NIJZ Nacionalni inštitut za javno zdravje

Outbreak of influenza A (H3N2) in a residence for mentally disabled persons in Ljubljana, Slovenia, 2013

Epidemiology and Public Health

Valencia, Spain

4th August 2015

Outbreak of influenza A: Background

- **Outbreak alert:** 27 January 2013
- 3 persons with acute respiratory symptoms in a LTCF for mentally disabled in Ljubljana occurred 25 January

  48 residents; 45 employees (1 GP, 2 nurses);

  majority bed–bound, skilled care/rehabilitation
- **Outbreak control team:** convened on 27 January
- **Objective:** to characterize outbreak, identify factors associated with contracting infection, recommend control measures

Outbreak of influenza A: Case finding and description

- **Case:** resident or employee of the residence for mentally disabled with fever (≥37.5°C) and cough or any other additional sy

  between January 25 and 29, 2013 (ILI) +

  LAB confirmed influenza virus (confirmed)

- **Microbiology:** respiratory pathogens, including influenza viruses

Outbreak of influenza A: Results

- Index case: 35 yr old employee

8 cases among residents (17% of all residents);

5 cases among staff (11% of all staff)

Age: average: 36.8 yrs (range: 13-51); 40-59 yrs: 54%

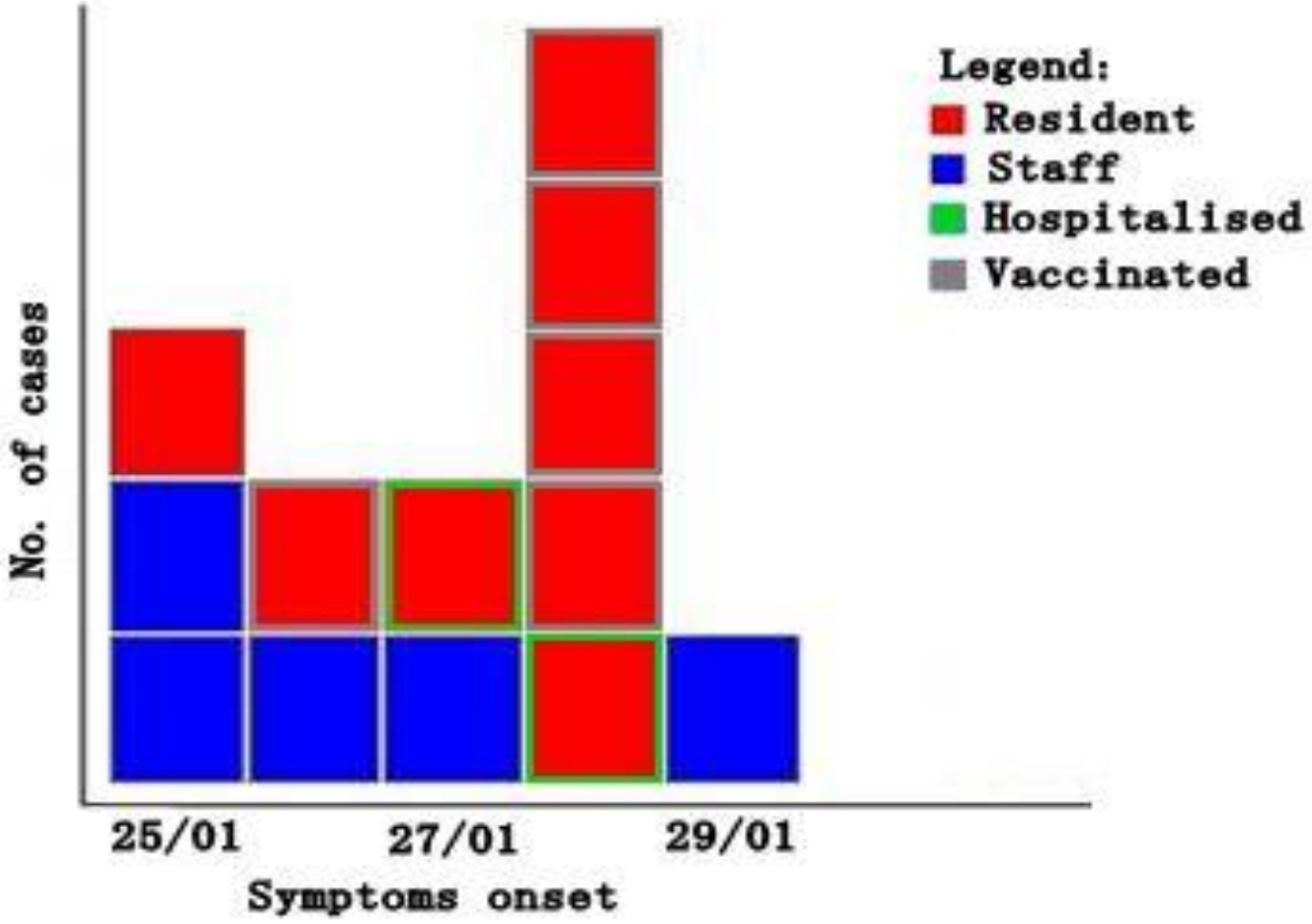
Female:male=1.6:1

Bed–ridden: 100% of all residents

Vaccinated: 0 staff, 5 residents;

24 (50% of all residents), 7 (16% of all staff)

Outbreak of influenza A:
