resources besides causing inconvenience to patients (staying indoors in an isolation room, visitor restriction, and potential breach of personal confidential clinical information).

In view of the above limitations of clinical algorithms and the consequences its implementation may generate, it is imperative that a rational approach is adopted with regard to resource utilisation and infection control needs. Infection control teams of most hospitals are under significant pressure to prevent nosocomial infections to patients, visitors and staff. Understandably under these circumstances it is not uncommon for a safety-first attitude to be adopted, leading to over-utilisation of available resources. Novel swine influenza should not blind us to the fact that there are many other old infections which are equally important and worthy of prevention. The latest data from the World Health Organization show that the basic reproduction rate (R_0: mean number of secondary cases a single case will cause) of the novel H1N1 influenza virus is <2 in most European countries and in the USA, which is significantly less than for many common diseases such as measles (R_0: 12–18) and mumps (R_0: 4–7).[5] Although the preventive measures to contain swine flu are justified (e.g. use of FFP3 mask for aerosol-generating procedures such as endotracheal intubation or suctioning), it is unreasonable not to take such measures for other diseases with potentially serious consequences (e.g. intubation of a patient suspected to have chickenpox or measles).

Case definitions are like diagnostic tests. Since case definitions act as a screening tool they are designed to have a high level of sensitivity at the expense of specificity. However, like other diagnostic tests the test for swine flu is likely to have a number of false-negative and false-positive results. It is important that users are aware of its limitations so that when one or more of certain symptoms are absent or additional symptoms/signs are present, the context within which the case definition is being applied is considered. If the consequence of spread of H1N1 virus is higher (inpatient, pregnancy, intubation), a higher level of caution is reasonable, and testing patients or using PPE or other infection control measures can be justified. Clinical algorithms are not tablets of stone. They are rather guide maps akin to the global positioning system. Keeping eyes and ears open is as important as the ability to read these maps.

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H1N1 2009 influenza among healthcare workers in a tertiary care hospital in Thailand

Madam,

During April 2009, a novel influenza A (H1N1) virus was detected in California and was subsequently recognised to be the cause of a major outbreak in Mexico and worldwide.[1,2] In Thailand, the influenza outbreak began in June 2009, in parallel with the decision of the World Health Organization to raise the pandemic to the highest level. This posed many medical challenges, especially to healthcare workers (HCWs) who are at high risk. We aim to describe findings in HCWs who had H1N1 2009 influenza during the early epidemic in Thailand.

We performed a prospective study in a tertiary care hospital in Bangkok. HCWs reported to the infection control unit if they had influenza-like illness (ILI). The diagnosis was confirmed by positive real-time polymerase chain reaction (RT—PCR) for H1N1 2009 influenza virus. HCWs with ILI were instructed to take sick leave and institute contact and/or droplet precautions. Educational pamphlets were distributed and small group meetings were held to ensure that HCWs understood isolation procedures, self-care and when to seek further medical services.

Between June and August 2009, 451 HCWs had ILI and 81 (18%) had confirmed H1N1 2009 influenza infection. The majority of cases (66 HCWs, 81%) reported during the first two weeks of July (Figure 1), in parallel with the epidemic rate for Thailand as a whole. This cluster was likely to be a consequence of patient-to-HCW transmission because of emergency management of ILI visits to the hospital, and of HCW-to-HCW transmission. In all, 64 (79%) HCWs were female and 60 (75%) HCWs were aged between 20 and 29 years. Nineteen (23%) affected HCWs were nurses and another 19 were physicians, 9 (11%) were nurse assistants, 8 (10%) were medical students, 4 (5%) each were nurse students and technicians, and 18 (22%) were others. The departments having the highest numbers of infected HCWs were: medicine 14 (17%), obstetrics—gynaecology 11 (14%), surgery 10 (12%), family medicine 7 (9%), and paediatrics 6 (7%). None had significant underlying medical conditions or reported recent travel abroad. The probable sources of acquisition were HCWs 19 (23%), patients 18 (22%), friends (on the convocation day) 6 (7%), and relatives 2 (2%). Common symptoms were fever (89%), cough (83%), myalgia (74%), sore throat (67%), and rhinorrhoea (59%). There was no statistically significant difference ($P > 0.05$) in the proportion of each symptom among HCWs who had been vaccinated ($N = 21$) and had not been vaccinated ($N = 60$) with seasonal influenza vaccine. Seventy-six (93.8%) HCWs were treated with oseltamivir. Five (6%) HCWs were hospitalised because of severe symptoms and/or pneumonia. All HCWs recovered and returned to work.

To date, limited information about H1N1 2009 influenza infection among HCWs has been published.[3] We report a large number of HCWs who were confirmed cases of H1N1 2009 influenza infection during the beginning of the epidemic in Thailand. The clinical presentations of HCWs were the same as those of the general population. Physicians and nurses were the largest group of cases; however, only 46% were considered to have acquired infection in a healthcare setting. Other possible sources of viral acquisition might be non-healthcare settings, such as household and community. Only 21 (26%) of HCWs had received seasonal influenza vaccine in the previous year which reflected poor vaccine uptake rate among all HCWs. The influenza vaccine should be encouraged for all HCWs according to recommendations.[4] We did not find any statistically significant association between presenting symptoms and the uptake of seasonal influenza vaccine.

