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PREPARING FOR AN INFLUENZA PANDEMIC IN ITALY: RESOURCES AND PROCEDURES IN PAEDIATRIC HOSPITAL UNITS

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The World Health Organization (WHO) has stated that preparedness for effectively facing a major influenza epidemic should involve the training of physicians in the management of contagious diseases and upgrading hospital resources and procedures [1]. Children would be particularly vulnerable during an influenza pandemic and specific measures are needed to face the threat to them effectively. We performed a national survey to obtain information about the preparedness in facing a major influenza outbreak in Italian paediatric units. In Italy, paediatrics clinics are found in both paediatric wards and paediatric departments. Departments are more complex structures, containing several units with different specialisations and facilities. For this study, we interviewed heads of both departments and units. A structured questionnaire, including 30 items, was submitted to the heads of 150 paediatric hospital departments across the country. Responses were obtained from 123 units; 10% of these had rooms dedicated to infectious diseases, and 4% had experts in infectious diseases available and routinely applied procedures for preventing the spreading of acute infectious diseases. Only 8% of departments have paediatric intensive care facilities. Few paediatric units, usually located in large children's hospitals or in academic paediatric departments, have a sufficient degree of preparedness to face severe influenza pandemics. A structural improvement of the paediatric units and the use specific procedures are essential for effectively care for children hospitalised because of contagious diseases.

Introduction

Preparedness for an influenza pandemic has become a major public health issue [1-3]. Global alert and response plans are in place to face the threat posed by the H5N1 influenza virus, and preparedness plans have been developed at national and European levels [4,5]. However, it was recently observed that, despite the planning and preparing for a possible pandemic, European countries are not yet ready to effectively face major epidemics of severe influenza [6,7].

The WHO has recommended that preparedness plans should include the identification of physicians and nurses specifically trained in the management of contagious diseases as well as recommendations to activate hospital resources and procedures in case of an influenza pandemic [1].

Children are at high risk of influenza and influenza-like illness [8,9], and they have specific age-related problems that require a management distinct from adults. Paediatric hospitals are therefore a major target for interventions to improve preparedness.

We carried out a national survey to obtain information on Italian paediatric hospital units and their preparedness for a major influenza outbreak. Specifically, we focused on the facilities and professional resources available and the procedures used in paediatric wards when a child with a severe, potentially contagious, disease is admitted.

Methods

A structured questionnaire was sent to the heads of paediatric hospital units in Italy. It was made up of 30 items, grouped in three sections. The first section included information on the general features of the hospital and the unit, i.e. logistical structures, including private rooms, toilets, and rooms equipped with negative pressure systems. The second section addressed the knowledge of healthcare workers and the presence of key personnel, namely physicians and nurses specifically trained in the management of contagious diseases. The third section included questions on the routine use of specific protocols and preventive procedures for infectious diseases that were applied. Each section of the questionnaire was separately analysed and evaluated for completeness. Key informants were invited to select “available”, “available in part” or “not available” to answer each question.

The questionnaire was submitted to the heads of 150 paediatric hospital units, chosen among the members of the Paediatric Italian Society, in 102 Italian cities, equally distributed in the North, Centre and South of Italy, between September and October 2005. Responses were obtained from 123 units, evenly distributed throughout the country. Of these, 97 were general paediatric units, five were referral paediatric infectious disease units, and 21 were specialised units in fields other than infectious diseases.

Results

Fifty-seven percent of the hospitals performed a paediatric triage based on the evaluation of contagiousness of diseases and 25% also had a specific emergency service for the management of infectious diseases. Fifty-two percent of the units had also a first-aid post for paediatric patients.

The results for the three sections of the questionnaire are summarised in the table. The number of wards or rooms dedicated to infectious diseases was quite low (36%). Rooms equipped with negative pressure systems were available in only 7% of units, and we estimated that approximately 10% of these rooms were available for contagious diseases on average. Despite the lack of effective measures to prevent the spreading of potentially contagious diseases, only 3% of interviewed hospitals declined the admission of children affected by infectious diseases.

The degree of preparedness in facing a severe contagious disease was indirectly investigated by the availability of intensive care units. According to key responders, paediatric intensive care units were available within the department of only 8% of the units included in this survey. Twenty percent of centres referred infected children in need of intensive care to adult wards, and 32% referred children to units that were external to their institution. In no case was a specific paediatric intensive care unit dedicated to contagious diseases available. This is a serious problem in cases of contagious children who need ventilation or intubation [10].

