

# Survey of influenza vaccination coverage and its determinants in nursing homes in France, season 2007-2008

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# Background

- Influenza: a threat in nursing homes
  - Rapid spread
  - High risk persons: 65 years+ /dependency
- Acute respiratory infections: leading cause of mortality by infection
  - ⇒ Vaccination of staff/ residents is recommended in french nursing homes
- Few data of this coverage



# Objectives

- To measure, in French nursing homes during the 2007-2008 season:
  - Staff influenza vaccination coverage
  - Association staff vaccination coverage / nursing homes' characteristics
  - Residents' influenza vaccine coverage



# Population and Methods



# Population

**NURSING HOMES IN FRANCE (100%)**

**Medico-social institutions**

**Elderly Care Residences  
ECR (61 %)**

**Apartments for seniors  
(28 %)**

**Temporary housings  
(1 %)**

**Healthcare institutions**

**Long Term Care Facilities  
LTCF (10 %)**

- Living conditions close / community
- Less dependent residents
- Fewer employees



# Sample

- Sampling frame: Finess
- Population size: **N= 7,420**
- Simple random sampling
- Sample size: **n= 2,276**
- Stratification
  - Elderly Care Residences : type/ size/ geographical area
  - Long Term Care Facilities: exhaustive





# Analysis

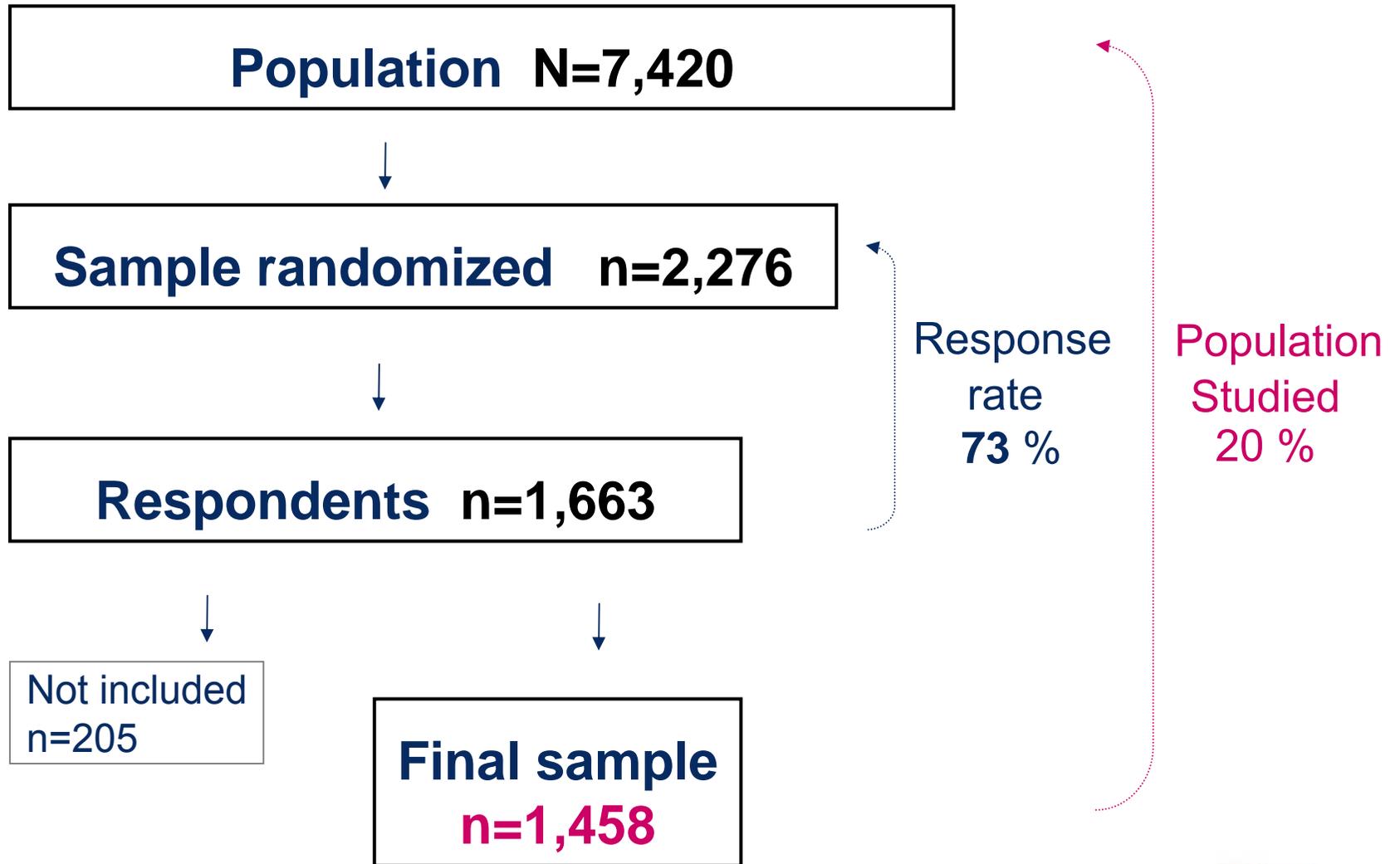
- Analysis performed according to sampling design
- Vaccination coverage rates: % and 95% confidence intervals
- Multivariate analysis: determinants of staff vaccination
  - Aggregated data
  - Poisson regression: not used (overdispersion)
  - ⇒ **Negative binomial regression**
  - Variables with strong association → multivariate model



