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Severe Acute Respiratory Infections (SARI) surveillance in over-65-years-old patients: the experience of a University hospital (seasons 2017-2018 and 2018-2019)

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Key words: Severe acute respiratory infections, surveillance, over-65-years-old patients
Parole chiave: Infezioni respiratorie acute e severe, sorveglianza, pazienti ultra-sessantacinquenni

Abstract

Background. *Influenza is a relevant public health problem, also due to the risk of complications. The most effective measure to prevent influenza is vaccination; therefore, at present, there is consensus among European countries, regarding the need for routine seasonal influenza vaccination of elderly and individuals at increased risk of severe influenza. At the same time, influenza surveillance is necessary to understand the viruses circulating and effectiveness of vaccination strategies. The present study reports the results of two seasons influenza surveillance (2017/2018 and 2018/2019) conduced in an University Hospital in Rome among hospitalized patients aged ≥65 years.*

Study design. *A prospective cohort study.*

Methods. *The study consisted of systematic daily screening of all admissions among patients aged ≥65 years meeting a syndromic SARI case definition during two consecutive influenza seasons: 2017/2018 and 2018/2019. Characteristics of patients and their risk factors were collected by a standardized questionnaire and nose-pharyngeal swabs were performed to each patient. Influenza vaccine effectiveness (IVE), rates of vaccinated subjects and case fatality rate were also evaluated.*

Results. *Influenza was laboratory confirmed in 11 (9.9%) of the 111 and 11 (9.6%) of the 115 enrolled patients in seasons 2017/18 and 2018/19, respectively. Adjusted IVE against all influenza type, calculated for each season, was 88.5% (95% CI: 38.9 to 97.8) and 61.7% (95% CI: -59.9 to 90.9) for 2017/2018 and 2018/2019 seasons, respectively. Our analysis shows a Case Fatality Rate of 2.7% and 4.3% for the 2017/18 and 2018/19 seasons, respectively.*

Conclusions. *The surveillance of SARI conduced in one hospital in Rome confirmed that influenza is an important cause of hospital admissions. Routine monitoring of infectious diseases and related aetiology associated with SARI, also at the local-level, is useful for targeting the right preventive measures.*

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Introduction

Influenza is a relevant public health problem, resulting in about 3 to 5 million cases of severe illness, and about 290 000 to 650 000 respiratory deaths annually (1, 2). The risk of complications from influenza, including lower respiratory tract infection, hospital admission, and death, may vary depending on different factors, such as age and type of comorbidity that may be present (3, 4).

With regard to our continent, before the 2009 influenza A(H1N1) pandemic, most European Union (EU) Member States had developed preparedness plans in order to timely respond to an eventual epidemic or pandemic. Many of these plans involve explicit or implicit planning assumptions on what can be expected during an epidemic or pandemic and on how a pandemic virus might behave (5). This is particularly important in a world characterized by global movements of population (6). According to international organizations, the most effective measure to prevent influenza and reduce the burden of influenza is vaccination (1, 7). Influenza vaccines have been shown to be effective in preventing influenza, even though immune responses to vaccination may be suboptimal, particularly in preventing influenza-related mortality and morbidity in elderly (8, 9). At present, there is consensus among EU countries, including Italy, regarding the routine seasonal influenza vaccination of elderly (≥65) and individuals at increased risk of influenza complications (10, 11).

Vaccination and other non-pharmaceutical interventions, including frequent hand-washing and correct respiratory hygiene, are crucial public health interventions to limit the spread of influenza (12). Moreover, another important aspect of influenza mitigation and containment is a well-established and integrated surveillance schemes to understand the impact of infections in different settings and the impact of vaccination strategies in target groups. In particular, the 2009 influenza pandemic highlighted the need for more global data and routinely monitoring severe influenza disease, which lead the WHO recommended establishment of sentinel hospital-based surveillance of severe acute respiratory infections (SARI) as well as influenza-like illness (ILI) in outpatients (13, 14). These efforts can help describe influenza seasonality, identify influenza isolates for vaccines, and develop plans for pandemic preparedness at national level.

For this reason, aside from vaccination, integrated influenza surveillance is crucial to understand the circulating influenza viruses and effectiveness of vaccination strategies implemented, especially in elderly (15).