The level of training in infectious diseases also revealed causes for concern. Medical and nursing personnel specifically trained in infectious diseases were available in 11% of units (Table). Many units relied on consultants for infectious diseases from units admitting adults (32%). Only six units (5%) claimed they routinely applied the adequate isolation precautions (Table). Many units relied on consultants for infectious diseases from units admitting adults (32%). Only six units (5%) claimed they routinely applied the necessary isolation precautions (Table).

TABLE**Facilities, resources and specific operational procedures for the management of potentially contagious diseases in 123 Italian paediatric hospital units**

	Available ¹	Available in part ¹	Not available ¹
A- logistic facilities for contagious diseases ²	9 (7%)	20 (16%)	94 (76%)
B- specifically trained physicians and nurses ²	14 (11%)	39 (32%)	70 (57%)
C- application of specific protocols and procedures ²	6 (5%)	69 (56%)	48 (39%)
A + B + C	5 (4%)	87 (71%)	31 (25%)

¹ Based on a qualitative evaluation of each section of the questionnaire, taking into account optimal standard needs

² Expressed as absolute number (percentage of hospital units)

To evaluate the overall preparedness of paediatric units in facing highly contagious/highly severe infectious diseases, we examined whether multiple measures were simultaneously available in the same unit (Table). Several centres (71%) had a variable combination of logistical facilities, trained medical and nursing staff and applied appropriate procedures. However as well as many as 25% of responding units did not have either logistic or specific educational qualification, and were thus totally unprepared to manage severe infectious diseases. Overall, only 4% of units had dedicated rooms and staff for infectious diseases, and effective isolation precautions based on specific protocols and procedures. Only the latter units may be considered actually or potentially capable to care for children with highly contagious, severe infectious disease.

Conclusion

The survey revealed that the preparedness of paediatric Italian units to confront a potentially fast spreading, severe contagious disease is far from adequate. Only a few units, usually located in large children's hospitals or academic paediatric departments, seem to be capable of facing the problem effectively. Most responding centres have major deficiencies, ranging from the lack of applications of routine precautions to prevent the spreading of contagious diseases to the lack of more advanced and expensive equipment, such as negative pressure rooms. Although our survey cannot be considered a formal investigation of the situation in Italy, the distribution of units and their size could be considered representative of the organisation of hospital care for children in this country. Hospital care for children in Italy is characterised by a predominance of small units that are effective against mild diseases, but that are not prepared to face major clinical problems. A major issue in the context of a severe contagious illness is the lack of intensive care dedicated to contagious children. Medical and nursing personnel trained in infectious diseases, specific logistic facilities in the wards and more rooms dedicated to infectious diseases, particularly in intensive care, are strongly needed. These facilities should be available at least in large tertiary care centres.

Action proposed

Preparedness for influenza pandemics would be improved by the implementation of specific paediatric guidelines and operational procedures at local level. A national pandemic preparedness plan was recently produced with the following goals, in case of a major influenza epidemic:

- to reduce the virus transmission,
- to recognize and manage the infections;
- to decrease the hospitalisations and
- to reduce the economic impact of a pandemic [5].

The plan includes seven key actions, ranging from the virologic surveillance, to the measures needed to ensure the administration of adequate care, including antibiotic and antiviral drugs in hospitals, even in extreme operational conditions such as those envisaged in the worst scenario of a major epidemic. In the light of the results of the present survey, there is a significant issue with preparedness regarding an influenza pandemic in children. The key points at this stage are twofold: first, to identify a paediatric coordinating centre at the local level, such as regional level, capable to provide information, and second, to improve general education, as it seems that there is little knowledge about the spreading of severe infections. A key action needed in the field of education is the production of guidelines; an important document was recently released that covers treatment in the community and in hospitals [11]. The recommendations were specific for adults and children further supporting the view that preparedness should be considered specifically for children.

In Italy, a net of paediatric centres was set up at the onset of HIV infection spreading. The network of referral centres for paediatric patients infected with HIV proved to be a very effective tool, as it provided indications for patient management, collected data and informed paediatricians about the epidemiology of the then new infection. Some of the largest centres in Italy gained major experience in facing complex and severe infectious diseases and developed the ability to rapidly respond to the challenges of new diseases, also using the opportunities offered by web communication. One could envisage a national paediatric network of referral centres for infectious diseases, bearing in mind that “the spread of avian influenza is an example of the need to strengthen defences against all infectious disease” [12].

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