# Results



# Sample





# Vaccination coverage of staff (1)

|                         | vaccination coverage |                |
|-------------------------|----------------------|----------------|
|                         | %                    | [95% CI]       |
| <b>Total</b>            | <b>34</b>            | <b>[32-35]</b> |
| <b>Physicians</b>       | <b>69</b>            | <b>[63-74]</b> |
| <b>Nurses</b>           | <b>46</b>            | <b>[43-48]</b> |
| <b>Nurse assistants</b> | <b>34</b>            | <b>[32-36]</b> |
| Cleaning staff          | 34                   | [32-37]        |
| Recreational staff      | 46                   | [42-50]        |
| Administrative staff    | 37                   | [33-40]        |



## Vaccination coverage for staff (2)

|                  | Vaccination coverage % [95 % CI] |             |            |
|------------------|----------------------------------|-------------|------------|
|                  | Public ECR                       | Private ECR | LTCF       |
| Total            | 28 [26-30]                       | 42 [38-46]  | 29 [26-32] |
| Physicians       | 58 [49-68]                       | 83 [73-92]  | 64 [59-69] |
| Nurses           | 41 [38-44]                       | 59 [54-64]  | 35 [32-38] |
| Nurse assistants | 28 [26-31]                       | 45 [42-49]  | 27 [24-29] |
| Other            | 28 [26-31]                       | 40 [36-45]  | 32 [28-37] |



## Determinants (1) - All staff

|  | RR  | [95% CI]    | p                 |
|--|-----|-------------|-------------------|
| <b><u>Categories of nursing home</u></b> |     |             |                   |
| Private ECR                              | 1   |             |                   |
| Public ECR                               | 0.7 | [0.6 - 0.9] | <10 <sup>-3</sup> |
| LTCF                                     | 0.7 | [0.6 - 0.9] | 0.001             |
| <b><u>Free vaccination</u></b>           |     |             |                   |
| No                                       | 1   |             |                   |
| Yes                                      | 2.6 | [1.8 - 3.6] | <10 <sup>-3</sup> |
| <b><u>Geographical area</u></b>          |     |             |                   |
| Nord                                     | 1   |             |                   |
| Ile-de-France                            | 1.3 | [0.9 - 1.8] | 0.149             |
| Bassin Parisien                          | 1.4 | [1.1 - 1.8] | 0.002             |
| Est                                      | 1.1 | [1.0 - 1.4] | 0.471             |
| Ouest                                    | 1.2 | [1.0 - 1.6] | 0.065             |
| Sud - Ouest                              | 1.1 | [0.9 - 1.3] | 0.496             |
| Centre Est                               | 1.1 | [1.0 - 1.5] | 0.364             |
| Méditerranée                             | 1.3 | [1.0 - 1.8] | 0.038             |
| <b><u>Training/ staff meeting</u></b>    |     |             |                   |
| No                                       | 1   |             |                   |
| Yes                                      | 1.1 | [1.0 - 1.3] | 0.144             |



## Determinants (2) - Nurses/Nurse assistants

|  | RR  | [95 % CI]   | p     |
|--|-----|-------------|-------|
| <b><u>Categories of nursing home</u></b>           |     |             |       |
| Private ECR  | 1   |             |       |
| Public ECR   | 0.7 | [0.7 - 0.8] | <10-3 |
| LTCF   | 0.6 | [0.6 - 0.7] | <10-3 |
| <b><u>Free vaccination</u></b>                     |     |             |       |
| No   | 1   |             |       |
| Yes  | 1.9 | [1.2 - 3.0] | 0,009 |
| <b><u>Training / information</u></b>               |     |             |       |
| No   | 1   |             |       |
| Yes  | 1.2 | [1.1 - 1.3] | <10-3 |
| <b><u>Size of institution (number of beds)</u></b> |     |             |       |
| >150   | 1   |             |       |
| [150 - 100[  | 1.3 | [1.1 - 1.5] | 0,005 |
| [100 - 50[   | 1.4 | [1.2 - 1.7] | <10-3 |
| ≤ 50   | 1.6 | [1.4 - 2.0] | <10-3 |



# Vaccination coverage for residents

|                                   | Vaccination coverage |                  |
|-----------------------------------|----------------------|------------------|
|                                   | %                    | [95% CI]         |
| <b>Total</b>                      | <b>91</b>            | <b>[90 – 92]</b> |
| <b>Categories of nursing home</b> |                      |                  |
| Private ECR                       | 91                   | [89 – 92]        |
| Public ECR                        | 91                   | [90 – 93]        |
| <b>LTCF</b>                       | <b>95</b>            | <b>[94 – 96]</b> |



# Discussion (1)

- Staff VC: 34 % → insufficient  
→ needs to be improved
- Particularly among
  - Nurses and nurse assistants
  - Public nursing homes
  - Large nursing homes
- Highest coverage
  - Free vaccination offered
  - Training/ formations had been given (for nurse and nurse assistant coverage)
- For residents coverage was high with 91 %



## Discussion (2)

- High response rate
- But limitations of the study:
  - Aggregated information
  - No confirmation of vaccination status
  - Responses by a single member of staff



# Conclusions

- First randomized study providing national information on influenza vaccine coverage in nursing homes in France
- Results useful to guide influenza vaccination policy in French nursing homes



# Acknowledgements

- All participants in nursing homes
- JC. Desenclos, InVS
- C. Six, Cire Sud
- Y. Le Strat, InVS Biostatistics
- DMI Secreteriat, InVS
- J. Nicolau, InVS SSI
- G. Vansteene, InVS Publishing
- L. King, InVS
- G. Lagnado , K. Manzies, A. Du Castel, V. Bousquet