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ISTITUTO ZOOPROFILATTICO SPERIMENTALE DELL'ABRUZZO E DEL MOLISE "G. CAPORALE"

Pandemic Preparedness: Simulation Exercise

H5N1, H1N1 & West Nile Virus Outbreak Scenarios

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ISTITUTO ZOOPROFILATTICO SPERIMENTALE DELL'ABRUZZO E DEL MOLISE "G. CAPORALE"

Scenario 1: Avian Influenza H5N1

Several migratory birds found near a wetland area have shown neurological signs and high mortality has been reported. The wetland is located close to a densely populated poultry area. A suspicion of Highly Pathogenic Avian Influenza (HPAI) has been raised.

Which initial steps should be taken by the Competent Authority?

a. Organizing collection of blood samples and monitoring clinical signs for two weeks

b. An official investigation should be initiated, including the organization of post-mortem examinations and the collection of samples from dead/sick birds for laboratory examination

c. Waiting for more birds to die before collecting samples

d. Testing only domestic poultry in nearby farms

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Scenario 1: Avian Influenza H5N1

The presence of HPAI H5N1 has been confirmed in samples taken from migratory birds. Local poultry farms are at risk.

Which of the following measures should be taken for the local poultry farms following the event in wild birds (1 or more answers)?

a. The competent authority may determine an infected zone in order to prevent the further spread of the disease

b. No specific measures are needed in the densely populated poultry area as the infection has been confirmed only in wild birds

c. Increasing surveillance: clinical inspection and sampling of at-risk flocks

d. Strengthening biosecurity (e.g. keep birds indoors where possible, protect feed/water from wild birds, control access to the farm)

e. Informing and instructing farmers/workers on clinical signs to report immediately

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Scenario 1: Avian Influenza H5N1

The presence of HPAI H5N1 has been confirmed in a poultry farm.

What immediate actions must be taken on the infected poultry farm?

a. Continuing production and observe for new clinical signs without movement restrictions
b. Humane culling of all birds, safe disposal of carcasses and contaminated material thorough cleaning and disinfection, destruction of poultry products
c. Vaccinating only the clinically affected birds to limit disease spread
d. Moving apparently healthy birds to another farm for safe keeping
e. Allowing marketing of eggs and poultry products after visual inspection

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Scenario 1: Avian Influenza H5N1

HPAI H5N1 subtype has been confirmed in the poultry farm.

Once the HPAI outbreak is confirmed, which reporting steps must be taken?

a. The competent veterinary authority must notify the relevant national authorities without delay and report the event through the official animal disease notification systems, in line with national, regional legislation and international reporting obligations (e.g. to WOAH)

b. The outbreak should be reported to local farmers' associations; international notification is optional if the virus is already known in the country

c. Deciding whether to inform the competent national and international authorities, depending on the severity of clinical signs and the expected economic impact on the farm

d. The notification to WOAH is done only for human cases of avian influenza, not for animal outbreaks

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Scenario 1: Avian Influenza H5N1

The presence of HPAI H5N1 has been confirmed in the poultry farm. Human exposure is possible.

What intersectoral coordination is required (1 ore more answers)?

a. The veterinary authority first completes all culling and cleaning–disinfection activities and immediately informs the public health and occupational health authorities

b. Activation of a joint One Health coordination mechanism to conduct a shared risk assessment, identify and follow up exposed persons, agree on PPE and align risk communication messages

c. Cooperation limited to private poultry producers

d. The private veterinarian advises farm workers that they should contact their general practitioner if they feel unwell, but no formal contact with public health services is necessary as long as infection appears to be limited to animals on the farm

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Scenario 1: Avian Influenza H5N1

The presence of HPAI H5N1 has been confirmed in the poultry farm. The farm owner keeps several outdoor cats that roam freely in the areas surrounding the poultry premises.

What should be done regarding the cats present in the poultry farm?

a. They can freely move between poultry houses because they help control rodents

b. They should be euthanized immediately without testing

c. They should be regarded as potentially exposed mammals, kept under observation and tested as appropriate, and measures should be put in place to prevent their contact with poultry and other animals, as well as close contact with humans without proper precautions

d. No action is needed, since cats are not susceptible to avian influenza viruses

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Scenario 1: Avian Influenza H5N1

Some animals on a dairy cattle farm located near the infected poultry farm have developed mastitis and a reduction in milk production. Two cats on the same farm died after showing respiratory signs.

What actions should the competent veterinary authority take in this situation?

a. Advising the farmer to pasteurize the milk and continue production as usual

b. Initiating an official investigation on the dairy farm, collect and submit samples from affected dairy cows (e.g. milk, nasal/oral/rectal swabs) and dead cats to assess the occurrence of potential H5N1 spillover

c. Waiting for the next routine surveillance campaign to include the cattle herd

d. Performing laboratory analyses only on milk

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The presence of H5N1 HPAI has been confirmed in milk samples and in the two dead cats.