Cases of influenza by date of onset



Outbreak of influenza A: Results

- Staff: first cases, presentation dispersed
- Residents: peak of the outbreak
- Hospitalized: 2 residents

- Laboratory investigation:

– Influenza A (H3N2): 2 cases

– Negative for other respiratory pathogens

Outbreak of influenza A: Symptoms and signs reported by cases

Clinical manifestation	No. of individuals (%)
Fever	13 (100)
Cough	10 (76.9)
Sore throat	5 (38.5)
Myalgia	5 (38.5)
Headache	5 (38.5)
Pneumonia	2 (15.4)

Outbreak of influenza A: Control measures

- Hand hygiene/disinfection, personal protective equipment, airing of rooms,
- Excluding ill staff, no residents group activities until 7 days after cessation of symptoms
- Cohort isolation of symptomatic residents
- Reducing staff exchange, no new admissions

Outbreak of influenza A: Conclusions

- Staff possibly initiated and contributed to the maintenance of transmission
- To comply with vaccination recommendations, especially for staff working with persons with risk factors

Influenza outbreaks in facilities: Surveillance

- Sentinel network of GPs
- Weekly No. of consultations for ILI
- Samples of nasal swabs

- **Influenza viruses and type identification**

Influenza outbreaks in facilities: Case finding and definition

- **Case:** fever and cough and ≥1 additional symptom (sore throat, arthralgia, myalgia, prostration) (ILI)

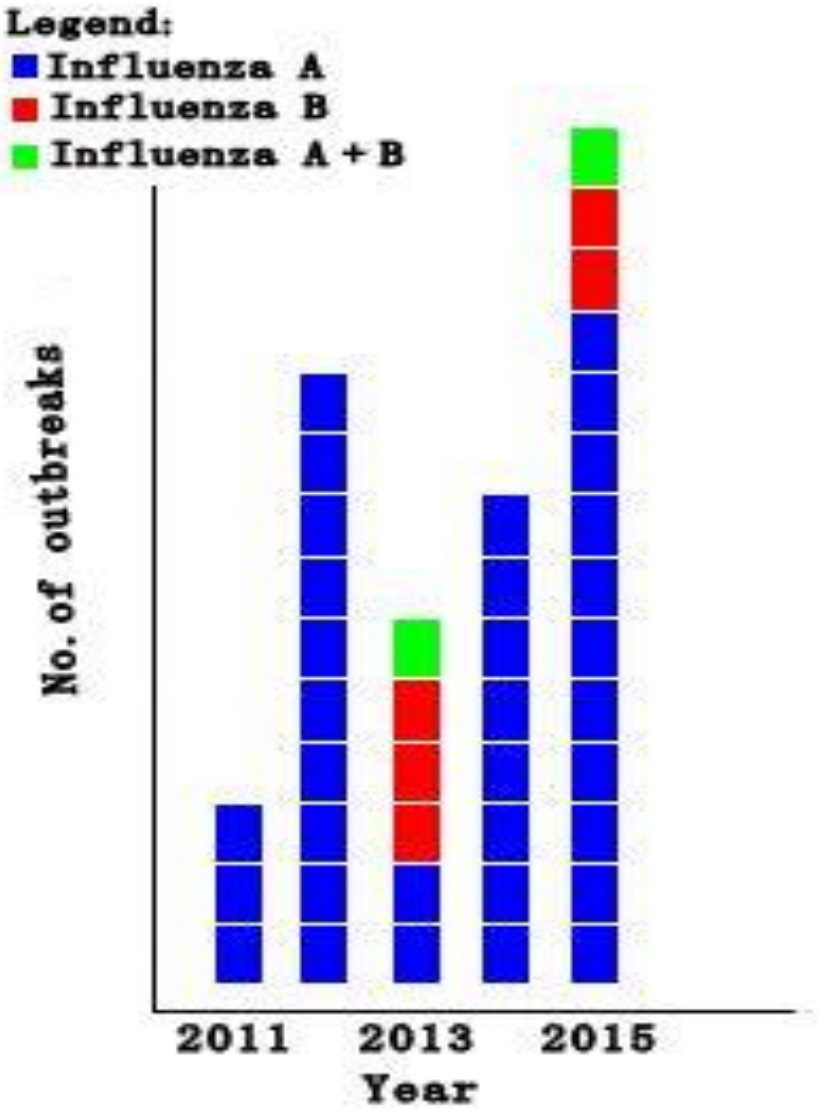
  laboratory confirmed influenza (confirmed)