In this context, the present study reports the results of SARI surveillance conducted in two consecutive influenza seasons (2017/2018 and 2018/2019) among hospitalized patients aged ≥65 years at Sant'Andrea University hospital in Rome, in the Lazio region in Italy. The main objective is to describe clinical characteristics and epidemiological features of SARI cases hospitalized during two consecutive seasons, and to explore risks for a severe outcome in influenza confirmed patients.

Methods

Study design and population

A prospective cohort study was designed at Sant'Andrea hospital in Rome during two consecutive influenza seasons: 2017/2018 and 2018/2019. The study consisted in the systematic daily screening and recruitment of patients aged ≥65 years admitted at the emergency department (ED) that meet the SARI case definition. To this purpose, we defined a SARI case as a hospitalized patient with at least one systemic sign or symptom (fever or low-grade fever, headache, myalgia, or generalized malaise) or deterioration of

general conditions (fatigue, weight loss, anorexia, or confusion and dizziness), and at least one respiratory sign or symptom (cough, sore throat, breathing difficulties) present at the time of admission or within 48 h after admission to the hospital (4, 16).

The symptoms onset (or the aggravation of the basic conditions, if chronic) must not exceed 7 days before admission to the hospital. Moreover, patients having contraindications for flu vaccination, institutionalized or carried out antiviral therapy or having had previously confirmed influenza diseases in the same season were also excluded from the study.

Case findings and study period

On the basis of a standardized data collection format, data on patients' characteristics and risk factors associated with SARI, were extracted directly from the hospital electronic clinical records. Then data were validated and, if necessary, integrated directly interviewing patients.

The study period was defined between week 47-2017 (20-26 November 2017) and week 15-2018 (9-15 April 2018) for 2017/2018 season, and between week 47-2018 (19-25 November 2018) and week 17-2019 (22-28 April 2019) for 2018/2019 season. Patients positive for influenza were classified as influenza confirmed SARI cases.

Laboratory analysis

Patients identified as SARI cases, underwent two nose-pharyngeal swabs. Each sample was analysed with two methods: by a rapid chromatographic test (Rapid Influenza A+B test, Immunospark, Pomezia (RM), Italy) and by Real-time PCR (FTD FLU IVD, fast-track diagnostics, Siemens, Italy, for season 2017/18; Influenza A&B test, Alere, Italy, for season 2018/19).

Statistical analysis

All variables collected, were described as mean and SD or proportions as appropriate. The rates of vaccinated subjects, vaccine type used and vaccine effectiveness between the two seasons of influenza surveillance were compared.

Estimates of influenza vaccine effectiveness (VE) were calculated for all influenza viruses and all seasonal vaccines. Crude point estimates of VE were calculated using the odds ratio (OR) of vaccination for influenza-positive SARI patients vs influenza-negative SARI patients, with the formula VE = 1 – OR. Ninety-five percent confidence intervals (95% CIs) were computed around point estimates.

We also estimated the case fatality rate (CFR) of all enrolled SARI patients in the study.

Data on regional ILI rates in the Lazio general population, in the two seasons considered were derived from the National influenza surveillance scheme –InfluNet (Influnet). The InfluNet surveillance system is based on weekly report of cases of ILI collected by sentinel general practitioners and paediatricians by age and vaccine status (Influnet).The study protocol was approved by the Ethics Committee of the "Cantacuzino" National Medico-Military Institute for Research and Development—approvals number 46/03.09.2015, 108/07.09.2016, and 251/14.09.2017.

Moreover, in order to estimate the strength of the association between SARI and different risk factors and to compare the vaccine effectiveness, a nested case-control study was conducted. To this purpose, aside the enrolled subjects (cases), additional patents meeting the SARI definition but with at least one exclusion criterion, were used as controls for the two seasons respectively.

Statistical analysis was carried out using the Stata software, version 16.0 (StataCorp 2019, College Station, Texas, USA).

Ethical approval and consent

The study protocol was approved by the Ethics Committee of *Sapienza*

University of Rome (number 4691/2017 and 5149_2018).

Results

Overall, the number of emergency room visits at Sant'Andrea University hospital for any cause, in the two considered seasons was 45,147; of which, 17,992 and 27,155 for 2017/18 and 2018/19 seasons, respectively. Among them, patients ≥65 years old were 5,399 and 8,074 in the two seasons respectively. Of these, 2,494 and 1,496 were admitted as potentially SARI in the two seasons respectively. According to our SARI definition, 226 patients were enrolled (111 in 2017/2018 season and 115 in 2018/2019 season). Twenty-two SARI cases were confirmed as influenza (Figure 1, Table 1).

