

Monitoring influenza vaccine effectiveness using the national influenza surveillance system

Ausenda Machado (1), Maria Graça Freitas (2), Raquel Guiomar(3), Carlos Matias Dias(1), Baltazar Nunes(1)

1. Department of Epidemiology, National Health Institute Dr Ricardo Jorge, Lisbon, Portugal;
2. General Directorate For Health, Lisbon, Portugal;
3. Department of Infectious Diseases, National Health Institute Dr Ricardo Jorge, Lisbon, Portugal

Background and objectives

- Due to the annual reformulation of the influenza vaccine composition estimates of the vaccine effectiveness (VE) are required every season.
- A Portuguese influenza surveillance system is in place, and data obtained by this system may be used to evaluate VE (compared to studies specifically designed to this purpose).

This study intends to evaluate the feasibility of using the national influenza surveillance system for monitoring the influenza VE (MonitorEVA).



Background and objectives

Methods

Results

Conclusions/ Main messages

Methods

Test Negative Design (TND)

Sample of GP/ emergency room

Select ILI cases (clinical signs and symptoms)

Data collection by the GP

1. Standardized questionnaire:
2. Nasopharyngeal swab

Laboratory analysis (RT-PCR / Culture)

CONTROLS (ILI-)
negative for any influenza virus

CASES (ILI+)
positive for any influenza virus

Statistical analysis

VE = 1 – OR being vaccinated in cases versus controls adjusted for confounders by logistic regression

Screening Method (SM)

ECOS sample

A sample of 1074 households
(stratified by region homogeneous allocation)
selected from a dual sample frame- random digit dialing

Data collection by CATI

- Standardized questionnaire: one respondent by household (proxy for the rest of the household members).

Data analysis

Weighted by sex and age of the Portuguese population

VC CASES (ILI +)

VC COMMUNITY CONTROLS

Statistical analysis

$$EV = \frac{PPV - PCV}{PPV(1 - PCV)}$$

PPV= Proportion of vaccinated community
PCV Proportion of vaccinated cases
Farrington method to adjust for age group



