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Deaths from laboratory-confirmed pandemic influenza H1N1 (2009) in Pacific Island countries and territories, 2009

Introduction

On 25 April 2009, the World Health Organization (WHO) declared the detection of novel H1N1 influenza case-patients in Mexico a Public Health Event of International Concern. Pandemic influenza H1N1 case-patients were first reported in the Pacific in Hawaii and New Zealand in late April 2009; other Pacific countries and territories started detecting case-patients in June. Since mid-June 2009, WHO's South Pacific Office has systematically collected information on numbers of cases of influenza-like illness and cases and deaths due to laboratory-confirmed pandemic influenza H1N1 from 23 Pacific countries and territories.¹ As of 5 January 2010, 1,964 confirmed cases of pandemic influenza H1N1 have been reported in the Pacific Island countries and territories.

Methods

WHO requested that all member states around the world report deaths related to laboratory-confirmed pandemic influenza H1N1 using a standardised case summary form. In the Pacific, these forms were collated by the Communicable Diseases Surveillance and Response team at WHO – South Pacific Office. Further information was requested by email and telephone when necessary.

Results

Seven Pacific Island countries and territories reported 21 deaths in confirmed case-patients of pandemic influenza H1N1. Deaths were reported from French Polynesia (n=7), New Caledonia (n=7), Samoa (n=2), Guam (n=2), Cook Islands (n=1), Marshall Islands (n=1) and Tonga (n=1). Information is available for all 21 case-patients (table 1).

Sixty-two per cent (n=13) of reported deaths were among females. Ages ranged from 6 weeks to 73 years, with a median age of 27 years (Graph 1).

Fatal case-patients had an onset of illness from 1 July 2009 to 14 September 2009 (Graph 2). Duration of illness prior to death ranged from 1 day to 27 days, with a median of 11 days. Sixty-two per cent (n=13) of case-patients were hospitalised prior to death.

¹ American Samoa, Cook Islands, Federated States of Micronesia, Fiji Islands, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Pitcairn Islands, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu and Wallis and Futuna.



Signs and symptoms of illness

Cough was the most commonly reported symptom (n=18, 86%). Other symptoms reported were fever (n=17, 81%), shortness of breath (n=12, 57%), muscle pain (n=4, 19%), headache (n=4, 19%), vomiting (n=4, 19%), runny nose (n=2, 10%), diarrhoea (n=1), sneezing (n=1) and sore throat (n=1).

Pre-existing conditions

Information about pre-existing conditions was available for 20 case-patients. Four (19%) case-patients had no reported pre-existing conditions or risk factors for severe disease. Pre-existing conditions reported were: morbid obesity/obesity (n=5, 24%), lung disease (n=4, 19%), heart disease (n=3, 14%), pregnancy (n=3, 14%), diabetes (n=1), immunodeficiency (n=1), cerebral palsy (n=1), prematurity in an infant (n=1) and genetic disorder (mitochondrial disease) (n=1). Three case-patients were reported to have more than one pre-existing condition/risk factor.

Treatment

Antiviral therapy was prescribed for 10 case-patients (48%) (data available for all case-patients). Antibiotics were prescribed for 10 (48%) case-patients (data not known for 9 case-patients). Four case-patients received both antiviral and antibiotic therapy.

Cause of death

Cause of death was reported for 17 (81%) case-patients. Case-patients died of either acute respiratory distress syndrome (n=7, 33%) or multi-organ failure (n=6, 29%), or a combination of both (n=4, 19%).

Discussion

The computed case fatality rate (CFR) (1%), amongst laboratory-confirmed cases in the Pacific appears high compared with published rates from other regions. However, these findings must be interpreted with caution. More severe cases of influenza are more likely to be tested and diagnosed with H1N1 which will over-estimate the CFR. Additionally, the majority of cases of influenza are not laboratory-confirmed due to limited laboratory capacity in the Pacific, and limited influenza surveillance and detection of clinical case-patients in some places. Therefore, it is likely that the true number of case-patients of pandemic influenza H1N1 is far greater than diagnosed. It is also likely that not all deaths due to pandemic influenza H1N1 were diagnosed and reported. Calculating a case fatality rate during a pandemic is problematic as methods of case ascertainment and reporting change as the situation evolves. It is likely that this CFR is a gross over-estimate of the true rate. Estimates of the true number of cases, derived from modelling not yet available for the Pacific, will provide a more accurate CFR.

Increased severity of illness in indigenous populations has been reported in other countries during this pandemic (ANZIC Influenza Investigators 2009; La Ruche et al. 2009; Verrall et al. 2010) and in the 1918 pandemic when some Pacific countries had very high mortality rates (McLeod et al. 2008). The reasons for this are probably multifactorial. First, indigenous people and Pacific Islanders have higher rates of pre-existing conditions, such as heart and lung disease, diabetes and obesity when compared with non-indigenous populations. Second, access to health care is often limited or delayed. Finally, larger family size and social networks, crowding and poverty may increase the risk of infection.



Our data also show that during this pandemic 19% of people who died did not have a pre-existing condition, a younger population was severely affected and pregnant women were at risk for severe disease. These findings are consistent with other published reports (Chowell 2009; Novel Swine-Origin Influenza A (H1N1) Virus Investigation Team 2009; Jamieson 2009).

These data have several limitations. Data collection was not standardised as only three countries completed WHO case summary forms. The remaining case data were elicited by email or telephone and as a result data are incomplete for many case-patients. Pre-existing conditions are not well defined, so it is possible that different definitions are used within the Pacific, e.g. heart disease may or may not include primary hypertension, and obesity may be defined as a body mass index greater than 30, 35 or even 40. Interpretation of the importance of pre-existing conditions such as heart disease and obesity is therefore not possible. Onset dates were estimated by reporting parties where information was not available. Finally, these data relate to a small number of cases.