Figure 1 reports the epidemic curve of SARI cases enrolled in the study in the two seasons compared to the ILI incidence rate per 1,000 inhabitants in Lazio region by week of symptom onset, for all ages and for ≥65 years old patients (17).

As regard to the clinical presentation of SARI, the short breath and malaise were the most frequent symptoms in both seasons, as shown in Figure 2.

Out of a total of 226 cases recruited in the two influenza seasons, 22 samples were positive to the Real-time PCR test and 204 were negative. Among the 22 positive to the PCR, that was considered the gold standard (18, 19), 3 samples tested positive also by chromatographic test, while 19 were negative. Sensitivity and specificity of the chromatographic test accounted at 13.6% (95% CI: 2.91 to 34.9) and 100% (95% CI: 98.2 to 100), respectively.

Influenza was laboratory confirmed in 11 (9.9%) patients (9 for type A virus and 2 for type B) and 11 (9.6%) patients (all for type A) in seasons 2017/18 and 2018/19, respectively (Tab 1).

During the 2017/18 season, a statistically significant difference between laboratory positive and negative enrolled SARI cases with regard to vaccination status for the current season (p=0.003) and for the two previous seasons (respectively p=0.005 and p=0.008) was reported. A statistically significant difference between patients tested positive and negative was reported also for the presence of heart disease (p=0.018). With regard to 2018/19 season, no significant differences were reported (Table 2).

Our analysis shows a SARI Case Fatality Rate of 2.7% (3 patients) and 4.3% (5 patients) for the 2017/18 and 2018/19 seasons,

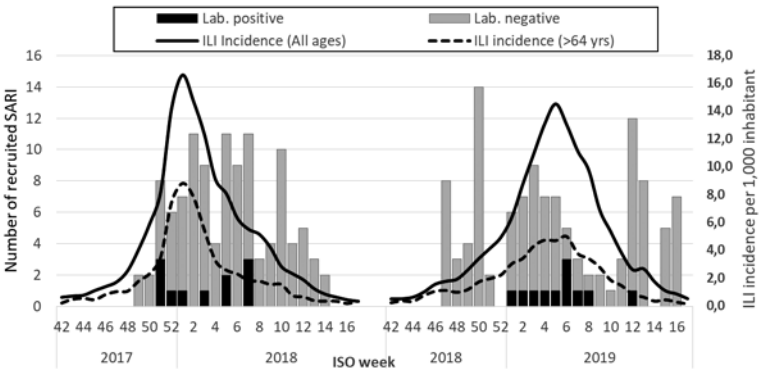

Figure 1 - Distribution of SARI cases recruited in the study and Lazio region ILI incidence rate by week of symptom onset.

Table 1 - SARI Cases distributed according to laboratory confirmation for seasons 2017/18 and 2018/19

	Positive			Negative
	Type A	Type B	Total	
Season 2017/18	9	2	11 (9.9 %)	100 (90.1 %)
Season 2018/19	11	0	11 (9.6 %)	104 (90.6 %)

Table 2 - Characteristics of SARI cases enrolled stratified according to laboratory confirmation and influenza season.

