

## **Evaluación del Riesgo del ECDC sobre el caso humano de infección por virus gripal AH1 de posible origen porcino en Aragón (se adjunta el informe original de la evaluación de riesgo realizada por el ECDC)**

El jueves 22 de enero de 2009 se publicó en el EWRS (*Early Warning Response System*) la Evaluación del Riesgo del caso humano de infección por virus gripal AH1 de posible origen porcino en Aragón elaborada por el ECDC.

En la evaluación se hace una breve revisión de la infección/enfermedad por virus de la gripe en animales y humanos y se describe el caso humano de infección por virus AH1 de origen porcino ocurrido en Aragón: Se trataba de una mujer de 46 años, sin antecedentes de vacunación antigripal esta temporada, con fecha de inicio de síntomas el 08/11/2008 y toma de muestra respiratoria el día 12/11/2008. La evolución de la enferma fue favorable, sin precisar tratamiento específico ni hospitalización. Los resultados de laboratorio indicaron que el caso estaba infectado con un virus de la gripe de origen porcino. La infección esporádica humana con el virus de gripe porcino ya se ha descrito en la literatura y en la mayoría de los casos ha ocurrido en personas que trabajan con cerdos. Mientras que las cepas de gripe aviar se consideran un importante factor en la emergencia de una cepa de gripe humana pandémica, los cerdos continúan considerándose un potencial reservorio en el que se “pueden mezclar” virus de la gripe de origen aviar y humano que podrían originar nuevos virus de la gripe. La transmisión interhumana se ha descrito en otros episodios de gripe porcina, aunque nunca llegó a ser eficiente para provocar una transmisión sostenida en la población humana. Actualmente no hay ninguna prueba convincente en España que sugiera que haya ocurrido una transmisión humana del virus porcino ya que ningún contacto familiar cercano ni ningún trabajador ha desarrollado la enfermedad y no se ha confirmado el diagnóstico de gripe en el médico centinela que atendió al caso.

Las conclusiones de la evaluación son las siguientes:

- La aparición esporádica de casos humanos infectados con virus de la gripe de origen porcino es un hecho habitual en personas que trabajan con cerdos
- Estos casos pueden ocurrir en el futuro en otros países europeos
- En Europa, el riesgo de una transmisión entre personas del virus de la gripe de origen porcino no ha aumentado con la aparición de este caso
- Se necesitan llevar a cabo más estudios sobre el virus. Los estudios serológicos podrían ayudar a determinar si ha tenido lugar una transmisión persona-persona
- La evaluación del riesgo para los humanos de infecciones con virus de la gripe de origen porcino podría ser una futura área de investigación y vigilancia en Europa
- **Este acontecimiento no se considera un riesgo para la salud pública en los países de la Unión Europea**



## **ECDC Threat Assessment**

### **Influenza of possible swine origin in human in Spain**

#### **SOURCE AND DATE**

EWRS posted by Spain on Wednesday 13 January, 2009

#### **PUBLIC HEALTH ISSUE**

Influenza of swine origin detected retrospectively in a human with illness in November 2008

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#### **DISEASE BACKGROUND INFORMATION**

##### *Animal infection and disease*

Swine influenza (SI) is an acute viral infection of the respiratory tract in pigs. Sub-clinical infections are also common. The mortality is low and recovery usually occurs within 7-10 days [1]. A typical swine flu outbreak is characterized by a rapid onset of high fever, dullness, loss of appetite, laboured abdominal breathing and coughing but there can also be inapparent outbreaks [1]. In Europe, infection is common in many countries [2] but it is not a notifiable disease in the European Union (hence there are no routine EU data available). Influenza viruses in pigs have been detected for many years and circulating subtypes include H1N1, H3N2, H1N2 and H2N3 [3]. There have been more studies of the infection in North America of late than in Europe but the origin and nature of swine-like influenza viruses differ somewhat between Europe and the United States [1]. Swine origin influenza viruses also occur in wild birds, poultry, horses and humans, but interspecies transmission is considered a rare event [3].

### *Human infection and disease*

Infection with swine influenza virus has been detected occasionally in humans since the 1950s and the human disease is usually clinically similar to disease caused by infections with human influenza viruses [4-9]. Complications that include pneumonia and death have been reported in the literature in otherwise healthy adults without underlying disease [1]. Single generation person to person transmission has been reported but appears to be rare and chains of transmission have not been observed. Serological surveys undertaken in North America among persons working with pigs have shown that they quite often have evidence of prior infection with swine influenza viruses [8, 10]. But interpretation of sero-prevalence data can be difficult due to cross-reactivity (i.e.. infection with an ordinary influenza virus might be misinterpreted as indicating prior swine influenza infection). There are no contemporary serological data for Europe.

#### **EVENT BACKGROUND INFORMATION**

The case:

- 46 year old female from Aragon Autonomous region
- Flu like symptom onset 08/11/2008, throat swab collected on 12/11/2008
- No specific treatment, fully recovered and no hospitalization
- Laboratory findings indicate that case was infected with a swine influenza virus.

