

Care of patients with suspected or confirmed Influenza A subtype H1N1 virus infection in 2009: experience of a university hospital

Atendimento aos pacientes suspeitos ou confirmados de infecção pelo vírus da influenza A, subtipo H1N1, no ano de 2009: experiência de um hospital universitário

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ABSTRACT

The present report addresses the planning and actions taken by the Hospital of the Federal University of Minas Gerais to confront and control the Influenza A virus subtype H1N1 pandemic, which occurred between the months of March and April 2009. We describe patient triage, the precautions established in the care of suspected or confirmed cases, the evolution of these patients, the associated mortality and the destination of the waste generated in care.

Key words: Influenza A Virus, H1N1 Subtype; Cross Infection; Infection Control; Pandemic.

RESUMO

O presente relato aborda o planejamento e as ações tomadas pelo Hospital das Clínicas da Universidade Federal de Minas Gerais para o enfrentamento e controle da pandemia pelo vírus Influenza A subtipo H1N1, ocorrida entre os meses de março e abril de 2009. São descritos os fluxos de pessoas, as precauções estabelecidas no atendimento dos casos suspeitos ou confirmados, a evolução para gravidade desses pacientes, a mortalidade associada e o destino dos resíduos gerados no atendimento.

Palavras-chave: Vírus da Influenza A Subtipo H1N1; Infecção Hospitalar; Controle de Infecções; Pandemia.

INTRODUCTION

Between the months of March and April 2009 the outbreak of a respiratory disease caused by a new Influenza virus was first identified in Mexico and in the United States. The new virus was made out of sequences of Influenza virus of human, swine, and avian origin. On April 25, 2009, the World Health Organization (WHO) declared the infection by the pandemic virus H1N1 as public health emergency of international importance.

The Brazilian Ministry of Health issued alerts to the national ports and airports in April 2009, while the National Health Surveillance Agency (ANVISA) coordinated surveillance and blocking actions that were recommended in order to identify symptomatic and suspect passengers, who were followed up from home or transferred to reference centers.¹⁻³

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The Hospital das Clínicas at the Universidade Federal de Minas Gerais (HC-UFGM), in Belo Horizonte, was recommended as reference center for suspected cases of infection by Influenza A virus subtype H1N1 in the state of Minas Gerais. The hospital had taken part in the contention plan for virus H5N1 years before and had six rooms available with proper respiratory isolation. The HC-UFGM is a large general university hospital that admits patients in all levels of health care – primary, secondary, and tertiary – from the Unified Health System (SUS).

EXPERIENCE REPORT

The present work is an experience report on the care of patients with or suspected of infection by Influenza A virus subtype H1N1, in the Hospital das Clínicas, Universidade Federal de Minas Gerais (HC-UFGM), in 2009, as submitted and approved by the Board of Education, Research and Extension of the HC-UFGM. The confidentiality of data and the privacy of patients were preserved.

On April 27, 2009, the Hospital das Clínicas at the Universidade Federal de Minas Gerais received the first two patients suspected of infection with Influenza A virus subtype H1N1, coming from Cancún, Mexico. They were initially hospitalized in separate, private rooms, and precautions were taken regarding air flow and physical contact, including the use of *High Efficiency Particulate Air* (HEPA) filters.

As modes of transmission were little known at the time (it is currently known that transmission occurs mainly through direct contact and airborne droplets),⁴ use of full personal protective equipment (gloves, N95 single-use masks, surgical cap, goggles and gowns) was mandatory during patient care.⁵ Gloves, N95 single-use masks, surgical cap, and gowns were disposed of after patient care and goggles were placed in a container with 1% sodium hypochlorite for disinfection purposes.

As the epidemics evolved, hospitalization demands became greater than the number of rooms with respiratory isolation, and an additional three nurses were allocated to the ward where these rooms were found.

Faced with the possibility of severe outcomes for infected patients, mainly from the respiratory standpoint, eight intensive care unit (ICU) beds were made available.

