

PREPAREDNESS FOR THE PREVENTION AND CONTROL OF INFLUENZA OUTBREAKS ON PASSENGER SHIPS IN THE EU: THE SHIPSAN TRAINET PROJECT COMMUNICATION

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Passenger ships carry a large number of people in confined spaces. A case of the new influenza A (H1N1) virus aboard a passenger ship is an expected event and would lead to rapid spread of the virus, if preventive measures are not in place. However, many cruise lines have detailed policies and procedures to deal with cases of influenza like illness (ILI). The EU SHIPSAN and SHIPSAN TRAINET projects include in their objectives guidelines for the prevention and control of communicable diseases aboard passenger ships. A literature review showed that from 1997 to 2005, nine confirmed outbreaks of influenza were linked to passenger ships, with attack rates up to 37%. It is important to establish and maintain a surveillance system for ILI aboard passenger ships, in order to systematically collect data that can help to determine the baseline illness levels. Monitoring these will enable early identification of outbreaks and allow timely implementation of control measures.

Introduction

Travel has played a major role in the transmission of the new influenza A (H1N1) virus throughout the world. Since April 2009, when the virus was recognised in Mexico, up to 25 May 2009, a total of 46 countries have officially reported 12,515 cases of new influenza A (H1N1) infection [1]. Within Europe, a total of 360 confirmed cases have been reported by 19 European Union (EU) and European Free Trade Association (EFTA) countries [2]. About 84% of the patients (149 out of 178 – data up to 6 May 2009) for whom travel history was available, reported recent travel to Mexico or USA and among the non travellers 52% reported contact with a returning traveller from Mexico [3]. To our knowledge, up to now all transmission to new countries has been through travel by air or by land.

Means of transport where large numbers of people gather, including airplanes and passenger ships, can provide the place for the spread of disease from person to person or indirect transmission (e. g. contaminated surfaces). Within the EU, a large number of

people travel by passenger ships, including ferries and cruise ships, for transport or leisure purposes. There were about 410 million passenger visits through EU ports in 2007 [4]. Even though to date there have been no confirmed cases of the new influenza A (H1N1) virus among passenger ship travellers, guidelines and protocols for the prevention of a potential introduction and control of the spread of influenza on board passenger ships have been prepared or are currently under preparation by governmental agencies [5], the passenger ship industry [6] as well as the International Maritime Health Association (IMHA) [7].

During a cruise or ferry voyage, passengers and crew members spend much of their time indoors. Passengers and crew may be from several nations and can intermingle for extended periods of time in semi enclosed areas. Shipboard activities and events such as dining, games, and movies increase the likelihood of contact between passengers and sometimes with crew as well [8]. The virus is easily spread from person to person by inhalation of the air that contains droplets from infected people who cough or sneeze, or by transferring the virus directly by hand or from surfaces contaminated by droplets to mucus membranes of the eyes, nose and mouth.

This paper describes the EU SHIPSAN TRAINET project activities that are related to the prevention and control of influenza outbreaks on board passenger ships.

SHIPSAN project

In 2006, the European Union project SHIPSAN (www.shipsan.eu) was established and funded by the Directorate General for Health and Consumers of the European Commission in order to assess the usefulness for an integrated common programme for communicable diseases surveillance and hygiene inspections in Europe. In the frame of this project, public health risks that may occur on passenger ships were assessed and a review of the relevant legislation and literature on communicable diseases outbreaks,

including respiratory infections, was conducted. Based on this information, proposals were prepared for the prevention and control of communicable diseases on passenger ships. The literature review showed among other things, that high attack rates of influenza have been reported in closed settings such as cruise ships [9]. From 1997 to 2005, nine confirmed outbreaks of influenza, linked to passenger ships, have been described in the scientific literature [8,10-13], including two in Europe (Mediterranean countries, United Kingdom and Germany). The infectious agent in seven out of the nine outbreaks was influenza A virus, in one it was influenza B and in one it was influenza A and B virus. A total of 898 cases have been reported including passengers and crew members. The attack rate ranged between 0.5 to 37%. However, it should be noted that many of the passengers are more than 65 years old, belonging to a high risk group for complications. The reported outbreaks highlight the need to develop criteria for determining when an outbreak is occurring and for effective surveillance protocols so that early and targeted prevention efforts may be instituted [14]. The SHIPSAN partnership proposals (as described in the final report of the project) on what needs to be done in the EU included: standardised syndromic surveillance for influenza like illness (ILI) on board passenger ships, outbreak management guidelines for port health authorities and crew members, web-based communication between ports and hygiene standards and protocols.

