

# DESCRIPTION OF THE EARLY STAGE OF PANDEMIC (H1N1) 2009 IN GERMANY, 27 APRIL-16 JUNE 2009

Novel influenza A(H1N1) investigation team<sup>1,2</sup>

1. Robert Koch Institute, Berlin, Germany

2. Members of the team are listed at the bottom of the article

We report characteristics of the early stage of the pandemic (H1N1) 2009 in Germany. Until 16 June 2009, 198 confirmed cases were notified. Almost half of the cases (47%) were imported, mostly from Mexico and the United States. About two thirds of indigenous cases were outbreak-related (with two large school-associated outbreaks, n=74). According to our results Germany is still in the early stage of the pandemic with limited domestic transmission.

### Introduction

After identification of the first cases in April 2009, the rapid spread of the new influenza A(H1N1)v pandemic is a clear signal that global spread of this new virus is inevitable. Within six weeks the novel influenza A(H1N1)v virus has spread as far as previous pandemic influenza viruses have spread within six months [1].

As of 15 July, the European Centre for Disease Prevention and Control (ECDC) reported 125,993 confirmed human cases worldwide from 129 countries with a total of 667 deaths. Most deaths occurred by far in the United States (n=211), Argentina (n=137) and Mexico (n=124) [2].

The first German case was notified on 27 April 2009. However, the dynamics of the unfolding pandemic in Germany and the rest of Europe differed markedly from that of North America.

We present data reported during the first two months including cases notified until 16 June 2009. The information is therefore focussed on the characteristics of the early stage of the evolving pandemic in Germany.

### Methods

Immediately after the first cases in the United States became public the Robert Koch Institute (RKI) established a case-based reporting of influenza A(H1N1)v. Information on possible, probable and confirmed cases was collected in a database.

A possible case was defined as a person with febrile ( $\geq 38^{\circ}\text{C}$ ) respiratory illness and with (a) an epidemiological link to a country with domestic transmission or (b) contact to a probable or confirmed case, (c) residence in a county or region with at least five cases that had no epidemiological link to a country with domestic transmission or a confirmed case or (d) laboratory exposure.

A probable case was defined as a person with a laboratory diagnosis of influenza A with a negative test result for seasonal influenza (A/H1 and A/H3).

A confirmed case was defined as a person who had a sample positive for influenza A(H1N1)v virus confirmed by the National Reference Laboratory (NRL) or by a laboratory approved for surveillance by the NRL.

A case was considered as imported if the date of onset of symptoms was within seven days after departure from a country with sustained community-level transmission. By 16 June 2009 according to the definition of the Robert Koch Institute this included: Argentina, Australia, Chile, Costa Rica, El Salvador, Honduras, Israel, Canada, Mexico, New Zealand, Panama, Singapore, Spain, United Kingdom, Uruguay and the United States. If no recent travel history to one of these countries fulfilling the RKI definition at the time of travel was reported, the case was considered as indigenous.

For laboratory-confirmed cases (self-) isolation was recommended (adults: for seven days, children: for 10 days after onset of symptoms)

Contact management in the early phase was as follows:

All contacts of confirmed and probable cases were registered at local health authorities and informed about pandemic influenza (H1N1). Contacts were classified in two categories: 1) close contacts (e.g. household contact or sexual partner or unprotected person involved in patient care or treatment) and 2) repeated casual contacts (including conversation and physical contact).

Measures for close contacts included home quarantine for seven days after the last relevant contact, daily health monitoring by local health authorities and consideration of antiviral prophylaxis for 10 days. Less close contacts were advised to reduce contact to vulnerable persons for seven days.

### Results

As of 16 June 2009, 198 laboratory confirmed cases of influenza A(H1N1)v have been detected in Germany (Figure 1).

Of the 190 confirmed cases, for whom the sex was reported, 110 (58%) were female. Cases ranged in age from 1 to 67 years, with an average of 23 years and a median of 18 years (Figure 2). The majority of the female cases in the age-group 10-19 years can be explained by the high number of infected girls associated with a school outbreak, where 70% of students in the two affected classes were female.

The confirmed cases were distributed over 14 districts (Figure 3).

