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Influenza outbreaks management in a French psychiatric hospital from 2004 to 2012☆

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ABSTRACT

Objective: Influenza epidemics can have consequences in terms of morbidity and mortality for the patients. This work assesses influenza outbreaks in order to validate and optimize alert and control measures in a psychiatric hospital.
Method: The prospective monitoring of influenza episodes was conducted for 8 years in 19 units of a mental health hospital. Rapid influenza diagnostic tests were used. The study of the episodes with confirmed influenza cases was carried out.
Results: Influenza monitoring and alert were essential with information and laboratory-confirmed cases. Influenza was common with a total of 20 episodes for the studied period. A maximum of 25% (5/20) of the units were affected in 2008–2009. Rapid influenza diagnostic tests allowed a quick identification with an average time of 1.5 days. Mainly, control measures limited the spread of the influenza virus in units with patient not at high risk of complications. On the other hand, antiviral curative treatment and chemoprophylaxis are essential in units with patients at high risk of complications.
Conclusion: In a psychiatric hospital, influenza management has to take into account the exposed patient's risks for influenza complications and to adapt the strategy according to the risks identified.

1. Introduction

Nosocomial influenza epidemics occur in all kinds of units with significant implications in terms of morbidity, mortality and costs. Investigating the epidemics should help us to understand the outbreaks in order to limit their impacts [1].

The epidemics in long-term care units or geriatric hospitals are common and well known, and acute respiratory infections and viral gastroenteritis are the most frequent ones [2]. In psychiatry wards, such epidemics are probably nonidentified and underreported, that is why validating alert and control measures is difficult, even if some data show the impact is significant in this kind of units [3–6]. The network of the regional influenza monitoring groups (Groupes Régionaux d'Observation de la Grippe) developed an experimental study in a psychiatric hospital for 8 years from 2004 to 2012 in the period of the influenza epidemic [7,8].

The goal of this study is to develop the monitoring in the units of a psychiatric hospital in order to improve our knowledge and validate the alert and control measures in that kind of units.

2. Methods

2.1. Setting

A total of 19 units were included with 17 hospitalization units [4 geriatric psychiatry (GP) and 13 clinical psychiatry (CP)] and 2 residential homes [1 specialized care home (SCH) and 1 medical-care home (MCH)]. Each unit consisted of independent care teams, which do not share the dining area and the other places to live. The 4 GP units consisted of 75 beds, and 277 beds were in the 13 CP units for adults. The SCH was for adults with physical and mental disabilities (45 then 56 beds in 2010), and the MCH accommodated adults with psychiatric illnesses (43 beds). For the study, two types of practices

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have been identified: units (named Type 1) with the majority of persons not at risk of complications (CP and MCH) and units (named Type 2) where all or the majority of the persons were at high risk of complications from influenza (GP, SCH).

2.2. Surveillance

Every year, before the winter, every care units were informed of the acute respiratory infections' risks in the framework of the influenza immunization awareness campaign for the staff and the patients. An information meeting was organized for the doctors to present rapid diagnostic tests for the detection of influenza. At the time of the community epidemic, alert messages were sent by e-mails to every unit. If epidemics were noticed in some units of the institution, all other units were informed about them.

The reporting of influenza cases or of the cases of all sorts of respiratory infections to the hygiene team was organized. Some alerts were made on the computers by the doctors, and/or the hygiene team was called by the care services or by the virological testing laboratory.

Eight epidemic seasons were monitored, each season between November and April, from 2004 to 2011. The national data of the regional influenza monitoring groups were used to define the epidemic periods.

2.3. Case definitions

As soon as cases of influenza or of respiratory infections of all sorts were reported, the hygiene team immediately intervened. Rapid diagnostic or virological laboratory tests were performed for patients that met the clinical case definition, and only episodes with influenza confirmed cases were included.

The clinical criteria also used to define the cases were a fever above 38°C and three of the following symptoms at least: chills, headache, eye pains, muscle pains, asthenia, anorexia, sore throat and coughing. For the elderly and mentally disabled people and in the context of the outbreaks with influenza confirmed cases, variable clinical presentations blending general symptoms (high fever, weakness/fatigue, mental confusion and anorexia) and respiratory symptoms (from rhinitis to pneumonia) were assessed case by case, and those without another causes (urinary infections, bacterial pneumonia, etc.) were included in the number of influenza-infected patients.

