

Clustered Cases of Pneumonia among Healthcare Workers over a 1-year Period in Three Italian Hospitals: Applying the WHO SARS Alert

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Abstract

Background: The World Health Organization (WHO) has recommended that a severe acute respiratory syndrome (SARS) alert should be raised when two or more healthcare workers (HCW) in the same health care unit fulfil the SARS clinical criteria, with onset of illness in the same 10-day period. However, in a number of European countries (including Italy) data on reasons for sickness absence are not routinely collected within current HCW worker sickness reporting systems, because of concerns about privacy. To help plan for the implementation of the proposed alert system in Italy, we aimed to determine the minimum number of alert cases defining a cluster.

Patients and Methods: Sickness absences longer than 7 days in HCW employed in three hospitals in 2003, were identified by checking the hospitals' administrative databases. HCW with onset of illness in the same 10-day period were contacted and asked whether they have been diagnosed with pneumonia.

Results: Overall, 273 absences > 7 days were recorded and 36 clusters of at least two absences > 7 days were identified; a total of 94 HCW were involved in these clusters. Only two HCW involved in different clusters, reported pneumonia.

Conclusion: The occurrence of clusters of two or more cases of pneumonia in HCW in the same hospital unit appears to be an uncommon event, and thus the alert system proposed is not likely to result in large numbers of false positive alerts. However, it may be difficult to implement this alert system in countries where clinical data on sickness absences are not routinely collected, and alternative mechanisms should be considered.

(HCW): an alert should be raised when two or more HCW in the same health care unit fulfil the clinical criteria for SARS, with onset of illness in the same 10-day period [1].

Moreover, the WHO recommends that before implementing the proposed alert system, a jurisdiction may determine, based on national SARS risk assessment and local experience of acute respiratory diseases, the minimum number of alert cases defining an alert cluster.

However, in Italy, and in a number of other European countries data on the reason for sickness absence are not collected within current HCW worker sickness reporting systems, because of concerns about privacy and confidentiality [2]. Thus, national or local data that would allow an assessment of the specificity of the proposed definition of an alert cluster, or an estimate of the number of alerts that would occur in the absence of a re-emergence of SARS, are not available.

To try to determine the minimum number of pneumonia alert cases that should define a SARS alert cluster in Italy, we analyzed sickness absences longer than 7 days, which occurred among HCW employed in three Italian hospitals in 2003.

Patients and Methods

Three Italian hospitals voluntarily participated in the study. Hospital A is an Infectious Diseases Research Hospital with 180 beds, including 20 dedicated to respiratory infections. Hospital B is a University hospital with 400 beds, 60 of which are dedicated to infectious diseases.

Hospital C is a general urban hospital with 600 beds, including 16 in an infectious disease ward and 25 in the respiratory medicine unit.

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Introduction

To detect the possible re-emergence of severe acute respiratory syndrome (SARS), the World Health Organization (WHO) has recommended the implementation of an alert system based on the surveillance of healthcare workers

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The study population was limited to HCW working in adult medical wards, Emergency Departments, Admission Units, and Intensive Care Units.

We assumed that a case of pneumonia would result in more than 7 days of sickness absence. We checked the hospitals' administrative database to extract clusters of two or more cases of absences > 7 days in HCW assigned to the same unit and with dates of onset of illness in the same 10-day period.

All the HCW identified as being part of a cluster were then contacted by their occupational health physician, who informed them about the aims of the study, assured them that participation was wholly voluntary, and asked them to consent to a partial disclosure of the reason for their absence, i.e. whether at the time of the absence, they had been diagnosed with pneumonia.

In hospital C, all HCW with absences > 7 days were asked if they had had pneumonia, an influenza-like illness, or another respiratory tract illness, regardless of whether or not they were part of a cluster.

Results

During the study period a total of 2,035 HCW were employed in the hospital units involved in the study (Table 1). Overall, 273 absences > 7 days were recorded, and 36 clusters of at least 2 absences were identified. A total of 94 HCW were involved in these clusters; all but two consented to participate in the study. Only two HCW from different centres reported they had been given a diagnosis of pneumonia. The two HCW for whom information was not available were involved in two different clusters, which did not include any other HCW with a diagnosis of pneumonia.