	Season 2017/18			Season 2018/19		
	Test Positive (N=11) N (%)	Test Negative (N=100) N (%)	p-value	Test Positive (N=11) N (%)	Test Negative (N=104) N (%)	p-value
Mean age	76.1	78.3	0.291	76.5	78.1	0.494
Aged 65-79 years	8 (72.7)	57 (57.0)	0.315	9 (81.8)	58 (55.8)	0.096
Sex = male	5 (45.4)	57 (57.0)	0.464	6 (54.5)	59 (56.7)	0.889
Number of hospitalisation in past 12 months	0.4	0.6	0.610	1.4	0.7	0.081
Number of GP visits in past 12 months	2.6	2.7	0.936	4.5	4.0	0.467
Vaccination status						
Season 2018-19	-	-	-	3 (27.3)	59 (56.7)	0.062
Season 2017-18	2 (18.2)	65 (65.0)	0.003	3 (27.3)	62 (59.6)	0.055
Season 2016-17	1 (9.1)	54 (54.0)	0.005	1 (9.1)	29 (27.9)	0.071
Season 2015-16	1 (9.1)	51 (51.0)	0.008	-	-	-
Underlying conditions						
Diabetes	4 (36.4)	37 (37.0)	0.967	3 (27.3)	42 (40.4)	0.397
Heart disease	5 (45.4)	78 (78.0)	0.018	8 (72.7)	75 (72.1)	0.966
Lung disease	8 (72.7)	55 (55.0)	0.260	4 (36.4)	62 (59.6)	0.138
Immune suppressed	0 (0.0)	0 (0.0)	-	0 (0.0)	0 (0.0)	-
Cancer	2 (18.2)	18 (18.0)	0.988	2 (18.2)	19 (18.3)	0.994
Renal disease	1 (9.1)	12 (12.0)	0.776	1 (9.1)	14 (13.5)	0.682
Dementia or stroke	1 (9.1)	7 (7.0)	0.799	2 (18.2)	6 (5.8)	0.124
Rheumatologic disease	0 (0.0)	6 (6.0)	0.404	0 (0.0)	0 (0.0)	-
Obese	2 (18.2)	5 (5.0)	0.088	1 (9.1)	18 (17.3)	0.485
Any underlying condition	9 (81.8)	95 (95.0)	0.088	11 (100.0)	96 (92.3)	0.340
Diagnoses related to deterioration						
General deterioration	1 (9.1)	11 (11.0)	0.847	na	Na	na
Dependency	1 (9.1)	11 (11.0)	0.847	1 (9.1)	9 (8.6)	0.961

respectively. Moreover, in the 2017/18 season, 73 patients (65.8%) were discharged, 30 patients (27%) were transferred to other healthcare facilities and 5 patients (4.5%) refused the hospitalization. Instead, in the 2018/19 season, 73 patients (63.5%) were discharged, 34 patients (29.6%) were transferred to other healthcare facilities, 2 patients (1.7%) refused the hospitalization and 1 patient (0.9%) voluntarily refuse

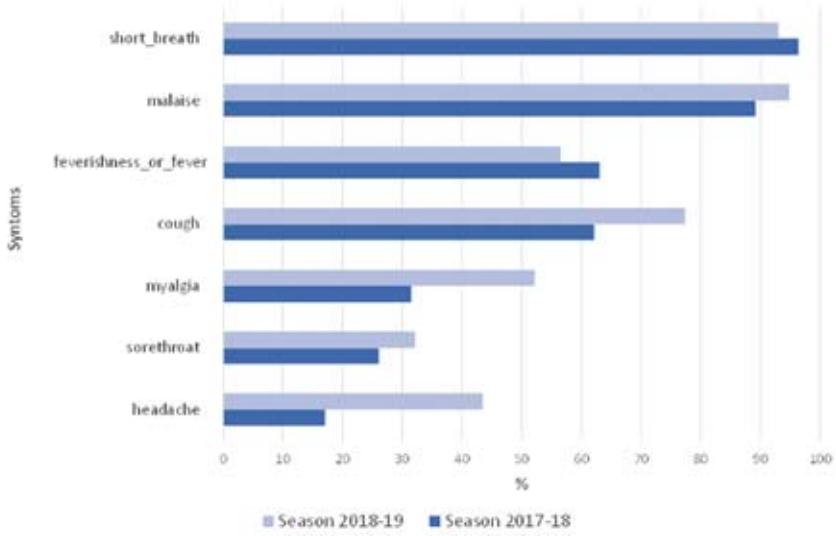

Figure 2 - Symptoms of SARI by influenza seasons.

further treatment against the advice of health care personnel.

Adjusted influenza VE against all influenza type, calculated for each season, was 88.5% (95% CI: 38.9 to 97.8) and 61.7% (95% CI: -59.9 to 90.9) for 2017/2018 and 2018/2019 seasons, respectively.