- **Outbreak in facility:** ≥2 cases within 7 days and with evidence with spread

Influenza outbreaks in facilities: Measures

- Notification of PH authorities
- Nasopharyngeal swabs for influenza testing
- Implementation of infection control measures
- Antiviral chemoprophylaxis

Influenza outbreaks in facilities per year: 2011–2015



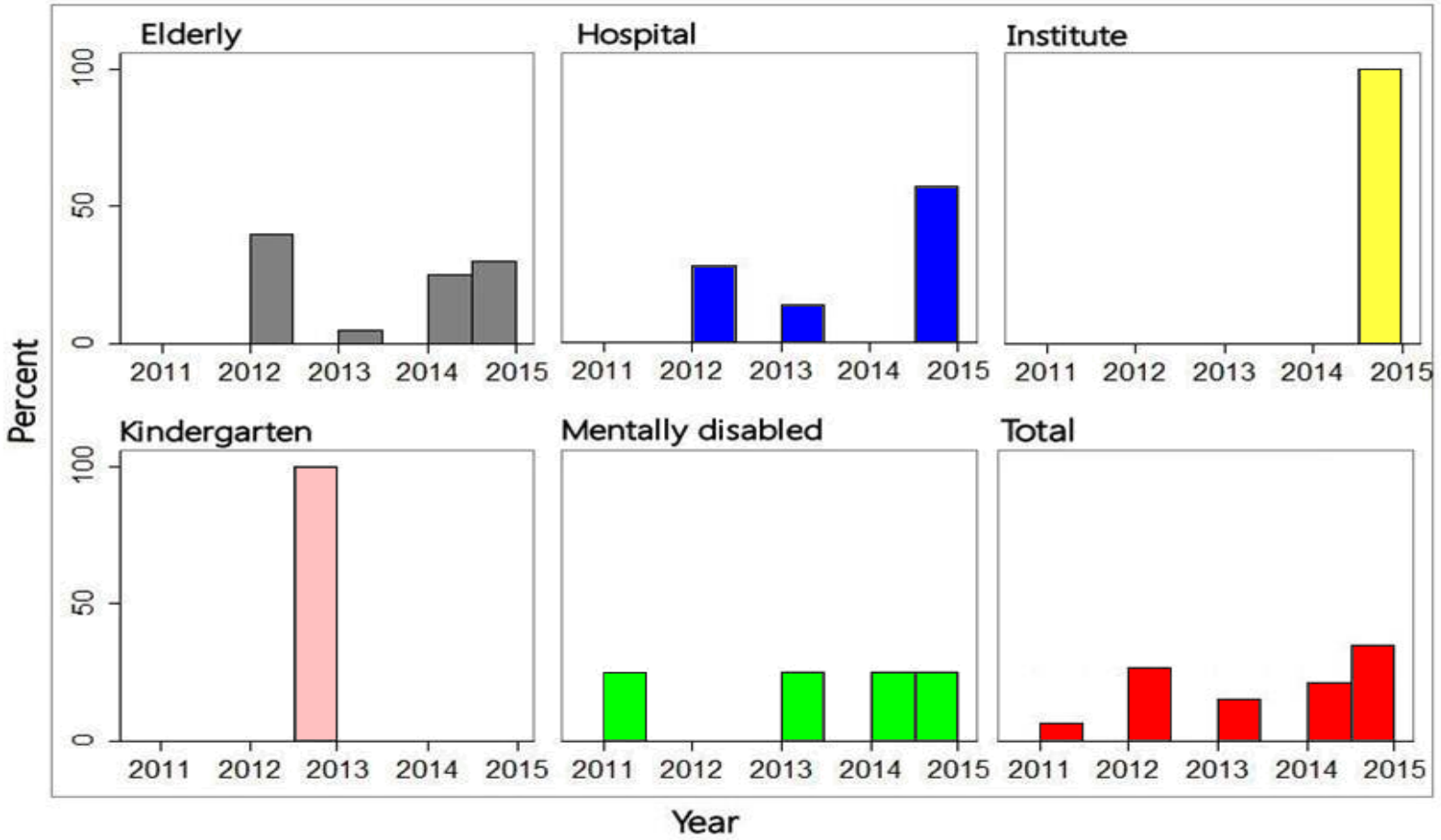
Influenza outbreaks in facilities per month: 2011–2015