EU SHIPSAN TRAINET project

The proposals formulated as a result of the SHIPSAN project are now being implemented within the EU SHIPSAN TRAINET project which started in 2008 and will be completed in May 2011. This project foresees the development of: a) harmonised communicable diseases surveillance including ILI syndrome by using standardised reporting forms, b) a manual providing hygiene standards (e.g. for disinfection and cleaning), and outbreak management guidelines for airborne diseases, c) training of port health personnel and crew members on hygiene issues and outbreak management and d) a communication network for collection and sharing of surveillance and ship inspection data among competent authorities. The systematic collection by passenger ships of routine syndromic surveillance data for gastrointestinal diseases and ILI, based on standard definitions, will help to determine threshold levels and identify outbreaks. An expert working group consisting of 75 participants from EU Member States, international organisations (WHO) and communicable diseases surveillance networks has been established in order to develop the manual, the reporting forms and the network operating specifications. The manual will be delivered in May 2010.

Passenger ship industry preparedness

Cruise ships provide a safer environment for travellers compared to other vacation settings. Doctors, nurses and very well equipped infirmaries are always available to passengers and crew on board ships. Active systematic surveillance is conducted for early identification of outbreaks. Cruise lines have detailed policies and procedures to deal with cases of ILI and for example many cruise ships are already equipped with diagnostic test kits for the influenza virus on board (although with limited reliability). Personal protective equipment (gloves and masks), disinfectants and detailed cleaning and disinfection protocols are already in place. The Cruise Lines International Association has issued a Public Health Questionnaire which should be completed by all persons before boarding the ship, as well as a preparedness protocol [6]. The goals of the protocol are

to early identify, isolate and treat suspected cases, thus minimising risk of transmission.

European Union early warning and response system (EWRS)

In the European Union, there exist a network for the epidemiological surveillance and control of communicable diseases administered by the European Centre for Disease Prevention and Control [15] and an early warning and response system (EWRS) [16] which enables to collect and exchange all necessary information on communicable disease events among competent public health authorities in the Member States, in liaison with the European Commission. The specific case definition for reporting of the new influenza A (H1N1) virus was adopted on 30 April 2009 [17] to enable the national competent authorities to communicate relevant information to the Community network. Consequently, at national level the port health authorities should follow the existing national surveillance system pathways and notify the competent health authority of any suspected case fulfilling the influenza case definition, which occurs on board of a ship.

European Union Port Health Authorities preparedness - International Health Regulations (2005) requirements

The International Health Regulations (2005), entered into force on 15 June 2007, in the Article 23(1) it provides that the State Parties to the World Health Organization (WHO) may require for public health purposes, on arrival or departure, certain data regarding travellers [18].

Furthermore, ships are required to submit a Maritime Declaration of Health to the competent port health authority of the next port of call according to the International Health Regulations (Article 37). This document communicates information about persons on board that are suspected of being infected by a communicable disease, including influenza. According to the International Health Regulations (IHR, Annex I), competent authorities at ports are responsible for providing, if necessary, medical examination and care for affected travellers. In addition, appropriate space, separate from other travellers, must be designated to interview suspected or affected persons. Competent authorities may also assess and, if required, quarantine suspected travellers. Trained personnel with appropriate personal protection, for the transfer of travellers who may carry infection or contamination, should be available. However, it should be noted that these capacities should be met by all countries by 2012 according to the IHR timeframes for implementation.

EU Member States are preparing national guidelines for surveillance and management of new influenza cases for both port authorities and ships. We are aware of specific guidelines which are prepared by at least five countries: France, Germany (www.rki.de), Estonia, the United Kingdom and Holland [personal communication].