According to ANVISA (Brazilian Health Surveillance Agency) recommendations, the waste gener-

ated in the care of patients with suspected/confirmed Influenza A virus (H1N1) was classified as belonging to the A1 group (RDC nº 306, of 07/12/2004)⁶, and sent for incineration at the Waste Treatment Sector in the HC-UFGM. On July 8, 2009, ANVISA issued the “Clinical Handling and Epidemiological Surveillance Protocol for Influenza” describing the Influenza A (H1N1) virus as a Class 2 biological agent, which meant that all waste resulting from the care of patients with suspected/confirmed infection was included in the A4 group (RDC nº 306, of 07/12/2004)⁶. Waste was sent to a licensed sanitary landfill, similar to other biohazardous waste produced in all health care institutions. From April to July 2009, 702.33 kg of A1 waste were sent to incineration, with a cost of R\$1.278,20 to the institution.

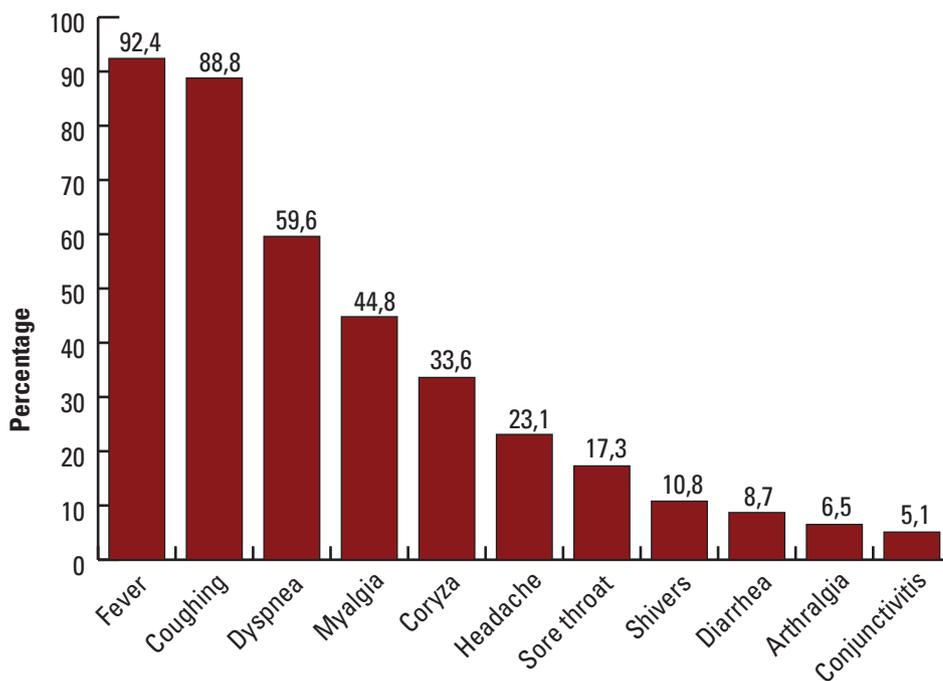
During the epidemic, 3,048 patients were admitted, 2,793 of which were adults and 255 children. A total of 595 suspect cases were notified and 277 were hospitalized, 24 of which occurred in the ICU, with six associated deaths. The main signs/symptoms for all patients were fever, defined as axillary temperature (Tax) $\geq 37.8^\circ$ (92.4%), and cough (88.8%) (Figure 1).

There were 30 (10.8%) patients aged less than two years and 247 (89.2%) aged between two and 60 years. Among patients in intensive care (n=27) distribution per age group went downwards from 30 to 39, 20 to 29, and 10 to 19 years of age, with 26.6, 25.9 and 22.2%, respectively. Distribution between males (51.8%) and females (48.2%) was uniform (Figure 2).

ICU Patients developed severe clinical manifestations, with consequent exacerbation of respiratory symptoms, requiring mechanical ventilation, and in some cases, presenting acute renal failure and hemodynamic instability. Among ICU patients (n=27), 22.2% died and 25.9% underwent kidney replacement therapy (Figure 3).

Among the patients admitted to the HC-UFGM, 164 were checked for Influenza A, subtype H1N1. For 128 (78%) of those, results remain have unknown, whereas 34 (20.7%) tested positive for Influenza A, subtype H1N1 virus and two (1.2%) negative.

In July 2009, the Influenza A H1N1 Clinic was inaugurated as an annex to the HC-UFGM and allowed suspect cases to be screened, reducing the number of hospitalized patients. Opening the Influenza A H1N1 Clinic also contributed to the decrease spontaneous demand and patient agglomeration in the Emergency Care (EC) sector of the HC-UFGM. Later, with the increased incidence of the disease among pregnant women, a specific flow for screening this group of patients was created.



