“I-MOVE network”
Monitoring Influenza Vaccine Effectiveness in Europe

I-MOVE network
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I-MOVE objectives
(Influenza monitoring VE in Europe)
ECDC tender 2007

- To identify and **pilot test methods**
  to measure seasonal and pandemic influenza VE
  in EU and EEA

- To develop a system to monitor
  on a routine and **real-time** basis IVE in EU and EEA
  - have early estimates during the influenza season
  - have a system ready to assess and monitor IVE in a pandemic
2007-8, Planning phase

- Establishing a network of partners
- Identification of methods to measure influenza VE in EU/EEA
  - Literature review
  - Influenza VE survey among EU member states
  - MS & expert workshop on influenza VE studies

- Main recommendations
  - Various study designs
  - Based on existing sentinel networks & existing DB
  - Variables to control for positive and negative confounding
  - Laboratory confirmed outcome

➤ Influenza VE generic study protocols
I-MOVE network 2008/9 – 2011/12

- **Partners**
  - 26 institutes
  - 17 MS EU / EEA MS

- **Studies in 15 sites**
  - national case-control based on sentinel networks
  - multicentre case-control
  - cohorts based on primary care computerised registers with nested case control
  - screening
I-MOVE cohort studies with nested case control

(ref presentations
Nick Andrews and Jesús Castilla)
I-MOVE cohort studies

Methods

- Large electronic GP databases
  - **England** 1,005,132; **Scotland** 93,380; **Navarra** 604,595
  - All ages

Outcomes

- ILI
- All respiratory illness
- Hospitalisations
- Death
- *Laboratory confirmed (nested case-control)*

Adjustment for + and - confounding

Analysis

- Poisson/Time dependent, Cox regression
- Logistic regression (case-control)
I-MOVE cohorts:
Preliminary IVE (end of March 2011) against MA-ILI

Country /region (population size) - Statistical method
I-MOVE case-control studies
Methods: Multicentre case-control study

- Sentinel networks (> 1000 GPs)
  - interview and swab of ILI patients
- Reference laboratories
  - cases: ILI positive for influenza
  - controls: ILI negative (test-negative)
- Vaccination status
  - vaccinated: vaccine > 14 days before ILI onset
- Covariates to adjust for + and - confounding
- Pooled analysis
  - ref E Kissling presentation
Multicentre case-control
Strengthening methods along the seasons

- **Study sites, population, sample size**
  - Pilot season 5 study sites, elderly (N= 327)
  - 2011/12 8 study sites, all population (N=4747)

- **EU ILI case definition**
  - Pilot season 4/5
  - 2011/12 7/8

- **Selection of ILI patients to swab**
  - All elderly swabbed
  - 2011/12 systematic selection of patients to swab in other age groups (8/8)
### Influenza VE by age and risk groups, type/subtype

**Multicentre case control study, I-MOVE, 2007-12, EU**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Type/Subtype</th>
<th>Seasonal Vaccine 2008/9</th>
<th>Seasonal Vaccine 2009/10</th>
<th>Seasonal Vaccine 2010/11</th>
<th>Seasonal Vaccine 2011/12</th>
</tr>
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<tbody>
<tr>
<td>Overall</td>
<td>Overall</td>
<td>N=292</td>
<td>N=96</td>
<td>N=96</td>
<td>N=96</td>
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<tr>
<td>Overall</td>
<td>Overall</td>
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<td>65</td>
<td>60</td>
<td>60</td>
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<tr>
<td>Overall</td>
<td>A(H1N1)</td>
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<td>66</td>
<td>66</td>
<td>56</td>
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<tr>
<td>Overall</td>
<td>B</td>
<td>52</td>
<td>56</td>
<td>56</td>
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<tr>
<td>Overall</td>
<td>15-64</td>
<td>52</td>
<td>66</td>
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<tr>
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<td>52</td>
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<td>66</td>
<td>56</td>
</tr>
</tbody>
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**Legend:**
- ▲: Adjusted vaccine effectiveness (%)
- ▲: 25
- ▲: 15
- ▲: 63
- ▲: 60
Screening method

Italy, Portugal, Spain, England, Scotland
Screening method: pandemic IVE against lab. confirmed influenza by age group 2009-10 season, Spain

Courtesy Amparo Larrauri
MA-ILI – 2010-11, preliminary Screening IVE (end of March) Effectiveness by week, England

Courtesy Dougas Fleming
The I-MOVE network

- Highly motivated study teams

- Continuous exchanges
  between I-MOVE members and with external experts
  - during the season teleconferences, workshops
  - annual meeting
  - website https://sites.google.com/site/epiflu/Home
The I-MOVE network

**Communication**
- **29 articles published**
- Scientific conferences (national and international)
- I-MOVE results included in meta-analysis
- Since 2009/10
  - preliminary results communicated to EMA, WHO, ECDC

**Funding**
- **2008/9- 2011/12**: funded by study sites and ECDC
- **2012/13**: funded by study sites and EpiConcept
Conclusions

- A consolidated **network** for measuring IVE
  - estimates from several countries, designs
  - laboratory confirmed outcome
  - control for positive / negative confounders

- Early estimates in seasons or pandemics

- IVE by age group, subtype, target population

- Contribution to strengthen influenza surveillance
  - case definition
  - systematic sampling

- Challenge
  - Long term funding....
Patients

Influenza Sentinel networks

Study sites I-MOVE
- Denmark: A Mazick, K Molbak (2008-9)
- England, Wales RCGP: D Fleming, H Durnall
- France OpenRome / GROG: JM Cohen, A Mosnier, I Daviaud
- Hungary, NCE: B Oroszi, K Horvath
- Ireland, HSE: AS Barret, J Rebolledo, J O'Donnell
- Italy, ISS: C Rizzo, A Bella, MC Rota, S Erlich
- Poland National Institute of Public Health: I Paradowska-Stankeiwicz, M Fluchowska, P Stefanoff
- Portugal, Inst Nac Saude Dr Ricardo Jorge: B Nunes, A Machado, J Marinho Falcão, R Guiomar
- Romania, Cantacuzino Institut: V Alexandrescu, D Pitigoiti, E Lupulescu,
- Scotland, HPS: J McMenamin, C Robertson
- Spain, CNE, ISCIII: A Larrauri, S Jiménez, S De Mateo
- Spain, Navarra Public Health Institute: J Castilla, I Martínez
- UK, HPA: R Pebody, N Andrews, P Hardelid, G Kaftatos

ECDC: B Ciancio, P Kramarz, A Nicoll
EpiConcept: E Kissling, A Moren, M Valenciano
C Savulescu, T Seyler, A Halm, V Nancey, N Colombo, G Jeannerod

Other partners Institutes
- Belgium IPH
- Spain Valencia CSISP
- Finland, THL
- France, InVS
- France, Sentinel
- Greece, KEEPNO
- Italy, Campobasso, Catholic University
- Norway, FHI
- The Netherlands, RIVM
- The Netherlands, Erasmus University
- Sweden, SMI