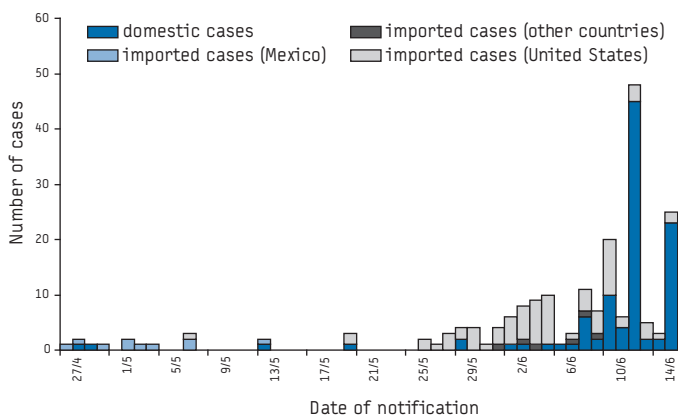
While in the beginning most cases were imported, the proportion of indigenous cases has increased since 2 June 2009 (Figure 1). Overall 93 cases (47%) were imported.

The most frequently involved countries were: United States with 77 cases (83%), Mexico with 10 (11%), Argentina with three (3%) and United Kingdom, Canada and Panama with one case each (total 3%).

105 domestic cases (53%) were notified. Amongst these the source of the infection was known in 96 cases (91%). Out of these

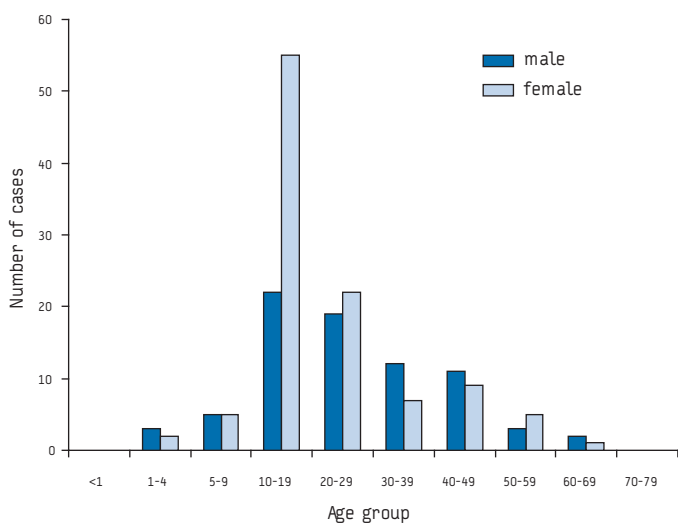
**FIGURE 1**

**Laboratory-confirmed cases of influenza A(H1N1)v by date of notification and source of infection, Germany, as of 16 June 2009 (n=198)**



**FIGURE 2**

**Age and sex distribution of laboratory-confirmed cases of influenza A(H1N1)v, Germany, as of 16 June 2009 (n=183)\***



\*Note: Data on age or sex was unavailable for 15 cases

96 cases 73 (76%) were outbreak-related and 23 related to an imported case (20 secondary cases=direct contact to an imported case, and 3 tertiary cases=direct contact to a secondary case). The infections of these 96 cases were most likely acquired in the following settings: school (73 cases), family/household (8), private party (6), healthcare (3), child care centre (3) and unknown (3).

For nine cases notified in June that were not restricted to a certain area the source of infection was unknown, i.e. the case did not report any travel history or contact to a confirmed case and was not part of an outbreak.

Four larger outbreaks ( $\geq 5$  cases) have been identified: one outbreak associated with a child care centre (5 cases), one outbreak following a private party (6 cases) and two recent outbreaks related to two schools in North Rhine-Westphalia (16 and 58 confirmed cases so far).

The clinical features of the confirmed cases are shown in Figure 4. In 29% of all confirmed cases information about symptoms was not (yet) available. Asymptomatic infection occurred in 3% of cases.

Reliable information on comorbidities is only available for a limited number of cases, who have been followed up intensively. Among 18 of these cases four reported underlying medical conditions including metastasising carcinoid, arterial hypertension, hypothyroidism and chronic respiratory disease.

Hospitalisation was reported for 40 cases (20%), the reasons were primarily infection control measures, not disease severity. Detailed information on the severity of the infection is pending, but up to 16 June 2009 no case was known to require mechanical ventilation and no deaths were been reported.

Data on vaccination status was available for 49% of confirmed cases. Of these, 11% (n=11) had a history of vaccination with seasonal influenza vaccine.

In 55% of cases information on contacts ascertained by the local health authorities was available. The mean number of contacts per case was five (range 0-291). The type of contact and applied infection control measures are currently under investigation.

For those cases (n=22) that have been followed up intensively the number of contacts who acquired influenza A(H1N1)v infection was calculated per case. Seven contacts had a PCR-confirmed infection, corresponding to 0.3 infected contacts per case. None of the symptomatic contacts with a confirmed infection had received timely antiviral prophylaxis. This calculation was performed for cases notified before 4 June 2009. With an increasing number of indigenous cases and the occurrence of larger outbreaks this ratio is now expected to increase considerably.