Background
and
objectives

Methods

Results

Conclusions/
Main
messages

Results

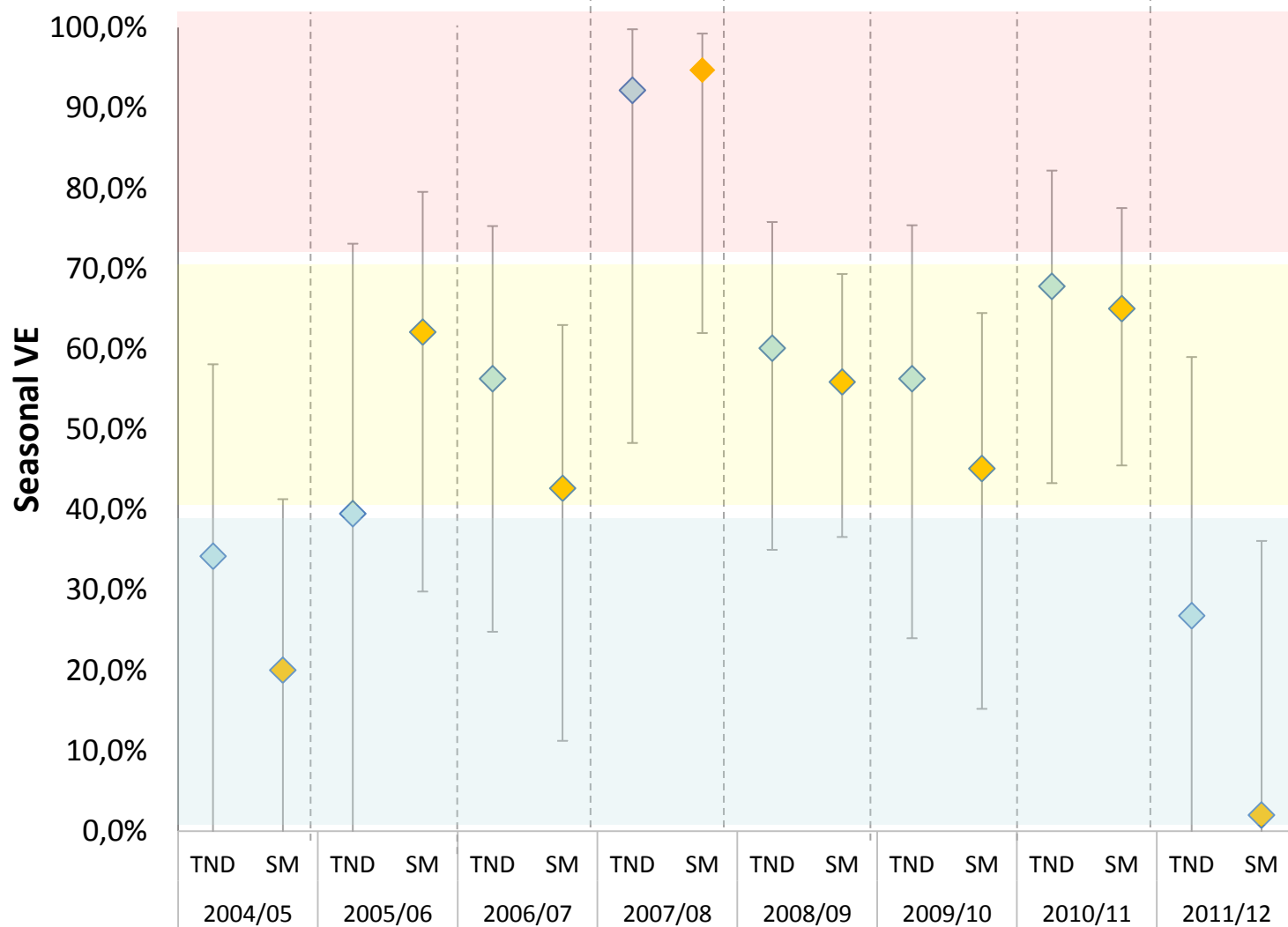


FIGURE 1. SEASONAL VACCINE EFFECTIVENESS AGAINST INFLUENZA ESTIMATED USING TND AND SM



Background
and
objectives

Methods

Results

Conclusions/
Main
messages

Results

TABLE 1. ADJUSTED VACCINE EFFECTIVENESS AGAINST INFLUENZA: COMPARISON BETWEEN MONITOREVA AND OTHER TND AD-HOC STUDIES

		MonitorEVA	EuroEVA*	IMOVE**
2008/09 (65 and plus)	VE	23,6	-3,0	59,0
	IC95%	(-87; 69)	(-316; 75)	(15; 80)
2009/10 (pandemic vaccine)	VE	67,0		72,0
	IC95%	(-60; 93)		(46; 86)
2010/11 (seasonal vaccine)	EV ajustada	44,0	58,2	52,0
	IC95%	(-3,6; 69,3)	(-61; 89)	(30; 67)
2011/12 (seasonal vaccine)	EV ajustada	5,0	48,8	25,0
	IC95%	(-80,9; 50,2)	(0; 74)	(6; 47)

*EuroEVA: National study to estimate VE

**I-MOVE: European multicentric case-control study



Background
and
objectives

Methods

Results

Conclusions/
Main
messages

Conclusions

- ❑ SM estimates were in accordance to the TND ones but for the majority of the SM VE was lower than the TND.
- ❑ Sample size and data quality are sufficient to obtain crude VE estimates with statistical significance (if VE is higher than 50%), however allowing less precise estimates.
- ❑ The surveillance data allowed the VE monitoring indicating if the VE was higher than 70% and less than 50%.

Main messages

- ❑ Improvement of data quality in the surveillance program seems a potential way of improving precision and closing the gap between the two methods proposed.
- ❑ Despite being less precise data from national influenza surveillance program seem to be a less expensive and adequate alternative to assess vaccine effectiveness.