During 2017/18 season, among the 111 patients enrolled as cases, 67 (60.4%) patients were vaccinated (Table 3): 57 (90.5%) received a trivalent inactivated and adjuvated subunit flu vaccine; 6 patients received a trivalent non adjuvated inactivated subunit flu vaccine; in 4 cases it was not possible to ascertain the vaccine type. Moreover, in the same season, 98 patients affected by SARI, but with at least one exclusion foreseen by the study protocol, were used as controls for the case-control study. Different causes of exclusion were identified: 34 patients were institutionalized, 20 patients had general contraindications for vaccination, 14 cases had a confirmed influenza in the same season, 2 patients had previously taken antiviral drugs before entering in ED and, finally, in 28 cases the symptoms onset was more than 7 days before the admission to the hospital. Overall, 40 of them were vaccinated (Table 3): 39 received trivalent inactivated and adjuvated subunit flu vaccine and only 1 received trivalent non adjuvated inactivated subunit flu vaccine.

During 2018/19 season, among the 115 patients enrolled as cases, 62 (53.9%) patients were vaccinated (Table 3): 31 patients, received trivalent inactivated and adjuvated subunit flu vaccine and 31 patients received quadrivalent inactivated split influenza vaccine. Moreover, in the same season, 100 patients affected by SARI, but with at least one exclusion foreseen by the study protocol, were used as controls for the case-control study. Different causes of exclusion were identified: 44 patients were institutionalized, 26 patients had general contraindications for vaccination, and in 34 cases the symptoms onset was more than 7 days before the admission to the hospital. Overall, 41 of them were vaccinated (Table 3): all of them by trivalent inactivated and adjuvated subunit flu vaccine.

Table 3 reports the results of the case-control-study (SARI cases vs controls). Some clinical features were more represented

Table 3 - Characteristics of cases and controls stratified according to influenza season.

	Season 2017/18			Season 2018/19		
	Controls (N=98) N (%)	SARI cases (N=111) N (%)	p-value	controls (N=100) N (%)	SARI cases (N=115) N (%)	p-value
Age (Mean ± SE)	79.4 ± 0.82	78.1 ± 0.62	0.206	76.1 ± 0.67	78.0 ± 0.69	0.050
Aged 85+ years	45 (45.9)	46 (41.4)	0.515	31 (31.0)	48 (41.7)	0.103
Sex = male	56 (57.1)	62 (55.9)	0.851	53 (53.0)	65 (56.5)	0.605
N° hospitalisation in past 12 months (Mean ± SE)	0.75 ± 0.11	0.61 ± 0.10	0.374	n.a.	n.a.	n.a.
Vaccination status						
Season 2018-19	-	-	-	41 (41.0)	62 (53.9)	0.059
Season 2017-18	45 (46.4)	67 (60.4)	0.044	40 (43.5)	65 (58.6)	0.032
Season 2016-17	38 (43.2)	55 (49.5)	0.371	27 (33.7)	30 (42.2)	0.282
Season 2015-16	37 (42.5)	52 (47.3)	0.506	-	-	-
Underlying conditions						
Diabetes	38 (38.8)	41 (36.9)	0.784	33 (33.0)	45 (39.1)	0.351
Heart disease	78 (79.6)	83 (74.8)	0.409	42 (42.0)	83 (72.2)	<0.001
Lung disease	65 (66.3)	63 (56.8)	0.156	44 (44.0)	66 (57.4)	0.050
Liver disease	17 (17.3)	4 (3.5)	0.001	15 (15.0)	7 (6.1)	0.031
Immune suppressed	18 (18.4)	0 (0.0)	<0.001	12 (12.0)	0 (0.0)	<0.001
Cancer	12 (12.2)	3 (2.7)	0.008	3 (3.0)	1 (0.9)	0.249
Renal disease	27 (27.5)	13 (11.7)	0.004	28 (28.0)	15 (13.0)	0.006
Dementia or stroke	12 (12.2)	8 (7.2)	0.217	15 (15.0)	8 (7.0)	0.057
Rheumatologic disease	15 (15.3)	6 (5.4)	0.018	26 (26.0)	0 (0.0)	<0.001
Obese	32 (32.6)	7 (6.3)	<0.001	21 (21.0)	19 (16.5)	0.400
Any underlying condition	93 (94.9)	104 (93.7)	0.709	97 (97.0)	107 (93.0)	0.189
Diagnoses related to deterioration						
General deterioration	40 (41.7)	12 (10.8)	<0.001	n.a.	n.a.	n.a.
Dependency	9 (9.9)	12 (10.8)	0.831	20 (20.0)	10 (8.7)	0.017
Syntoms						
Feverishness or fever	75 (77.3)	70 (63.1)	0.026	58 (58.0)	65 (56.5)	0.827
Malaise	81 (89.0)	99 (89.2)	0.968	49 (57.6)	109 (94.8)	<0.001
Headache	35 (38.9)	19 (17.1)	0.001	51 (57.3)	50 (43.5)	0.050
Myalgia	45 (46.9)	35 (31.5)	0.024	54 (60.0)	60 (52.2)	0.263
Cough	66 (67.3)	69 (62.2)	0.434	58 (61.7)	89 (77.4)	0.014
Sorethroat	27 (32.5)	29 (26.1)	0.330	37 (50.7)	37 (32.2)	0.011
Short breath	87 (88.8)	107 (96.4	0.033	65 (69.9)	107 (93.0)	<0.001