Month	Number of outbreaks (%)
Jan	10 (24.4)
Feb	20 (48.8)
March	10 (24.4)
April	1 (2.4)

Influenza outbreaks in facilities, duration: 2011–2015

Year	Number of outbreaks (%)	Average duration (Min–Max) (days)
2011	3 (7.3)	13 (6–17)
2012	10 (24.4)	13 (2–24)
2013	6 (14.6)	11 (2–31)
2014	8 (19.5)	23 (7–49)
2015	14 (34.2)	11 (2–22)
All outbreaks	41 (100)	14 (2–49)

Influenza outbreaks in facilities, distribution: 2011–2015



Legend: Elderly: Long-term-care facility for the elderly; Mentally disabled: Long-term-care facility for mentally disabled.

Attack rates by facility type: 2011–2015

Facility	Number of outbreaks (%)	AR (Average)	AR (Min-Max)
Elderly	20 (48.8)	20.3	5.2–42.3
Hospital	7 (17.1)	20.5	11.1–40.0
Kindergarten	1 (2.4)	34.2	
Institute	1 (2.4)	16.3	
Mentally disabled	12 (29.3)	20.3	5.2–38.9
All outbreaks	41 (100)	20.6	3.1–42.3

Hospitalization rates by facility type: 2011–2015

Facility	Number of outbreaks	HR (Average)	HR (Min-Max)
Elderly	20 (48.8)	7.5	0–37.0
Hospital	7 (17.1)	5.7	0–40.0
Institute	1 (2.4)	0	
Kindergarten	1 (2.4)	7.3	
Mentally disabled	12 (29.3)	11.5	0–40.0
All outbreaks	41 (100)	8.0	0–40.0

Attack rates by influenza virus type: 2011–2015

Influenza virus	Number of outbreaks (%)	AR (Median)	AR (Q1-Q3)
A	34 (82.9)	16.0	13.1–26.1
B	5 (12.2)	20.2	11.5–24.0
A+B	2 (4.9)	25.2	16.3–34.2
All outbreaks	41 (100)	20.0	13.1–26.1

Influenza outbreaks in facilities, MVA: 2011–2015

- Delayed notification was associated with increase in the **death rate** among residents ($p < 0.001$) and outbreak **duration** ($p=0.027$) regardless of facility type/size and viral aetiology
- The effects of facility type/size and viral aetiology on the average residents' death and attack rates, duration of outbreaks and time to report to PH authorities was not significant

Influenza outbreaks in facilities, conclusion: 2011–2015

- Timely identification and reporting of influenza outbreaks to PH authorities and prompt implementation of competent infection control measures by PH authorities:

– Shorter **duration** of outbreaks

– Lower **mortality** among the infected residents

Thank you for your attention!

Additional slides

Outbreak of influenza A: Recommendations

- Outbreaks of influenza should be reported as soon as possible to put control measures in time and prevent future occurrences in LTCFs
- Rapid agent identification crucial to control spread of infection
- Staff vaccine uptake focus

– Optimal vaccine provision models

– Public health support

Influenza outbreaks in facilities: Risk factors

- Outbreaks of influenza reported every year
  - **Risk factors:** age, comorbidities, dementia (institutionalised elderly), shortage of staff, insufficient knowledge of infection control measures
  - More severe and longer duration

Residents in long–term care facilities (LTCF)

- Anatomical and functional changes
- Comorbidities/polimedication
- Implants, catheters
- Malnutrition
- Frequent/prolonged ambulatory care and hospitalization
- Multiple diagnostic and therapeutic interventions
- Closed environment
- Limited mobility

- **Increased susceptibility to infections**

Influenza in residents of LTCF

- Symptoms atypical or absent
- Diagnosis unrecognized and/or undertreated
- Prolonged hospital stay
- Low influenza vaccination coverage

- **Higher morbidity and mortality**