### Discussion

The characteristics of cases in the beginning of the pandemic closely resemble the data presented by other European countries (e.g. United Kingdom [3]) and Japan [4] in the early phase of the pandemic.

The majority of cases in the beginning were imported from Mexico and the United States. Strategies for early detection and

FIGURE 3

Geographical distribution of laboratory-confirmed cases of influenza A(H1N1)v, Germany, as of 16 June 2009 (n=198)

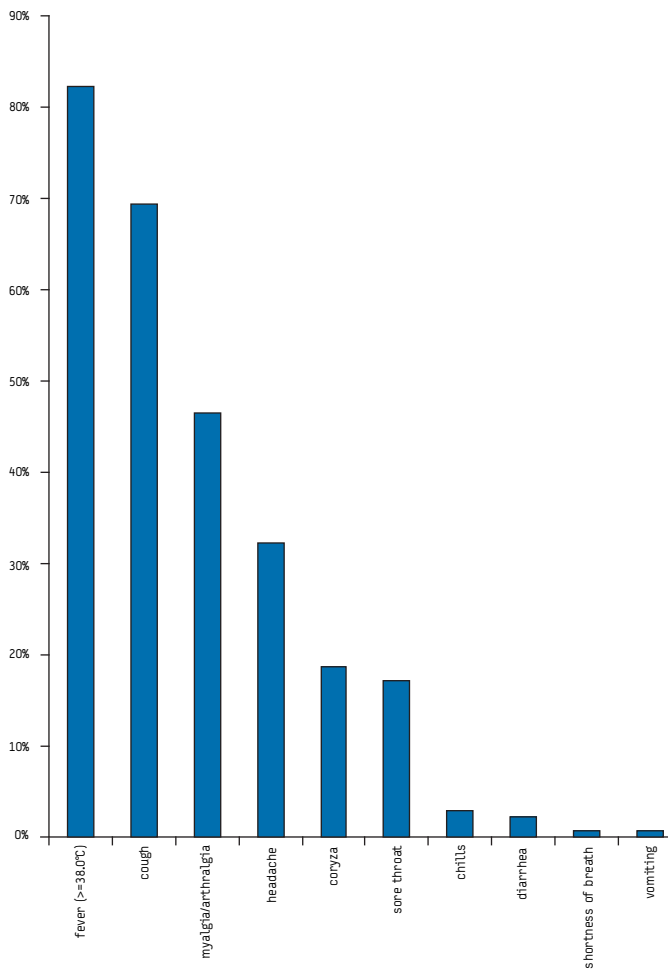


management of these cases seemed to work in this stage as no recommendations for travel restriction were in place. In the time period described Germany did not experience an exploding number of cases, however this might not only be due to the effect of the control measures taken but also due to other factors [5].

According to our results the first two months represented the early stage of the pandemic in Germany characterised by a high proportion of cases being imported, short chain of infections and limited outbreaks within the general population. The number of cases showed a rapid incline since mid-July 2009 with 7,963 confirmed cases notified until 5 August 2009 (of these, 6,259 cases (79%) were imported). However the overall picture has not changed considerably since 16 June since the recent increase is mainly due to travellers, in part German high-school graduates, returning from Spain and UK.

Due to the increasing case numbers the surveillance system has by now been changed from reporting of suspected cases individually

**FIGURE 4**  
**Clinical presentation of laboratory-confirmed cases of influenza A(H1N1)v, Germany, as of 16 June 2009 (n=140)\***



\*Note: Data on symptoms was unavailable for 58 cases

by fax to the routine case-based electronic notification to the state and national level of laboratory-confirmed cases and cases with an epidemiological link to a laboratory-confirmed case.

Taking into account the mildness of symptoms in the majority of cases the strategy for contact management has been adapted recently. Only close contacts (definition as above) with either a) an increased risk of severe infection (e.g. immunocompromised or chronic ill patients or pregnant women or infants) or b) with close contacts to vulnerable groups or with a high risk of causing outbreaks (e.g. in schools) are being followed up. The adapted measures are now focused on close contacts.

Furthermore, information on hospitalisation, treatment and risk groups are collected through the electronic notification system as with an increasing number of cases the burden of disease and severity of the clinical presentation becomes the main focus of the monitoring.