In hospital C, 5 of the 59 HCW identified as being involved in 21 clusters, reported a respiratory tract illnesses other than pneumonia. A further eight HCW from three separate clusters, reported absence due to an influenza-like illnesses. The 66 HCW in hospital C who had been absent on sick leave for > 7 days but were not part of a cluster, included 2 who reported having had pneumonia, 14 who had had an influenza-like illness and 5 who reported an other respiratory tract illnesses.

Discussion

In this study, we did not observe any clusters of pneumonia in HCW employed in the same unit in any of three Italian hospitals over a 1-year period. This suggests that the

occurrence of a cluster of cases of pneumonia among HCW, defined as at least two cases of pneumonia among HCW in the same unit and with onset of illness in the same 10-day period, is an uncommon event. Thus, our study suggests that the use of this definition to trigger an alert of the possible spread of SARS [1], or of any other respiratory infection in which occupational transmission is an important feature, would not result in an unacceptably high frequency of false positive alerts.

Our study was designed to determine the minimum number of alert cases that should be used to define a cluster according to WHO recommendations, and should not be regarded as a proposed alternative SARS alert system. However, even if it is likely that a re-emergence of SARS would result in at least two HCW cases of pneumonia per ward in the same 10-day period, the sensitivity of the alert system for any future strain of SARS-Coronavirus cannot be tested, and remains unknown.

Overall, the proportion of HCW taking a leave of absence > 7 days exceeded 13% with significant differences between the three hospitals (28%, 18%, and 4%, respectively). Among employees of four National Health System trusts in the United Kingdom, 30% of all absences, and 50% of absences due to respiratory disorders (the main known cause of absence), were of > 1 week duration [3]. No reference data are available in Italy for comparison with the proportions observed in our study.

However, while variation in levels of absenteeism could affect the reproducibility of our study in different settings, it is unlikely that it could affect the rate of clustering of cases of pneumonia.

The extent to which our results may be generalisable to other different epidemiological settings where incidence of community acquired pneumonia may be higher [4–6] remains to be determined.

We may have missed clusters that included HCW with milder pneumonic illnesses, as a milder illness might have resulted in a absence of less than 7 days disability. However, current guidelines recommend at least 7 days of antibiotic treatment for pneumonia [7, 8], and the duration of SARS pneumonia was usually longer than a week [9].

Finally, the occurrence of pneumonia was investigated retrospectively by interviewing HCW involved in a cluster, and thus, recall or reporting biases may have affected our results.

Syndromic surveillance of respiratory illnesses has also been advocated as an alerting mechanism for other naturally emerging infections, such as pandemic influenza as well as diseases due to the deliberate release of biological agents [10–12].

Not unexpectedly, data from hospital C suggest that expanding the surveillance to cases of febrile acute

Table 1
Work absences longer than 7 days and clusters of pneumonia among health care workers in three Italian Hospitals, 2003.

Hospital	Health care workers surveyed	Absences > 7 days	Clusters of ≥ 2 absences > 7 days		
			Number of clusters (HCW)	Cases of pneumonia	Clusters with > 1 case of pneumonia
A	400	112	11 (26)	1	0
B	954	36	4 (9)	1	0
C	681	125	21 (59)	0	0
Total	2,035	273	36 (94)	2	0

respiratory illnesses could be more sensitive, though obviously less specific, and a more labour intensive investigation on a larger number of absences and clusters should be performed.

Without in-time disclosure of all diagnoses of pneumonia in HCW, the value of any alert system would be compromised. Indeed, in the case of SARS, the delay in implementing isolation measures while waiting for a second, clustered case of pneumonia could be considerable, and sufficient to result in a serious outbreak.

If the SARS alert system recommended by the WHO is to be implemented in countries such as ours, where clinical data on sickness absences are not collected, efforts should be made to overcome the barriers that undermine notification, balancing the need for protecting the privacy of individuals with the need for an effective surveillance.

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