Influenza vaccine effectiveness 2010-11 in Portugal obtained by two methods: results from the EuroEVA study

Ausenda Machado 1, B. Nunes 1, P. Pechirra 2, P. Gonçalves 2, P. Conde 2, R. Guiomar 2, I. Falcão 3

1 Department of Epidemiology and 2 National Influenza Reference Laboratory of the Instituto Nacional de Saúde Dr. Ricardo Jorge, Portugal, 3 General Directorate of Health, Portugal

BACKGROUND Every year the influenza vaccine is reformulated, so estimating the influenza vaccine effectiveness (VE) every season and in an early stage is important to support public health decisions. Since 2008, Portugal has been participating with the EuroEVA study in the I-MOVE (Influenza Monitoring Vaccine Effectiveness in Europe), financed by ECDC and coordinated by Epico, which main objective is to estimate seasonal and pandemic vaccine effectiveness during and after the influenza season. In this context, we used two methods to estimate VE for the 2010-11 seasonal influenza vaccine, both in the elderly and in all age groups.

METHODS

TEST NEGATIVE DESIGN (TND)

- General Design
  A case-control approach was used, where laboratory confirmed influenza cases (ILI+) were compared to laboratory negative influenza patients (ILI-).

- On a weekly basis, each GP selected systematically ILI patients using the EU ILI case definition.

- Systematic selection
  Each GP has different starting day of the week – from Monday to Thursday

- 2 ILI cases with less than 65 years
- All ILI cases with 65 years and above

DATA COLLECTION BY THE GP

1. Standardized questionnaire: data on confounding factors and effect modifiers;
2. Nasopharyngeal swab

LABORATORY ANALYSIS (RT-PCR / Culture)

Figure 1. Design and recruitment flow process

Vaccination status
Individuals vaccinated more than 14 days before disease onset.

Statistical analysis
VE was estimated as one minus the odds ratio of being vaccinated in cases versus controls adjusted for confounders by logistic regression.

RESULTS

In this season, 2010-2011, the seasonal vaccine coverage in Controls was significantly higher (17.4%) than in All influenza cases (ILI+) (4.2%) (Figure 3).

The crude vaccine effectiveness estimate was 79.7%, with statistical significance (Table 1).

After the adjustment for confounders, via non conditional logistic regression, the VE estimates decreased to 59% with no statistical significance and presenting a very low precision.

| Table 1. Crude and adjusted seasonal 2010-11 vaccine effectiveness against influenza |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| Crude VE | Crude 95% CI | Adjusted* VE | Adjusted* 95% CI |
| 79.7 | 44.2-93.6 | 59.0 | -61.8-89.6 |

* Data used in the estimations from week 45-11 week 11. VE estimates adjusted for age group, pandemic and seasonal vaccine 2009-10, any chronic disease, target group and month of onset.

CONCLUSIONS

VE point estimates obtained by the two methods were very similar and an explanation for this consistency could be the fact that the seasonal vaccine coverage estimates between ILI- (17.4%) and the population based telephone survey (17.5%) were also very close. Nevertheless, and due to small sample size, our study was unable to estimate VE for specific seasonal vaccine target groups. Further efforts should be done to increase sample size, mainly in the elderly population.

ACKNOWLEDGMENTS The authors would like to acknowledge all the GPs participating in this study and the Associação Portuguesa de Médicos de Clínica Geral.