Novel influenza A(H1N1)v investigation team:

Alpers, Katharina; Altmann, Doris; An der Heiden, Matthias; Bartels, Cornelius; Bätzing-Feigenbaum, Jörg; Becker, Anne; Behnke, Susanne; Bergholz, Andreas; Bernard, Helen; Bielecke, Jessica; Biere, Barbara; Böhmer, Merle; Brodhun, Bonita; Buchholz, Udo; Buda, Silke; Cai, Wie; Claus, Hermann; Dehnert, Manuel; Déleré, Yvonne; Dettmann, Marleen; Eckelmann, Fabian; Eckmanns, Tim; Faber, Mirko; Faensen, Daniel; Fahle, Caroline; Feig, Marcel; Frank, Christina; Gencaslan, Özlem; Ghassim, Parvin; Gilsdorf, Andreas; Gohlke-Micknis, Silvia; Gunsenheimer-Bartmeyer, Barbara; Haar, Karin; Haas, Walter; Hamouda, Osamah; Heltenbrand, Wiebke; Hermes, Julia; Herzhoff, Michael; Houareau, Claudia; Jansen, Andreas; Kalbhenn, Andrea; Kamga-Wambo, Oscar; Kappelmayr, Lutz; Kermer, Antje; Kirchner, Göran; Kleinkauf, Niels; Koch, Judith; Kollan, Christian; Köpke, Karla; Krause, Gérard; Kühne, Andrea; Laude, Gabi; Leuber, Michael; Lindemann, Christina; Liss, Ilka; Lohmann, Katrin; Maidhof, Heinrich; Männel, Andrea; Marcus, Uli; Matysiak-Klose, Dorle; Meyer, Birgit; Mohr, Oliver; Mücke, Inge; Neugebauer, Denise; Nielsen, Stine; Noll, Ines; Offergeld, Ruth; Pape, Ebi; Poggensee, Gaby; Poorbiazar, Mona; Radun, Doris; Reinhardt, Bernd; Reiter, Sabine; Reuß, Annika; Riedmann, Klaus; Ritter, Sabine; Riva, Alessandra; Rosner, Bettina; Sagebiel, Daniel; Säiler, Andrea; Sasse, Julia; Schenkel, Karl; Schirmack, Jaska; Schmidt, Axel; Schuppelius, Daniel; Schwarz, Franziska; Schweickert, Brigitta; Schweiger, Brunhilde; Siedler, Anette; Spackova, Michaela; Spielmann, Nadine; Stark, Klaus; Stegemann, Verena; Stöcker, Petra; Strobel, Hartmut; Süß, Thorsten; Trull, Heidi; Velasco, Edward; Voß, Lieselotte; Wadl, Maria; Walter, Dietmar; Weiß, Bettina; Werber, Dirk; Wessels, Guido; Wetzel, Sarah; Wiese-Posselt, Miriam; Zbinovcova-Dennis, Martina; Zimmermann, Ruth.

Correspondence should be addressed to Walter Haas: HaasW@rki.de

#### References

1. World Health Organization (WHO). Changes in reporting requirements for pandemic (H1N1) 2009 virus infection. Pandemic (H1N1) 2009 briefing note 3 (revised). 22 July 2009. Available from: [http://www.who.int/csr/disease/swineflu/notes/h1n1\\_surveillance\\_20090710/en/print.html](http://www.who.int/csr/disease/swineflu/notes/h1n1_surveillance_20090710/en/print.html).
2. European Centre for Disease Prevention and Control (ECDC). ECDC Situation Report. Influenza A(H1N1)v infection. Update 15 July 2009. Available from: [http://ecdc.europa.eu/en/files/pdf/Health\\_topics/Situation\\_Report\\_090715\\_1700hrs.pdf](http://ecdc.europa.eu/en/files/pdf/Health_topics/Situation_Report_090715_1700hrs.pdf).
3. Health Protection Agency and Health Protection Scotland new influenza A(H1N1) investigation teams. Epidemiology of new influenza A(H1N1) in the United Kingdom, April – May 2009. Euro Surveill. 2009;14(19):pii=19213. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19213>
4. Shimada T, Gu Y, Kamiya H, Komiya N, Odaira F, Sunagawa T, Takahashi H, Toyokawa T, Tsuchihashi Y, Yasui Y, Tada Y, Okabe N. Epidemiology of influenza A(H1N1)v virus infection in Japan, May - June 2009. Euro Surveill. 2009;14(24):pii=19244. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19244>
5. Depoortere E, Mantero J, Lenglet A, Kreidl P, Coulombier D. Influenza A(H1N1)v in the southern hemisphere - Lessons to learn for Europe?. Euro Surveill. 2009;14(24):pii=19246. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19246>

This article was published on 6 August 2009.

Citation style for this article: Novel influenza A(H1N1) investigation team. Description of the early stage of pandemic (H1N1) 2009 in Germany, 27 April-16 June 2009. Euro Surveill. 2009;14(31):pii=19295. Available online: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19295>