

Ventilation: Ventilation systems should be designed to minimize re-circulation of air within animal housing rooms which will reduce the exposure of pigs to viruses from other pigs, to reduce their exposure to avian and human influenza viruses, and conversely, to reduce exposure of workers to swine influenza viruses.

Basic hygiene practices: Workers should change clothes prior to leaving swine barns for office facilities, food breaks or their homes. Also, hand to face contact should be minimized and provision of hand- washing with soap should be made available in the farm. Frequent hand washing with soap should be encouraged.

- The butchers/pork sellers also have to use face masks while handling the pork and pork products.
- The pork and pork products can be used by the consumer after thorough cooking to an internal temperature of 71°C/170°F for 20 minutes

ACTION PLAN DURING AN OUTBREAK

Reporting

- If anybody suspects any case of swine influenza in an around his/her vicinity he/she should inform immediately the competent authority of the state/ Director, National Research Centre on Pig, ICAR, Rani, Guwahati, Assam.

Testing

- All the pigs located on a premises where swine influenza is confirmed must be tested for the antibody on the day when the infection is confirmed, and again 21 days after that date.
- Pigs on a contact premises would only normally be tested when disease has been confirmed in pigs on that contact premises.
- The preferable testing materials would be nasal swabs and blood samples. Epidemiological groups of pigs should be sampled to give a 95% confidence of detecting 5% prevalence of infected pigs.

Restrictions on pig movements

- Pig movements should be restricted in the infected premises and will remain in place unless a veterinary officer confirms that the animals are not infected (preferably after 2nd negative lab result).
- No further action would be necessary if the pigs remained sero-negative and virus negative at the subsequent tests done 21 days apart and in such cases all restrictions can be removed.

Culling

There are two criteria to follow in case of positive test results –

- If all pigs have tested and the swine influenza virus is confirmed in only 1 pig in a herd, the individual animal would be culled. Testing and surveillance of the remaining herd would be maintained to see if other naïve pigs became infected.
- If swine influenza virus is found in pigs, a decision to cull the whole herd would be made on a case by case basis depending on veterinary risk assessment.

Monitoring and Surveillance

- Swine influenza infection in pigs will be monitored through monitoring clinical signs in herds. Surveillance by blood sampling of pigs may also be utilized.
- Strict bio-security control measures should be introduced within the infected zone to limit the spread of disease.

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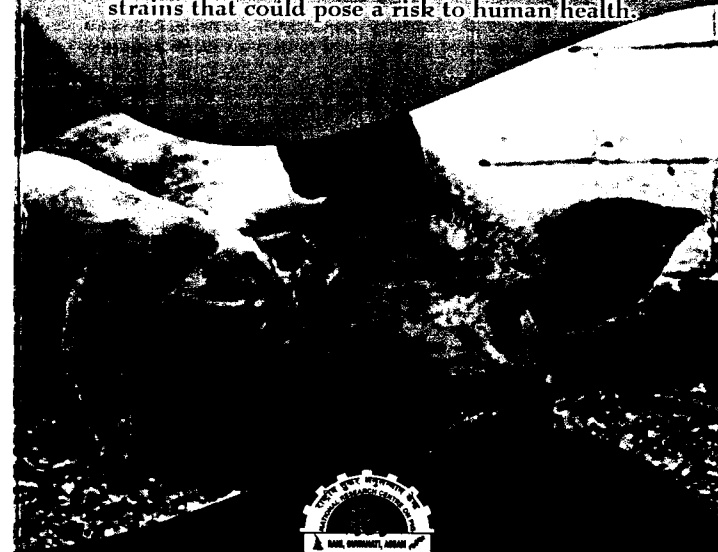
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SWINE INFLUENZA : CLINICAL SIGNS, ITS PREVENTION AND CONTROL



Pigs' physical makeup allows them to contract—and to spread—influenza viruses to and from other species, such as humans and birds. Due to their susceptibility to influenza virus infections from other species, pigs can also serve as "mixing vessel hosts" that can produce new influenza virus strains that could pose a risk to human health.