The cases were listed with the date when the first symptoms appeared and with the vaccinal status against influenza. In residential services, the global vaccination rate was recorded. Health worker infections were not recorded.

2.4. Control measures

Preventive measures around those cases included « contact » and « droplet » precautions lasting for 5 to 7 days at least or finishing 48 h after the fever disappeared. The measures were supported by information: about the flu to the health workers (transmission, treatment and risks), alert of the hospital manager and meeting with all the patients of the units in the case of outbreaks with more than three infected patients (influenza infection, risks and control measures).

In some situations, patients were suggested to wear a mask (Type 2, European norm 14683) to enable them to get out of their room. Airing the rooms and the unit (10 min three times a day) was recommended, and infected staff were sent home for a minimum of 5 days. Hand hygiene was reinforced, and a curative treatment with oseltamivir could be prescribed by the doctors of infected patients or by family doctor for the health workers. The events were suspended, but the assembly of noninfected patients during meals and in the rest areas with television were not prevented in those units.

At least, one laboratory-confirmed case among patients was necessary to initiate the chemoprophylaxis for all the patients in the unit. Other criteria (patients at risk or not, outbreak, severity of the infection, death, difficulties to implement control measures, etc.) should be taken into account to make the final decision about the chemoprophylaxis. For health workers, information was given to contact their doctors for a potential prophylaxis, particularly those at high risk of complications from influenza. Following the detection of the first case in one unit, the daily monitoring of the temperature of all the patients and residents was also implemented in order to identify the cases quickly in the concerned unit.

2.5. Influenza virus identification

The rapid immunoassay diagnostic tests for detection of influenza were: QuickVue® from 2004 to 2007 (without the virus Type A or B) and Clearview® Exact Influenza A and B from 2007 to 2012 (with the differentiation of Influenza A and B virus). Both have been approved by the US Food and Drug Administration with similar sensitivities and specificities [9]. The tests were essentially prescribed to identify the epidemiological context with the presence or the absence of the influenza virus in the unit and then to adapt the chemoprophylaxis with oseltamivir. Given the low sensitivity of rapid tests, they were not used any longer once the control measures had been implemented and had enabled to control the influenza outbreak. Clinical criteria were used to evaluate the outbreak evolution. Doctors could also prescribe a test for a specific patient to make a precise diagnosis and then to adapt his treatment.

2.6. Statistical analysis

The software XL Stat 2006 was used for the univariate analyses. The comparison of infection percentages according to the control measures and to the Type 1 or 2 activities was made according to the univariate method thanks to the chi-square test. The selected significance threshold was $P<.05$.

3. Result

The total number of rapid influenza diagnostic tests varied from 1 year to the other (8 (2004–2005), 7 (2005–2006), 8 (2006–2007), 38 (2007–2008), 22 (2008–2009), 13 (2009–2010), 25 (2010–2011), 34 (2011–2012).

A total of 20 episodes with at least one laboratory-confirmed case were included for the eight seasons (Table 1). A maximum of 25% of the included units were affected in 2008–2009. Eighteen out of the 20 outbreaks were identified in the epidemic periods (90.0%). The attack rate varied widely by episode, ranging from 2.3 to 44.4 cases per 100 patients with no death observed during these episodes.

The influenza episode rate was 0.59 episodes a year for 100 beds in the psychiatry wards (13 outbreaks for 277 beds included during 8 years). In the other units, the yearly rate for 100 beds was 0.50 (GP, 3/600), 0.79 (SCH, 3/382) and 0.29 (MCH, 1/344).

The average time between the first case and the intervention of the hygiene team was 1.5 days [confidence interval (CI) of 95%, 0.8–2.2]. The average number of cases at the time of the intervention was 2.5 infected patients (CI 95%, 1.4–3.6). The rapid influenza diagnostic test was positive at the time of the intervention for 100% of the outbreaks (20/20). The mean duration of the episodes was 3.7 days (CI 95%, 2.7–4.7). At the intervention time, 33 clinical cases underwent a rapid testing; out of which, 23 were influenza positive. No test was performed for 10 cases, particularly if the durations between the beginning of the clinical signs and the days of the intervention were superior at 96 h.

The vaccination of the staff was globally known for the whole institution. The percentages of vaccinated members of staff