in the control groups in both seasons: liver disease, immune suppressed, renal disease, rheumatologic disease. While, short breath was more represented in the case group. Moreover, cancer, obesity, general deterioration and myalgia were more reported in the control group in the season 2017/18; instead, heart disease, malaise, and short breath were more reported in the case group, for the season 2018/19.

Discussion and conclusions

The surveillance of SARI at Sant'Andrea hospital in Rome confirmed that influenza is an important cause of hospital admissions. Routine monitoring of syndromic data is one of the pillar of modern disease surveillance applications (20), and data on syndromic surveillance coupled with laboratory analysis may provide a very specific signal during heath event such as SARI epidemic or pandemic, also at local level (16).

During 2017/18 season in Europe, epidemiological data on ILI showed the trend starting to increase in week 47/2017 and a returning to baseline levels in week 18/2018, the incidence peak was reached in week 2/2018 (4, 21). In Italy, the seasonal trend was characterized by an early start and a co-circulation of type A and B influenza viruses, with a prevalence of type B virus (60%), starting from the first weeks of surveillance. This virological data at National level is not consistent with what we observed in our study, where only 18.2% of isolates were type B for 2017/18 season.

During 2018/19 season in Italy, episodes of SARI were recorded between the 20th of November (week 47) 2018 and the 23rd of April (week 16) 2019 (2). Both, the total number of recorded SARI and the number of patients with laboratory-confirmed influenza peaked in weeks 3–6, 2019 (2). Of the 500 cases with laboratory-confirmed influenza reported, only one type B influenza was recorded (2). This data is consistent with the present study where no B type related cases were identified in the same season.

Overall, excess mortality from all causes was reported by the majority of 21 reporting countries during the influenza season and was mainly observed in people aged 65 years or older (22). In our study, case fatality rate was higher in 2018/19 than in 2017/18 season.

In Italy, the vaccination coverage against influenza in the general population (per 100 inhabitants) is around 15% (23). In the season 2017/18 and 2018/19, in the target population aged ≥ 65 years, for which the minimum coverage target is 75%, the vaccination coverage was 52.7% and 49.4%, respectively (4, 23). In our study, we estimated a vaccination coverage of around 60%, but this can be due to the sample selection, since the study enrolled all hospitalized patients that probably have more underling diseases and therefore higher compliance to vaccination.

Our surveillance study has tracked the presence of SARI among high risk groups. Overall, analysing the sample of SARI cases enrolled in the 2 seasons, 498 underlying comorbidities were found: 166 (33.3%) of them attributable to cardiovascular diseases and 129 (25.9%) to respiratory diseases, according with several studies (24). This trend is also confirmed considering the control group of patients who had at least one exclusion criterion. Several influenza mortality studies have shown that the diagnosis of cardiovascular disease was commonly associated with fatal outcomes after influenza (25, 26). In our study heart disease were more reported in the case group than in controls, and the difference was also significant for the season 2018/19. Therefore, individuals with cardiovascular disease must be better targeted for flu vaccination programs in the future.

Analyzing the results of the comparison of risk factors between the patients with SARI and related controls, a lower level of association than the expected values was reported; this result is probably linked to the fact that the inclusion criteria provided by the study protocols do not include all SARI clinical diagnostic criteria. Therefore, it may be appropriate, for next surveillance years, to extend the inclusion criteria of patients to allow for more extensive enrollment that better reflects the spread of SARI in the population during the flu season.