Which immediate control measures are required (1 or more answers)?

a. All diary cattle kept in the affected establishment shall be killed as soon as possible on the spot and the cattle products shall be destroyed

b. Placing the dairy farm under official control as an infected/suspected holding, with strict movement restrictions on animals, milk and other products

c. Continuing milking and selling pasteurized milk since pasteurization inactivates the virus

d. Quarantining clinically affected cows. For apparently healthy animals, perform pre-movement checks and monitor the herd using bulk-tank milk testing

e. Other

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The presence of H5N1 HPAI has been confirmed in milk samples and in the two dead cats.

Which biosecurity and prevention measures are the top priority on the affected farm (1 or more answers)?

a. Restricting access, requiring PPE for personnel, and ensuring disinfection of equipment and vehicles

b. Halting the use and movement of raw milk, except for consignments intended for authorized destruction

c. Vaccination of cattle using avian influenza vaccines

d. Other

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Scenario 1: Avian Influenza H5N1

The presence of HPAI has been confirmed in the poultry farm, in the dairy cattle farm and in the two dead cats. Human exposure is possible.

How should information be shared with the public (1 or more answers)?

a. Through social media rumors and unofficial channels

b. Providing joint, coordinated messages from veterinary and public health authorities

c. Withholding all information until the outbreak is over to avoid creating panic among the public

d. Using official channels (e.g. press releases, authority websites, local media) to give timely updates, using clear, non-technical language and stressing both the risks and the measures in place to control them

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Scenario 2: H1 avian-like IAV in swine

In late November, two workers at a medium-sized pig slaughterhouse developed respiratory symptoms (fever, cough, muscle aches). In the preceding week, pigs on a farm supplying this slaughterhouse had shown similar respiratory signs including cough, nasal discharge, and reduced growth rates.

What is the first action to take in the swine farm reporting influenza like illness (1 or more answers)?

a. Treat the animals with broad-spectrum antibiotics
b. Immediately notify the suspicion to the competent Veterinary Authority and apply biosecurity measures
c. Slaughter the animals to prevent spread
d. Collection of nasal swabs and/or oral fluids from cotton ropes within 24-72 hours
e. Observation of clinical signs and wait for clinical confirmation before reporting

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Scenario 2: H1 avian-like IAV in swine

Pig samples has been collected and molecular investigations confirm the presence of influenza A virus in all samples. Genomic sequencing identified a H1N2 avian-like IAV subtype in the pig samples that is genetically distinct from currently circulating H1N2 avian-like swine influenza viruses and seasonal human influenza strains.

Which of the following statements are correct (1 or more answers)?

a. The circulating virus may represent a novel swine influenza strain and the event should be notified to the national and, eventually, to international (WOAH) authorities

b. There is no risk for humans because it is a swine virus

c. The virus could have arisen through swine-to-human transmission

d. The virus could have arisen through reverse zoonosis (human-to-swine)

e. The identified strain will almost certainly cause a pandemic due to its ability to transmit to humans

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Scenario 2: H1 avian-like IAV in swine

Genomic sequencing identified an H1 avian-like IAV subtype in the pig samples. Two slaughtermen showed respiratory symptoms. An 86-years old man related to one symptomatic slaughterman, died after acute respiratory distress syndrome.

What should be done immediately at the slaughterhouse level (1 or more answers)?

a. Immediate communication to the public health authorities to collaborate and to assess possible zoonotic transmission under the One Health framework
b. Conduct a joint epidemiological and laboratory investigation (animal + human) to compare viral strains and evaluate risk
c. Ignore the human cases, since Swine Influenza is considered common in pigs and usually mild in people
d. Maintain and strengthen biosecurity and hygiene measures in the farm and slaughterhouse, including PPE use and restricted movement of people and animals
e. Other

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What information is most critical for risk assessment and public health (1 or more answers)?

a. Pig breed and age

b. Genetic characterization of the virus and its similarity to human influenza strains

c. Antiviral susceptibility and antigenic characterization vs. currently used human seasonal H1 vaccines (any expected cross-protection?)

d. The feeding schedule of pigs

e. The possible presence and resistance of H1 avian-like IAV in pork meat and, consequently, the safety of pork

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What communication approach should be used with the public (1 or more answers)?

a. Communicate transparently through official channels, explaining that investigations are underway and safety measures are in place

b. Avoid public announcements to prevent panic

c. Before informing the general public, veterinary authorities and public health should jointly agree on the risk communication, so that any human health messages are consistent with the veterinary investigation and data

d. Blame the slaughterhouse workers for the outbreak

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Scenario 3: West Nile Virus Outbreak

It is early June in a WNV-low risk area. Several dead magpies and crows are reported by local citizens and a goshawk showing neurological signs was rescued by the regional wildlife rescue center, that notifies the local veterinary authorities.