Symptoms and symptoms

Figure 1 - Frequency of signs and symptoms in patients treated at the HC-UFGM, with suspected or confirmed influenza A H1N1 infection in 2009.

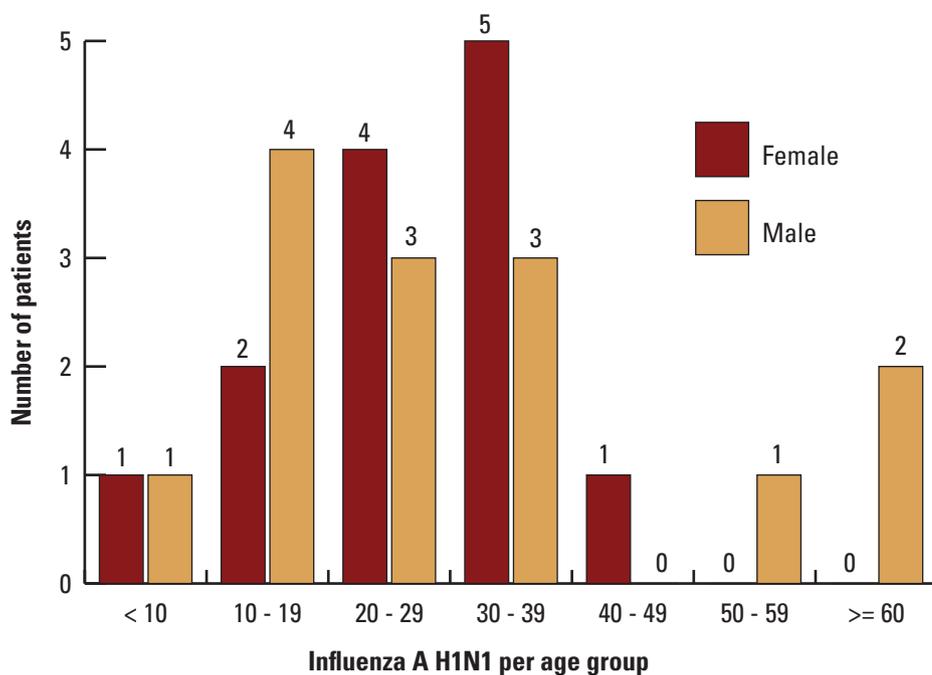


Figure 2 - Distribution of suspected or confirmed cases of Influenza A H1N1, per gender and age, in the ICU of HC/UFGM in 2009.

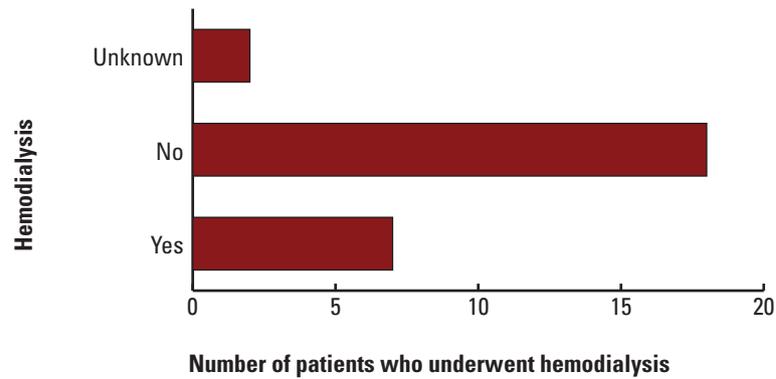


Figure 3 - Number of patients with suspected or confirmed H1N1 influenza infection, ICU hospitalized who underwent hemodialysis, at HC-UFMG in 2009.

Notifications for this new (pandemic) human influenza subtype were submitted after medical care and collection of materials for diagnosis. Due to the high number of swab and tracheal aspirate samples taken, much above the processing capacity of the Central Public Health Laboratories (LACENs), the amount of positive cases treated at the HC-UFMG remains undefined.

In 2010 a vaccination program was implemented as part of the strategies adopted by the Ministry of Health for containing and combating the new 2009 Influenza H1N1 pandemic. The vaccine, produced from weakened strains of the virus, had been used in countries in the northern hemisphere in the latter half of 2009. In Brazil, mass vaccination began in March 2010, in the following order of priority: pregnant women, the elderly, children under the age of two, individuals aged 20 to 29, and those aged 30 to 39 years.

