Presumptive summer influenza A: an outbreak on a trans-Tasman cruise

Mark Ferson,[1] Paul Paraskevopoulos,[1] Steve Hatzi,[1] Peter Yankos,[1]
Michael Fennell,[2] Anna Condylios[2]

Abstract

A number of recent reports from the Northern Hemisphere have drawn attention to the occurrence of summer outbreaks (May to August) of influenza A among cruise ship passengers and their contacts. In cases amongst passengers returning to Canada from Alaska, exposure appears to have occurred during the land-based Alaskan tour with illness developing during the subsequent cruise. A late summer outbreak of influenza A among passengers and crew on the return leg of a 14-day Sydney-New Zealand-Sydney cruise is reported in this article.*Commun Dis Intell* 2000:24;45-47.

Keywords: influenza A, outbreak, cruise ship, upper respiratory tract infection, surveillance

Introduction

Influenza A outbreaks have been reported from cruise ship passengers and contacts in the Northern Hemisphere.[1-3] In recent years, staff members of the South Eastern Sydney Public Health Unit (SESPHU) have worked together with companies operating regular international cruises out of Sydney to develop a routine program for surveillance of gastroenteritis and acute respiratory tract infection. Reporting by masters of vessels to this surveillance system is also designed to comply with the pratique or human health clearance requirements of the Quarantine Act administered by the Australian Quarantine and Inspection Service (AQIS) of the Department of Agriculture, Fisheries and Forestry Australia (AFFA). There are two components to this surveillance system, which is still being refined:

ISSN 0725-3141
Volume 24
Number 3
16 March 2000

1. South Eastern Sydney Public Health Unit, Zetland, New South Wales
2. Virology Division, SEALS Microbiology, Prince of Wales Hospital, Randwick, New South Wales

Corresponding author: Associate Professor Mark Ferson, South Eastern Sydney Public Health Unit, Locked Bag 88, Randwick, New South Wales, 2031

Contents

Presumptive summer influenza A: an outbreak on a trans-Tasman cruise 45

Mark Ferson, Paul Paraskevopoulos Steve Hatzi, Peter Yankos, Michael Fennell, Anna Condylios

Possible community immunity to Small Round Structured Virus gastroenteritis in a rural Aboriginal community 48

Dan Ewald, Christine Franks, Sandra Thompson, Mahomed S Patel

Factors influencing vaccination uptake 51

Edited by Jill M Forrest, Margaret A Burgess and Peter B McIntyre

Measles Control Campaign update 54

Yellow fever vaccination for the Hajj 54

Yellow fever in Brazil 54

cont'd next page

1. *The end-of-cruise medical report, sent by facsimile 12-24 hours before the vessel is due to berth in Sydney.*

   In this report the ship's doctor provides information on deaths and medical disembarkations during the cruise, and the total numbers of attendances at the medical clinic by passengers and crew for acute diarrhoeal illness, upper respiratory tract infection (URTI), lower respiratory tract infection (LRTI) and pneumonia.

2. *A system for reporting suspected disease outbreaks at any time during the cruise by facsimile*.

   The surveillance system has been designed to detect potential outbreaks without imposing an unrealistic burden on ships' doctors or the SESPHU.

Outbreak of upper respiratory tract infection on Cruise ship A

Cruise ship A travels throughout the Pacific Islands, with an annual cruise to New Zealand. Voyages generally last 9-14 days. Personnel providing medical services on Cruise ship A maintain a spreadsheet which tallies daily attendances for gastroenteritis, URTI and LRTI. The cruise liner's administration has set an arbitrary level of 3% of the ship's population presenting ill with URTI as a trigger to alert health authorities of a potential outbreak.

On Day 11 of a Sydney-New Zealand-Sydney cruise operating during the first 2 weeks of February 2000, a report was received from the ship's doctor advising that the notional 3% threshold of the ship's complement affected by URTI had been exceeded, with many affected by sore throat and dry cough associated with fever in some instances. The Public Health Unit provided advice to the ship's medical staff concerning the collection and transportation of throat swabs for viral culture. These were collected in Sydney and delivered to the SEALS Virology Laboratory at Prince of Wales Hospital, Randwick. Of the 7 swabs collected, influenza A was identified in 2, with 1 isolate subtyped as H3N2. Blood was not collected for serology.

The end-of-cruise medical report indicated that 88 (8.0%) passengers and 20 (4.1%) crew, or 7.3% of the ship's total complement had attended the clinic for URTI during the cruise. This was the highest figure for URTI presentations since institution of the system for end-of-cruise medical reports in March 1998 (Figure1). When passenger attendances for URTI were analysed by day of cruise (Figure 2), it became apparent that the epidemic began 1 week into the cruise, after the ship had called at Milford Sound (Day 4), Dunedin (Day 6) and Christchurch (Day 7) on New Zealand's South Island. The epidemic peaked on Day 12 when 21 passengers and crew presented to the clinic with URTI. There were no presentations during the cruise for LRTI or pneumonia, nor any deaths, which could be attributed to influenza or its complication. Although

Figure 1. Per cent of ships' complement attending clinic for URTI on Cruise ship A, by cruise number, March 1998 to February 2000