What should be the first recommended action (1 or more answers)?

a. Ignoring until more data are collected

b. Requesting necropsy and collect samples to be sent to local official laboratory for WNV and USUV analyses

c. Collecting samples from all the horses in the area for serological testing, as they are certainly infected as well

d. Notifying the regional public health authority immediately

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What are the preferred samples to collect and the *preferred* analyses to perform (1 or more answers)?

a. Brain and internal organs (heart, spleen and kidney, even in pool) from dead birds for

   Real Time RT-PCR for WNV and USUV

b. Blood from the sick goshawk for serological analyses to detect IgM against WNV and

   USUV

c. Blood from the sick goshawk for Real Time RT-PCR for WNV and USUV

d. All the mentioned samples for viral isolation in cell colture

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Scenario 3: West Nile Virus Outbreak

All bird samples tested positive for West Nile Virus.

What is the next surveillance step triggered by a positive result in wild birds (1 or more answers)?

a. Intensifying entomological surveillance in the area using a grid of regular geographical units (20 km per side) and using at least one CDC or gravid trap with CO_2 bait.

b. Culling of target bird species to contain the spread of the infection

c. Sending positive sample to the National Reference Laboratory for West Nile Disease for the confirmation of positivity and lineage identification within two days

d. Testing by Real Time RT-PCR for WNV and USUV the trapped mosquitoes

e. No action is required until human cases occur

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Scenario 3: West Nile Virus Outbreak

The National Reference Laboratory identified Lineage 2 WNV in bird samples and in *Culex pipiens* collected with entomological traps.

Following the confirmation of West Nile virus circulation in the area, which measures should be implemented (1 or more answers)?

a. Intensifying removal of mosquito breeding sites and apply larvicidal treatments
b. Activating precautionary measures for donations of blood, blood components, organs and tissues
c. Suspending outdoor activities at night immediately
d. Strengthening public awareness in personal protection and vector control
e. Informing general practitioners (GPs) and pediatricians (PLS) about possible human cases
f. Considering adulticidal disinfestation in sensitive locations (hospitals, residential care facilities, public parks) and during outdoor evening events
g. Informing the Ministry of Health and the local public health services

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f. Considering adulticidal disinfestation in sensitive locations (hospitals, residential care facilities, public parks) and during outdoor evening events
g. Informing the Ministry of Health and the local public health services

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Scenario 3: West Nile Virus Outbreak

The National Reference Laboratory identified Lineage 2 WNV in bird samples and in *Culex pipiens* collected with entomological traps. A veterinarian reports a horse with neurological symptoms (ataxia, tremors, lower lip ptosis) in a stable located in the same province.

What immediate actions are required?

a. Euthanizing the animal immediately to avoid viral transmission to other horses

b. The veterinarian should collect and send samples to the local official laboratory for WNV testing

c. The veterinarian should notify the local veterinary authority who will provide to collect and send samples to the local official laboratory for WNV testing

d. Waiting for confirmation before taking action

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What are the preferred samples to collect and the preferred analyses to perform (1 or more answers)?

a. Cerebrospinal fluid for Real Time RT-PCR analyses for WNV and USUV

b. Plasma and urine for Real Time RT-PCR analyses for WNV and USUV

c. Nasal swab and feaces for Real Time RT-PCR analyses for WNV and USUV, to assess the viral shedding and environmental contamination

d. Serum for ELISA-based IgM detection

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Scenario 3: West Nile Virus Outbreak

Another horse has been found dead after showing neurological signs in a different stable located in the same province.

What should be the correct actions to do?

a. The private veterinarian should perform necropsy and collect brain, brainstem, spinal cord, heart, kidney, and spleen for WNV analyses

b. The private veterinarian should notify the local veterinary authority who will provide to perform necropsy and collect brain, brainstem, spinal cord, heart, kidney, and spleen for WNV analyses

c. Waiting for other cases in the same stable before taking action

d. Burying the carcass deep enough that insects can't get to it

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Scenario 3: West Nile Virus Outbreak

Real time RT-PCR on blood and urine samples and organs of the two horses confirms the WNV lineage 2 infection. ELISA detected IgM antibodies against WNV in the first horse.

What should be the way to proceed at this stage (1 or more answers)?

a. No further tests are needed; the local laboratory analyses are sufficient
b. Positive samples should be sent to National Reference Laboratory within two days for WNV infection confirmation
c. The Ministry of Health, the local public health authorities as well as the blood donation and organ transplant centers should be promptly notify to activate precautionary measures for donations of blood, blood components, organs and tissues
d. Immediately suspending all horse movements out of the infected area
e. Considering to protect other horses from mosquito bites and from disease by vaccination

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Scenario 3: West Nile Virus Outbreak

Several people living in the infected province show unusual mild fever and flu-like symptoms. A 87-years old woman shows Parkinson-like signs and several mosquitoes bites. A 82-years old man died following acute flaccid paralysis.

What is the correct immediate procedure for reporting and laboratory confirmation of this suspected case?

a. Notifying the local health authority (ASL) within 12 hours, sending samples to the regional reference laboratory and/or to the National Reference Laboratory
b. Only notifying the National Ministry of Health by email and waiting for further instructions
c. Starting treatment immediately and do not report until confirmation is received
d. In case of positive results, notifying within 24 hours to the regional authorities and the Ministry of Health
e. Considering targeted adulticidal interventions

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