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ETIOLOGY

It is commonly known as Swine Flu, Hog Flu, and Pig Flu. The etiology of Hog Flu is a Type A Influenza virus which belongs to the Orthomyxoviridae family. There are four main subtypes (H1N1, H1N2, H3N2 and H1N7).

EPIDEMIOLOGY

The disease affects mainly young pigs with high morbidity and low mortality and occurs during cold months. Aquatic birds act as natural reservoir which can spread the disease to pigs.

TRANSMISSION

The influenza viruses may be transmissible between humans and pigs. Pigs may become infected with related type A human influenza strains during epidemics of human influenza, but show no clinical signs of infections. Aquatic birds are natural reservoir. Swine are the sole animal known to be susceptible to influenza A virus of human, swine & avian origin. The human strains have been isolated from pigs in Hong Kong, and pigs may serve as a reservoir for pandemics in humans as well as a source of genetic recombination between human and porcine strains.

CLINICAL SIGNS

Swine influenza is a specific, highly contagious disease of pigs that affects mainly young ones. **After an incubation period of 24-48 hrs. the animal exhibits signs of fever (107°F), jerky breathing (thumps), muscle stiffness, rhinitis, cough and loss of appetite.** These symptoms usually subside after 3-5 days, but in some cases, transitory fever may recur within 3 weeks. Laboured breathing associated with severe pulmonary involvement is observed in some cases, and death occurs after severe pneumonia. The mortality rate is usually not high (about 1%). The morbidity rate may approach 100%. Multiple factors such as immune status of the animal, age, infection pressure, concurrent infections, climatic conditions and housing interact

to affect clinical outcome of SIV infection. Secondary infection with bacteria such as *Actinobacillus pleuropneumoniae*, *Pasteurella multocida* and *Mycoplasma* sp. increase the severity of SIV. Following Influenza outbreak in a herd, there is incidence of increased infertility, abortion, small weak litters and stillbirths.



Lungs from cases of SIV

DIAGNOSIS

The clinical symptoms provide a basis for the presumptive diagnosis of swine influenza. Definitive diagnosis depends on:

- Isolation of virus,
- Demonstration of significant elevation of virus-neutralizing or antihaemagglutinin antibodies in the sera of pigs during the course of an infection by HI test and ELISA test,
- PCR to detect virus in nasal swab specimen
- Demonstration of viral antigens with immunological staining techniques.
- The swine influenza should be differentiated from diseases like atrophic rhinitis, swine fever, enzootic pneumonia and PRRS.

TREATMENT

Affected animals should be treated with broad spectrum antibiotics such as penicillin/streptomycin, long-acting oxytetracycline or synthetic penicillins such as amoxicillin. If the illness is severe then medicate the drinking water with either chlorotetracycline or oxytetracycline at a level of 25g (100% pure) per 1000kg of live weight per day, for five days.

CONTROL MEASURES

Control measures to protect pigs & human against infection by swine influenza virus can be classified in two broad categories:

A. Measures to prevent the entry of virus into the swine herd

- **Controlled barn entry:** Keep the sty doors closed and locked and only allow essential personnel to enter.
- **Equipment hygiene:** Equipments should be cleaned and disinfected.
- **Vehicle hygiene:** Vehicle movement to the farm premises should be restricted & vehicles that enter the farm yard should be cleaned thoroughly.
- **Control of other animals/birds:** It is essential to establish a fly and rodent control program in and outside the farm.
- **Water treatment:** Ensure that the incoming supply of water is chlorinated, and that the chlorine level and pH is monitored regularly. Use of untreated surface water as either drinking or water for cleaning in swine facilities should be avoided.

B. Measures to reduce the transmission of influenza viruses between pigs and people

- **Vaccination of pigs:** Vaccination of pigs against swine influenza can reduce the level of virus shed by infected animals, and thus reduce the potential for human exposure and zoonotic infections.
- **Vaccination of pig farm workers:** Human influenza vaccine may likely to provide some level of protection against infection with swine viruses of the same hemagglutinin subtype. Further, vaccination of farm workers will reduce the amounts of virus they shed if infected during human outbreaks, and thereby limit the potential for human influenza virus infection of pigs.
- **Bio-security to workers:** Provide face mask, boots and aprons to the workers working within the pig housing units, thus minimizing the transmission chance.