, Brest, France, 7Clinical Research Unit (URC), Service de Biostatistiques, La Pitié-Salpêtrière Teaching Hospital, CHU Pitié-Salpêtrière, Paris, France, 8Service Gériatrie et Néphrologie, Nimes Teaching Hospitals, Carémeau Hospital, Nîmes, France, 9Internal Medicine, Charles Foix Hospital, Ivry sur Seine, France, 10University Clinic of Geriatric Medicine, Grenoble Teaching Hospital, CHU A. Michallon, B Grenoble, France

ABSTRACT. Background and aims: The French institute for study of geriatric infection risk (ORIG) has run a multiphase multicenter study (VESTA) to develop and implement active programs promoting healthcare worker (HCW) influenza vaccination. The present article reports results after implementation of the first active program. Method: A cluster-randomized controlled trial was conducted from December 1 to December 15, 2005, and a total of 43 geriatric wards (3646 HCWs) were randomly assigned to two clusters. The program cluster (24 wards; 1918 HCWs) received the active program whereas no action was taken in the control cluster (19 wards; 1728 HCWs). The program was educational; its objective was to convince HCWs to be vaccinated by giving them top-down scientific information and developing a sense of altruism. Data from 1201 HCWs (63%) from the program cluster and 1144 HCWs (66%) from the control cluster were collected. Results: The program failed to increase the HCW influenza vaccination rate (program: 34%; control: 32%; p>0.05), but won the faithfulness of vaccinated HCWs (5% vs 8% HCWs quitted vaccination; p<0.05). Conclusions: Resistance to active influenza vaccination programs was found. Future active programs will have to restore a climate of confidence between sources of knowledge and HCWs and promote “self-protection” in contrast with the protection of elderly people.

INTRODUCTION

Influenza (flu) can have serious consequences in the elderly (1). Although the elderly have a diminished immune response to flu vaccination compared with young adults, annual flu vaccination remains the most effective method of preventing flu and its complication in the elderly (1-3). Vaccination is therefore recommended by the World Health Organization (WHO) and French health authorities for adults aged ≥65 years (1, 4). Flu vaccination coverage in the elderly is usually greater than in other age-groups. In France, Gavazzi et al. showed that such rates ranged between 57% (rehabilitation care setting) and 93% (nursing home setting) during the 2002-03 flu season in 105 French geriatric healthcare units (5).

Healthcare workers (HCWs) in regular and prolonged contact with the elderly are a potential source of nosocomial flu infection in this population (6-8). In addition, HCW vaccination has been shown to be effective in protecting patients by reducing the number of deaths among nursing home patients and elderly hospitalized patients (2, 9). Carman et al. (10) showed that a flu vacci-
nation rate of over 50% in HCWs would decrease mortality by approximately 40% among elderly patients in long-term care. Although a recent Cochrane review stated that there is no strong evidence to support the protection of older persons by vaccinating HCW (11), annual flu vaccination of HCWs in contact with the elderly has been highly recommended by the Centers for Disease Control and Prevention (CDC) since 1981 and the WHO since 1997, and is now recommended by many national health authorities (1, 4, 9). It has been included in the French vaccine calendar since 2000 (12). The fact that flu vaccination reduces influenza and its complications in older people and in adults <65 years is also the reason to consider vaccinating HCW. However, flu vaccination rates are usually low in HCWs and vary with age, occupational group and type of facility (9). In France, 48% of the overall population of HCWs was vaccinated during the 2004-05 flu season, according to a SOFRES survey (http://www.tns-sofres.com/etudes/sante/220905_grippe2005.pdf) carried out for the French Influenza Study and Information Group (GEIG, Groupe d’Etude et d’Information sur la grippe) and our own preliminary survey found that 31% of HCWs working in 107 geriatric wards had been vaccinated during the 2002-03 season.

The low flu vaccination rate of HCWs in regular prolonged contact with institutionalized elderly patients led the French ORIG (Observatoire du Risque Infectieux en Gériatrie) to run the VESTA study. ORIG is a healthcare research network devoted to improving understanding of the causes of infection risk in the elderly and to developing offensive counter-strategies. The VESTA study was a multiphase multicenter study: (i) to identify factors limiting vaccination in HCWs working in French geriatric wards; (ii) to develop and implement active programs promoting HCW flu vaccination; and, (iii) to assess the efficacy of implemented active programs. The present paper reports results obtained after implementation of the first active program developed during the VESTA study.

**METHODS**

As this study was a multicenter, cluster-randomized controlled interventional study and did not modify medical practice, it did not need to be submitted to an ethics committee for approval. However, all information collected during the study was rendered anonymous through a procedure submitted to and approved by the Commission Nationale de l’Informatique et des Libertés (French data protection commission; authorization n°. AR 0962228).

A call for participation was sent to geriatric wards with more than 50 beds and without patients aged ≤64 years of public hospitals throughout France. Department heads wanting their wards to participate in the VESTA study were required to designate a local investigator and to contact ORIG. Wards participating in the study were then randomly allocated to two clusters. Between December 1 and December 15, 2005, one cluster (Program) received the active program; no action was performed in the second cluster (Control).

All HCWs in regular contact with elderly patients, present at the time of the study in the wards could be included in the study: i.e., physicians (geriatricians and residents), nurses (head nurses and nurses), nursing auxiliaries, and other workers (physical therapists, occupational therapists, etc.). Nursing or nursing auxiliary students were excluded.

The active program was developed during the first phases of the VESTA study. It was educational, its objective being to convince HCWs to be vaccinated against flu by giving them information that would clarify all fears and doubts and develop a sense of altruism (i.e., flu vaccination of HCWs has a beneficial effect on elderly patients). Materials for the active program included a slide show (52 slides + 4 short movies), a leaflet, and a guide for the leading investigator.

In each ward, after informing the heads of department and occupational medicine department, the local investigator organized information sessions for all HCWs. A total of three 2-hour sessions were performed in each ward. The slide show, entitled “Myths and reality about flu vaccination”, was shown during the information sessions. The 52 slides were intended to expose myths in favor of realities: for example, the myth that “the vaccine can cause flu” was contradicted by the reality that “the vaccine does not cause flu”. Three of the four short movies were interviews of physicians: a nationally well-known geriatrician, a young geriatrician, and a hospital nursing director. The fourth, which was humorous, showed an elderly patient talking with his son about the nurses and saying that, in his view, he would appreciate the fact that they were vaccinated against influenza as much as they were pretty and kind to him. To make the intervention as homogeneous as possible between centers, each local investigator was provided with written information indicating the methodology, and comments on the slides and suitable replies to frequently asked questions (investigator guide). The leaflet summarized the slide show, and was distributed to all participants at the end of each information session.

Two weeks after the end of the program implementation, the local investigator collected in questionnaires specifically developed for the study, information on the flu vaccination status of the HCWs who had agreed to participate.

The main criterion was the percentage of vaccinated HCWs before the 2004-05 flu season and after its implementation (2005-06 flu season) of the active program in each cluster. The second criterion was the percentage of vaccinated HCWs before and after imple-