The use of the rapid RT-PCR test for

influenza was confirmed as the gold standard method when compared to other diagnostic tests (18, 19). Furthermore, it is widely demonstrated that the use of RT-PCR optimizes patient management times by reducing the time needed to obtain the laboratory result, with consequences on ward activities and significant impact on the use of antivirals and antibiotics among hospitalized patients (19, 27).

With regard to IVE, our results showed higher level than the 2017/18 and 2018/19 interim estimates from a European influenza network result (21, 28). In fact, interim IVE calculated in hospitalised influenza patients aged 65 years and older was overall 35% (95% CI: 13 to 51) in 2017/18 season and 38% (95% CI: - 12 to 66) in 2018/19 season. Probably, this difference is related to the different timeframe used for the analysis; in fact, our analysis considers the entire flu season while other studies reported partial analysis of VE. Therefore, it would be appropriate to carry out an evaluation of the vaccination effectiveness at the end of the season, in order to better planning subsequent vaccination strategies.

In particular, in our study IVE was higher in 2017/18 than in 2018/19 season and this is consistent to national data (2, 4). In fact, in 2018-2019 season, when there was a main circulation of A viruses, seasonal vaccines were moderately effective against type A influenza overall, but showed a moderate to low VE against subtype A(H3N2) virus (2).

In conclusion, it is confirmed that routine monitoring of infectious diseases and their related etiological agents, also at the local-level, is useful for targeting the right preventive measures (2, 4, 29). This is particularly true for SARI surveillance: COVID-19 experience has demonstrated that routine monitoring may also provide timely data concerning the description of a pandemic (16).

This study has some limitations. First, influenza viruses isolated were not genotyped. This has not allowed the analysis of the precise viruses circulating. Another potential limitation is the dimension of the sample enrolled; in fact, we analysed only a small number of cases coming from one single hospital, that is not representative and referable to a national context. However, we obtained significant results for the 2017/18 season and, given the limited number of data on vaccine effectiveness, in particular in the elderly population, these results can be a useful scientific contribution.

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The Authors declare that they have no conflict of interest.

Riassunto

Sorveglianza delle Infezioni respiratorie acute e severe (SARI) in pazienti ultra-sessantacinquenni: l'esperienza di un ospedale universitario durante le stagioni 2017-2018 e 2018-2019

Introduzione. L'Influenza è un rilevante problema di sanità pubblica anche a causa del rischio di complicanze. La più efficace misura di prevenzione è la vaccinazione; perciò, al momento, gli stati Europei concordano sulla necessità di campagne vaccinali stagionali per soggetti anziani ad alto rischio di complicanze. Parallelamente, sono necessari sistemi di sorveglianza dell'influenza per studiarne la circolazione virale e l'efficacia delle campagne vaccinali. Il presente studio riporta i risultati della sorveglianza condotta durante due stagioni influenzali (2017/2018 e 2018/2019) in un ospedale universitario della città di Roma, in pazienti ultrasessantacinquenni.

Disegno dello studio. Studio di coorte prospettico.

Metodi. Lo studio ha previsto uno screening, all'ammissione in ospedale, di tutti i pazienti che presentassero i criteri stabiliti per la definizione di Infezione respiratoria acuta severa (SARI). Per ciascun paziente è stato effet-

tuato un tampone naso-faringeo ed è stato compilato un questionario inerente dati personali ed eventuali fattori di rischio. Sono stati, inoltre, calcolati: efficacia vaccinale (IVE) ed il tasso di mortalità.

Risultati. Influenza è stata confermata in laboratorio in 11 (9.9%) dei 111 pazienti arruolati nella stagione 2017/18 e in 11 (9.6%) dei 115 pazienti arruolati nella stagione 2018/19. L'IVE per tutti le categorie di vaccini anti-influenzali utilizzati è risultata 88.5% (95% CI: 38.9 to 97.8) nella stagione 2017/2018 e 61.7% (95% CI: 59.9 to 90.9) nella stagione 2018/2019. Lo studio ha mostrato un tasso di mortalità pari a 2.7% (2017/18) e 4.3% (2018/19).

Conclusioni. La sorveglianza condotta nel presente studio conferma che l'influenza è un'importante causa di ricovero ospedaliero. Sistemi di monitoraggio delle infezioni e degli agenti eziologici associate a SARI sono fondamentali, anche a livello locale, per identificare le migliori strategie preventive.

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