In the HC-UFMG, during the months of March to April, the Specialized Service in Safety Engineering and Occupational Medicine (SESMT-HC) sponsored a vaccination campaign for staff, vaccinating 3,300 (74%) professionals, with no record of severe adverse reactions.^{7,8}

CONCLUSION

Establishing a flow for patient care and collecting biological specimens for workup and treatment of infectious diseases in health care institutions were crucial for tailoring strategies to address suspected/confirmed cases of this particular disease, whose mode transmission was at first little known.

The experience of the HC-UFMG with the pandemic H1N1 virus may be repeated for other diseases with unknown modes transmission that may appear in the near future.

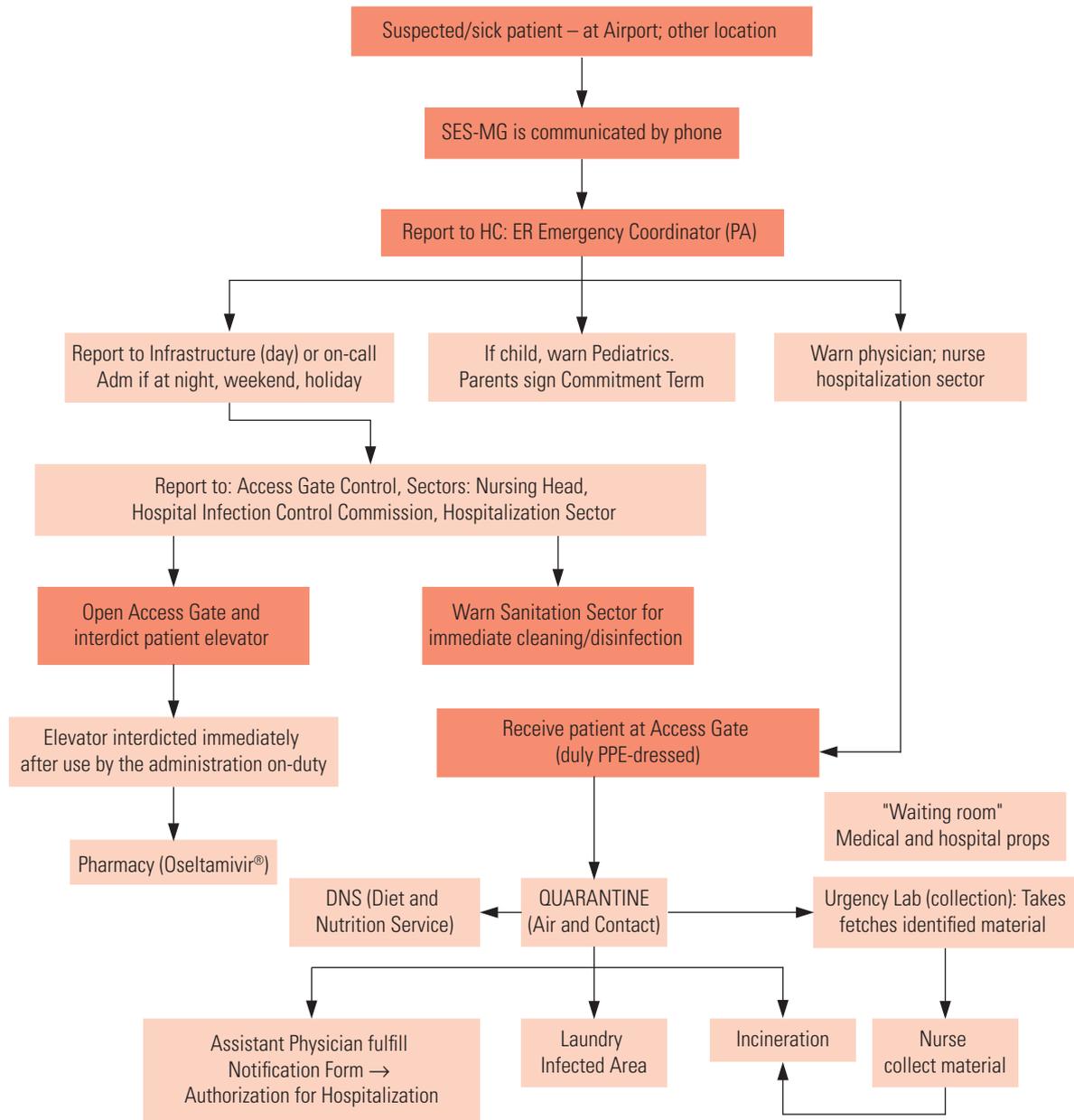


Figure 4 - Flowchart of initial approach to patients suspected or diagnosed with infection by the virus Influenza A - H1N1 forwarded to the HC/UFMG. **Source:** Influenza A H1N1 Commission. NEPI / HC-UFMG. 04/05/09.