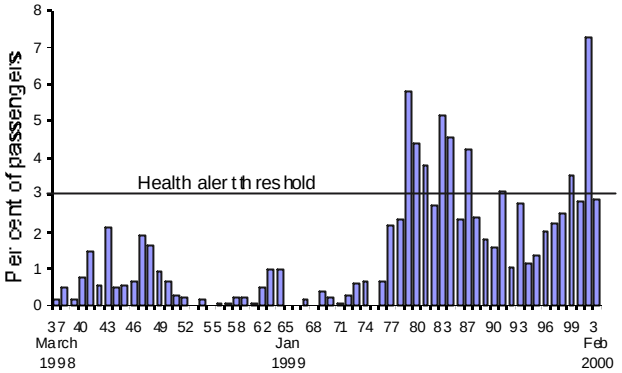
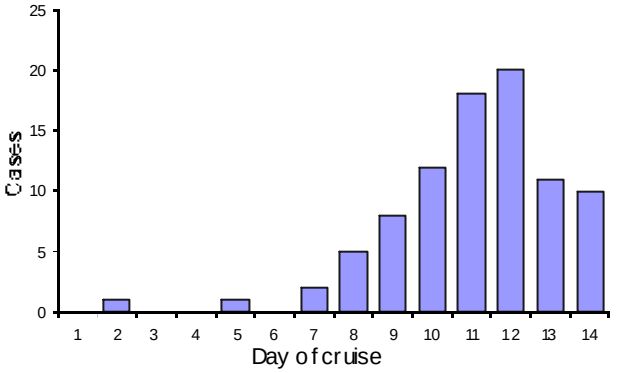


Figure 2. Number of passenger presentations to clinic for URTI on Cruise ship A, by day of cruise, February 2000



there were 2 cases with URTI that occurred on Days 2 and 5 of the cruise, the rapid evolution of the outbreak during the second week of the cruise suggests transmission following common exposure among a number of people, rather person-to-person transmission from 1 index case on the cruise ship. No information was available about clustering among co-travellers. It was not possible to ascertain whether previous cruises in which illness rates exceeded the 3% cut-off were due to influenza or another common aetiological agent.

Contents, *continued*

Data analysis by date of onset for NNDSS	55
Communicable Diseases Surveillance	55
Bulletin Board	66
Overseas briefs	67

Discussion

The authors believe that this is the first report of a presumptive influenza A outbreak on an Australian cruise ship, which is of additional interest because of its occurrence in the summer. There has been a previous report of a summer influenza B outbreak on an oil rig anchored in Darwin Harbour, attributed to the frequent arrival of workers from many parts of the world,[4] although it was recognised that in the tropics, influenza can occur throughout the year.[5] In the case of Cruise ship A, it is not possible to say whether the entire epidemic was caused by influenza A, as the virus was isolated from only 2 cases who presented to the clinic at the end of the cruise. However, as small numbers of cases of influenza A had been confirmed on the South Island during January and February (personal communication, Debbie Hulston, Institute of Environmental Science and Research, New Zealand), it is plausible that passengers were exposed to influenza A during South Island tours and subsequent person-to-person transmission resulted in the epidemic which peaked shortly before the ship berthed in Sydney.

During the following cruise, rates of clinic attendance for URTI remained below the 3% threshold (Figure 1). We are currently discussing with the personnel providing medical services to Cruise ship A, the possibility of using near-patient, rapid testing for influenza in the ship's medical clinic. However, the low sensitivity and specificity of these tests needs to be considered (personal communication, WD Rawlinson, SEALS Microbiology Randwick). Such testing might allow the use of antiviral therapy for influenza in the closed population of a cruise ship. The institution of clinical surveillance on Sydney-based cruise ships using a more specific definition for influenza-like illness may also be warranted. We believe that it is premature on the basis of this report to make recommendations for influenza vaccination of cruise ship passengers beyond current NHMRC recommendations for individuals at high-risk of influenza complications.[6] The crew of cruise ships is not routinely vaccinated against influenza at present. Enhanced surveillance of influenza on cruise ships, as has been proposed in North America,[3] is required before authoritative recommendations can be made for passengers and crew embarking on summer cruises on Australian vessels.

Acknowledgments

We wish to thank Associate Professor Bill Rawlinson and Ian Carter of the Virology Division, SEALS Microbiology, Prince of Wales Hospital, Randwick, New South Wales.

References

1. Anonymous. Influenza on a cruise ship in the Mediterranean. *Commun Dis Rep CDR Weekly* 11 Jun 1999;9:209,212.
2. Anonymous. Update: Outbreak of influenza A infection - Alaska and the Yukon Territory, July-August 1998. *MMWR* 1998;47:685-688.
3. Anonymous. Influenza in travellers to Alaska, the Yukon Territory, and on west coast cruise ships, summer of 1999. *Can Commun Dis Rep* 1999;25:137-141.
4. Johnston F, Krause V, Miller N, Barclay L. An outbreak of influenza B among workers on an oil rig. *Commun Dis Intell* 1997;21:106.
5. Benenson AS , Editor. *Control of communicable diseases manual*. 16th Edition. Washington: American Public Health Association, 1995.
6. NHMRC. *The Australian immunisation handbook* (6th edition). Canberra: AGPS, 1997; pp 127-131.