The virology:

The National Influenza Centre and Reference Laboratory has detected an influenza virus A/H1 (Influenza virus A/Aragon/RR-3218/08) of swine origin in a human case of influenza infection. Based on the phylogenetic analysis of the HA gene, the strain is close to swine H1 (almost identical to the isolate), A/Switzerland/8808/2002). The lab has yet to complete the study of the virus and to study other genes.

Exposure: the case worked on the family farm in the section of the pig farm. No pigs at the farm had any respiratory symptoms

Contacts: no family or co-workers reported any flu-like symptoms following the case. The physician that took the throat swab reported mild flu symptoms after having had contact with the patient. There is no virological information available for the doctor.

Measures: active surveillance for flu-like symptoms in household and work contacts was implemented at the farm and additional serological and laboratory studies are stated to be planned or ongoing respectively.

Spain reported in week 46/2008 through their sentinel influenza surveillance system to ECDC a low level of intensity of influenza activity with no activity for the geographical spread indicator. Sporadic laboratory confirmed cases of influenza were reported since week 43/2008.

#### **ECDC THREAT ASSESSMENT FOR THE EU**

Sporadic human infection with swine influenza virus has been documented in the literature with cases mostly confined to persons that have occupational exposure to pigs. It is for this reason that some scientists advocate to recommend seasonal influenza vaccination campaigns to persons working with pigs [11, 12].

While avian influenza genes are considered an important factor in the emergence of a human pandemic influenza strain pigs continue to be considered a potential "mixing

vessel” for influenza viruses from avian and human origin, thereby potentially leading to new influenza viruses [6, 13].

Human to human transmission certainly occurs and has been recorded in other events of swine influenza transmission to humans in Europe and the United States [6]. However it must be noted that in these instances the transmission was not efficient enough for sustaining the viruses in the human population.

In Spain there is currently no convincing evidence to suggest that a single generation of human to human transmission of swine influenza has occurred as no close family and work contacts have developed influenza like illness and diagnosis of influenza in the treating physician is unconfirmed. The event also took place more than two months ago and the investigations suggest that this event is closed. Further laboratory and serological investigations are still planned in this event. ECDC emphasises the importance of the virus being shared with a WHO Collaborating Centre for full characterisation and that serological testing should be undertaken jointly between the National Reference Laboratory and a laboratory experienced in investigating human exposures to animal influenza viruses.

#### *Conclusion*

- This sporadic case is not an unexpected event in persons occupationally exposed to pigs
- European countries can expect similar events in the future
- There is no increased risk for further human to human transmission of swine influenza viruses in Europe in the light of this case
- Further investigation and information on the virus is needed and serological studies would be helpful to eventually determine whether human to human transmission has taken place
- The risk to humans of swine influenza virus in Europe may be an area of further surveillance and study
- **This event is not considered a public health risk to countries in the European Union (EU).**

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#### **References:**

1. Van Reeth, K., *Avian and swine influenza viruses: our current understanding of the zoonotic risk*. Vet Res, 2007. **38**(2): p. 243-60.
2. Van Reeth, K., et al., *Seroprevalence of H1N1, H3N2 and H1N2 influenza viruses in pigs in seven European countries in 2002–2003*. Influenza and Other Respiratory Viruses, 2008. **Volume 2**(Issue 3): p. 99-105.
3. ESNIP2. *Swine influenza: variations on an old theme*. [cited 2009 January 15 2009]; Available from: <http://www.esnip.ugent.be/page6/page6.html>.
4. Kluska, V., M. Macku, and J. Mensik, *[Demonstration of antibodies against swine influenza viruses in man.]*. Cesk Pediatr, 1961. **16**: p. 408-14.
5. Dowdle, W.R. and M.A. Hattwick, *Swine influenza virus infections in humans*. J Infect Dis, 1977. **136 Suppl**: p. S386-9.

6. Myers, K.P., C.W. Olsen, and G.C. Gray, *Cases of swine influenza in humans: a review of the literature*. Clin Infect Dis, 2007. **44**(8): p. 1084-8.
7. Olsen, C.W., et al., *Triple reassortant H3N2 influenza A viruses, Canada, 2005*. Emerg Infect Dis, 2006. **12**(7): p. 1132-5.
8. Gray, G.C., et al., *Swine workers and swine influenza virus infections*. Emerg Infect Dis, 2007. **13**(12): p. 1871-8.
9. Newman, A.P., et al., *Human case of swine influenza A (H1N1) triple reassortant virus infection, Wisconsin*. Emerg Infect Dis, 2008. **14**(9): p. 1470-2.
10. Myers, K.P., et al., *Are swine workers in the United States at increased risk of infection with zoonotic influenza virus?* Clin Infect Dis, 2006. **42**(1): p. 14-20.
11. Thacker, E. and B. Janke, *Swine influenza virus: zoonotic potential and vaccination strategies for the control of avian and swine influenzas*. J Infect Dis, 2008. **197 Suppl 1**: p. S19-24.
12. Gray, G.C. and W.S. Baker, *The importance of including swine and poultry workers in influenza vaccination programs*. Clin Pharmacol Ther, 2007. **82**(6): p. 638-41.
13. Webster, R.G., et al., *Evolution and ecology of influenza A viruses*. Microbiol Rev, 1992. **56**(1): p. 152-79.