As the pandemic continues to evolve, it will be important to maintain a high level of vigilance for changes in the epidemiology of severe and fatal H1N1.

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Table 1. Characteristics of fatal case-patients of pandemic influenza H1N1, Pacific Islands Countries and Territories, 2009

Country	Age	Sex	Date of onset	Date of death	Pre-existing condition	Antivirals	Date of antiviral	Antibiotics	Days till death	Cause of death
Guam	26 yr	F	01-Jul-09	11-Jul-09	Heart disease	N			10	ARDS*, MOF**
Tonga	26 yr	F	04-Jul-09	19-Jul-09	Pregnancy	N		Y	14	ARDS
Cook	36 yr	F	19-Jul-09	24-Jul-09	Lung disease	N		Y	10	ARDS
Samoa	22 yr	F	23-Jul-09	06-Aug-09	Pregnancy	Y	29-Jul-09	Y	13	MOF
Samoa	31 yr	F	23-Jul-09	06-Aug-09	Unknown	N			14	N/A
French Polynesia	32 yr	F	01-Aug-09	20-Aug-09	Lung and heart disease, morbid obesity***	Y	N/A		19	ARDS, renal failure
French Polynesia	24 yr	F	03-Aug-09	12-Aug-09	Immunosuppression	N	N/A		9	N/A
French Polynesia	24 yr	F	08-Aug-09	04-Sep-09	Pregnancy	Y	N/A		27	ARDS, MOF
New Caledonia	58 yr	F	09-Aug-09	19-Aug-09	Diabetes, obesity	N		Y	10	MOF
New Caledonia	27 yr	M	10-Aug-09	20-Aug-09	Morbid obesity	Y	14-Aug-09	Y	10	MOF
New Caledonia	30 yr	M	10-Aug-09	21-Aug-09	Nil known	N		Y	11	ARDS, MOF
New Caledonia	46 yr	F	10-Aug-09	22-Aug-09	Nil known	N		Y	12	ARDS, MOF
New Caledonia	11 months	M	13-Aug-09	08-Sep-09	Prematurity	Y	19-Aug-09		26	ARDS
Guam	13 yr	F	15-Aug-09	29-Aug-09	Cerebral palsy	Y	16-Aug-09	Y	14	ARDS
French Polynesia	6 weeks	M	16-Aug-09	17-Aug-09	Nil known	N			1	N/A
Marshall	17 yr	M	17-Aug-09	25-Aug-09	Lung disease	Y	24-Aug-09	Y	8	ARDS, pneumonia
New Caledonia	36 yr	F	18-Aug-09	30-Aug-09	Morbid obesity	Y	24-Aug-09	Y	12	MOF
New Caledonia	1 yr	F	22-Aug-09	24-Aug-09	Genetic disorder	N			2	MOF
French Polynesia	73 yr	M	25-Aug-09	28-Aug-09	Heart disease	Y	N/A		3	MOF
French Polynesia	61 yr	M	02-Sep-09	03-Sep-09	Lung disease, morbid obesity	N			1	N/A
French Polynesia	45 yr	M	14-Sep-09	20-Sep-09	Nil known	Y	N/A		6	ARDS

N/A not available

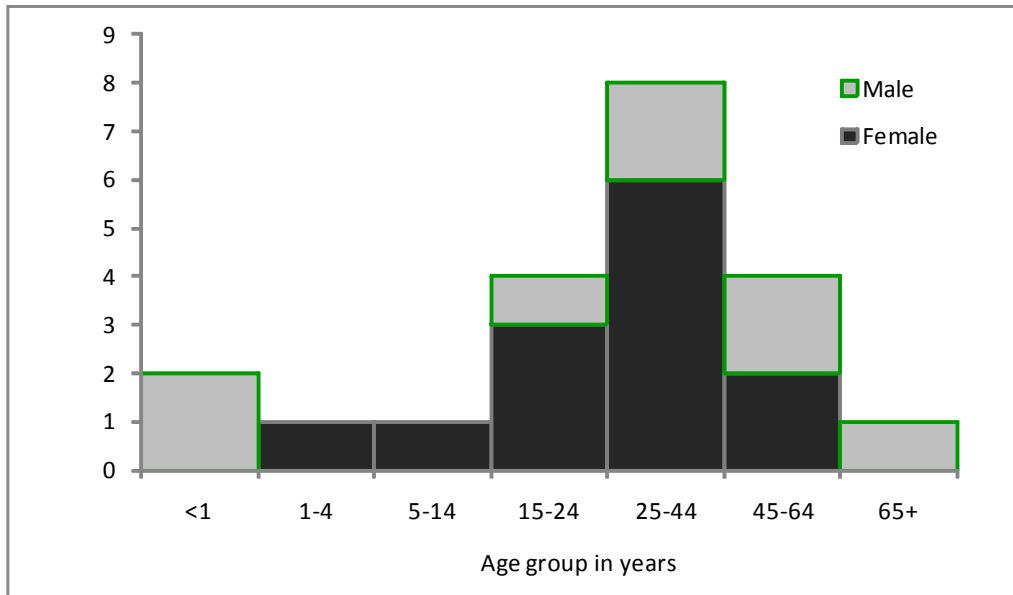
*ARDS - acute respiratory distress syndrome

**MOF - multi-organ failure

***morbid obesity = body mass index (BMI) of 40 or higher



Graph 1. Fatal case-patients of pandemic influenza H1N1 by age and sex, Pacific Islands countries and territories, 2009



Graph 2. Fatal case-patients of pandemic influenza H1N1 by onset of illness, Pacific Islands countries and territories, 2009