It is interesting to note that historical data from the 1918 and 1957 pandemics show that quarantine measures introduced at ports in some countries delayed the onset of an influenza pandemic up to three months [19]. Intervention as barrier measures against influenza pandemic spread are easier to implement at national and community levels than travel ban at international level. Screening of travellers departing countries has been recommended in an article published by a WHO working group in the past [19]. Current WHO guidelines recommend that exit screening for all travellers

from affected areas is more feasible than entry screening for early detection of cases [20].

Summary of guidelines

The SHIPSAN TRAINET partnership has considered the following actions as options to be implemented, in order to prevent the spread of influenza infections on board cruise ships and ferries:

Pre-embarkation

- A routine annual vaccination programme for all crew members should be considered [14].
- Before boarding a ship, all persons (passengers, crew members, visitors) should be required to complete and sign a written health questionnaire which is designed to screen for the symptoms of influenza.
- Passengers who have symptoms of influenza should not be allowed to board the ship, and should be referred for medical evaluation to one of the national health services to ensure diagnosis and adequate treatment.
- Crew members who have symptoms of influenza should undertake a medical evaluation and be confined to their cabin quarters for the duration of the illness [5].
- Leaflets should be disseminated to passengers and crew members including information about symptoms and hygiene rules (hand washing, coughing and sneezing etiquette, disposal of dirty tissues, etc.) and what to do in case of compatible symptoms.

During the voyage

- Adequate supplies of anti-viral drugs, gloves, masks and disinfectants effective against influenza virus should be available on board.
- Rapid influenza diagnostic tests should be available. However, results of these tests should be interpreted with caution and false positive and false negative results should be taken into consideration.
- Treatment should be provided to cases and chemoprophylaxis contacts in accordance with WHO [21] and ECDC [22] recommendations.
- Standardised surveillance data using a standardised definition for ILI should be collected in the ship medical log. Data that are collected should include, at a minimum: patient age, sex, onset date of symptoms, respiratory symptoms (fever and either cough or sore throat, malaise, myalgia, chest pain), signs of complications (like difficulty of breathing, purple or blue discoloration of the lips, vomiting) or signs of dehydration, pregnancy, chronic medical conditions (such as asthma, diabetes or heart disease), recovery or death, country of residence and/or destination, and results of diagnostic testing (e.g., rapid viral and bacterial tests, chest x-ray). Data should be routinely reviewed to assess trends in disease frequency [14].
- Active surveillance among passengers and crew members should be initiated by the ship's medical staff to detect new cases of respiratory illness once an influenza outbreak has been identified. Active surveillance should include directly contacting passengers (e.g. passenger surveys) and crew members and should be recorded [14].
- Ill crew members and passengers should be isolated in cabins and a limited number of persons should come into contact with them. Surgical masks should be worn by patients.

- Healthcare workers and crew members that come into contact with patients should be trained in proper use of gloves and certified particulate disposable respirators (EN 149:2001) [5].
- Crew members should be trained in order to follow protocols for cleaning materials contaminated by body fluids and to properly manage waste [5].

Before disembarkation

- For ships on international voyages, the Maritime Declaration of Health according to IHR should be completed and sent to the competent authority, if an infection has occurred on board and according to national legislation of the country of disembarkation. Ships may be required to report the previous itinerary for a given period before entering a port.
- The competent port health authorities should be informed if any support is needed (clinical specimen examination, disinfection, hospitalisations) before the ship arrives at port.

After disembarkation

- Preventive measures should be taken to avoid the recurrence of an outbreak in the next voyage.
- Early suspicion of potential cases of influenza among passengers and crew members and rapid implementation of a respiratory illness control protocols can probably limit the size of outbreaks.

Conclusions

Currently, just one case of new influenza A (H1N1) virus infection on a ship, even though it is an expected event, may trigger the implementation of emergency plans by the passenger ship industry as well as competent authorities or result in an overreaction to the event. However, we believe that it is important to establish and maintain a surveillance system for ILI on board passenger ships, in order to systematically collect data that can help to determine the baseline illness levels. Monitoring these will enable early identification of outbreaks and allow timely implementation of control measures.

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