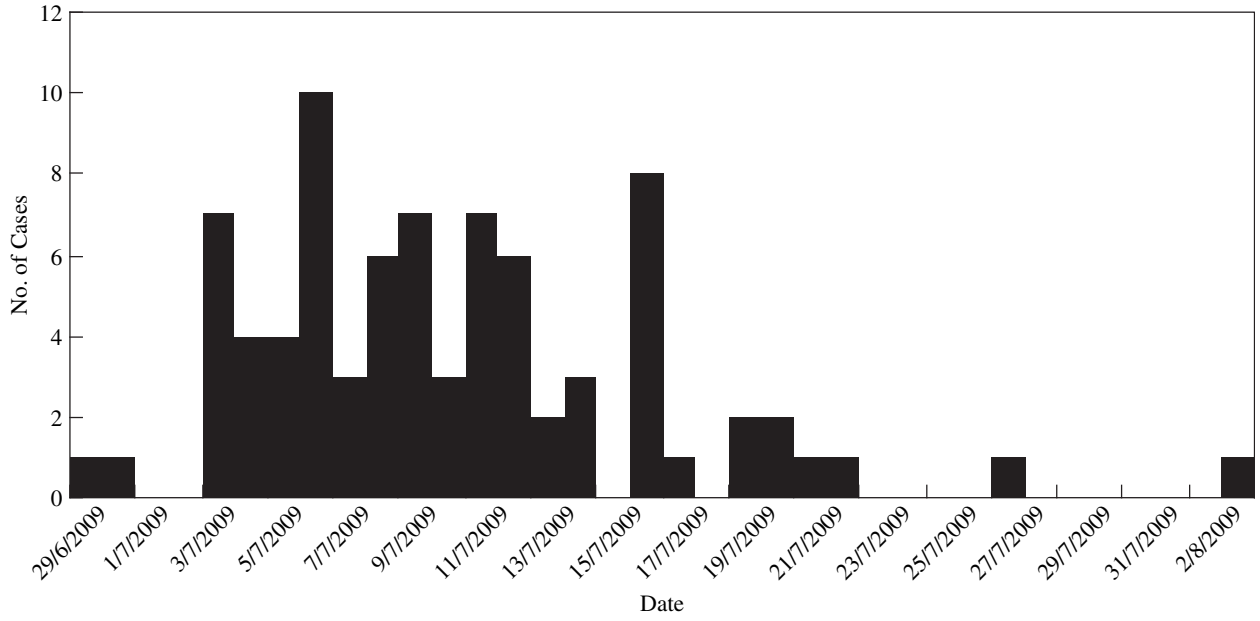

Figure 1 Epidemic curve of H1N1 2009 influenza infection among health care workers in a tertiary care hospital, Bangkok, Thailand.

This observation may be due to a small sample size and the fact that seasonal influenza vaccine is unlikely to be protective against H1N1 2009 influenza. All but five HCWs received oseltamivir for the treatment of infection. Although there are recommendations for the use of antiviral medications for either postexposure prophylaxis or early treatment after a suspected exposure to H1N1 2009 influenza infection, these five HCWs had mild symptoms and the symptoms improved before we knew the results of RT—PCR. None of these HCWs died or had any complications. This might be explained by the absence of risk factors predisposing to severe disease, early diagnosis, prompt antiviral treatment, and good education of HCWs.

These findings are subject to limitations. First, the total number of infected HCWs is likely to be underreported, even though we had set up a special service system and encouraged them to report. In addition, RT—PCR was not performed in some cases. Second, information collected on exposures might be subject to recall bias. Finally, data on the use of personal protective equipment was not collected.

In conclusion, a high number of HCWs, who were working in a tertiary care hospital, were diagnosed with H1N1 2009 influenza during the early phase of the epidemic in Bangkok, Thailand. Diligent preparations, such as vaccination and use of personal protective equipment, are needed in advance of the next wave of infection to minimise risk of influenza infection or transmission among HCWs.

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Educating junior doctors on healthcare-associated infection: more work to be done

Madam,

Reports of the knowledge of healthcare staff on the control of healthcare-associated infection (HCAI), such as meticillin-resistant *Staphylococcus aureus* (MRSA) and hand washing, indicate significant gaps in knowledge.[1,2] We assessed the knowledge of junior doctors on various aspects of HCAI in an acute tertiary hospital setting before and after educational initiatives. We drafted a 20-question 'best of 5' multiple-choice questionnaire during 2007—2008, covering topics related to patient isolation, bloodborne viruses, MRSA, norovirus, vancomycin-resistant enterococci (VRE) and tuberculosis. These were attached to payslips and available at additional locations in the hospital. A two-week deadline was given for completion and