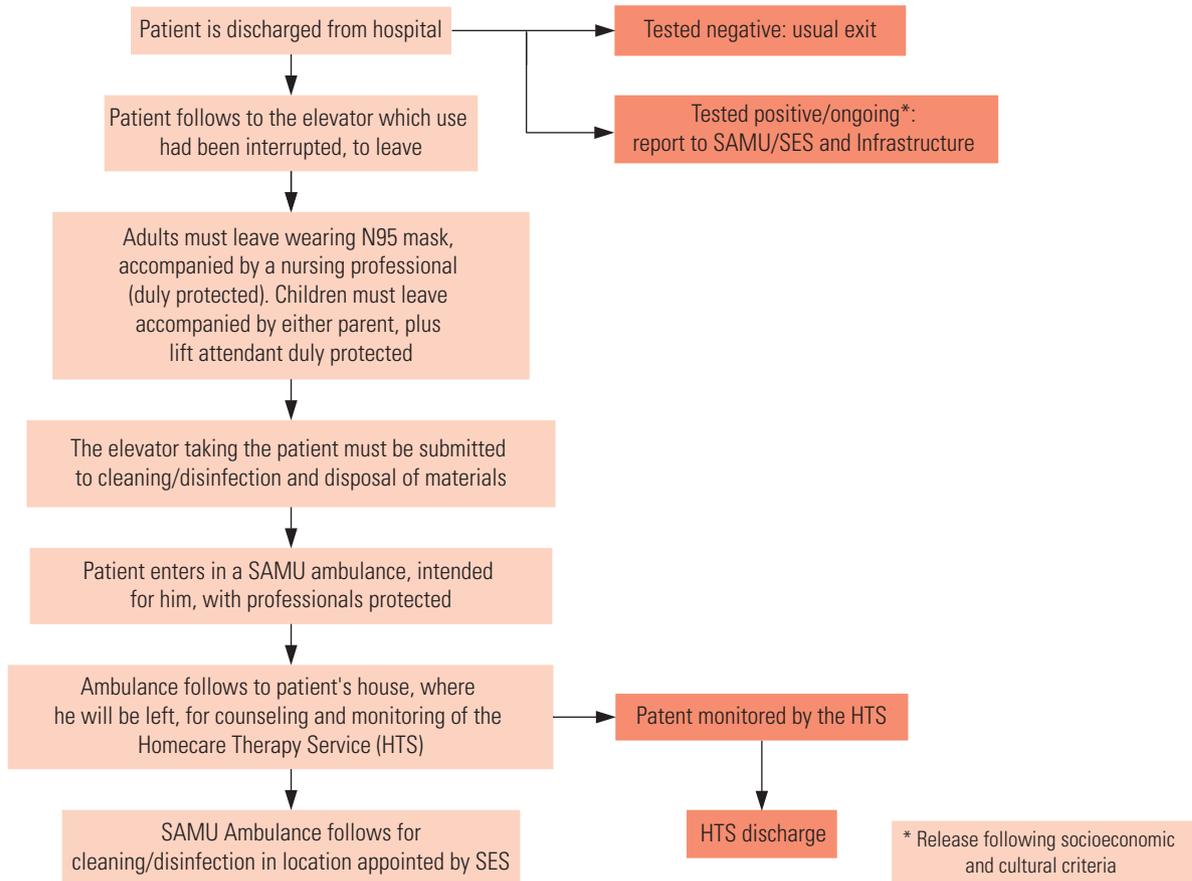


Figure 5 - Flowchart of conduct in patients suspected or diagnosed for Influenza A - H1N1 hospital discharge at HC/UFMG. **Source:** Influenza A H1N1 Commission. NEPI / HC-UFMG. 04/05/09.

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