Beyond Zoonoses: One World - One Health,

The Threat of Emerging Diseases to Human Security and Conservation, and the Implications for Public Policy

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Avian Flu and SARS: The Policy and Legal Challenges of Zoonotic Diseases

by

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Beyond Zoonoses: One World - One Health

• “One World One Health” – aptly describes impact of viral globalisation of zoonotic diseases which crosses frontiers
• Example – amazing how fast SARS virus travelled from a Singapore tourist in HK (Esther Mok) who contracted it there, spread it to Spore. SARS also hit Vietnam, US and other countries
• Mok spread virus to her parents and pastor who died
• Another victim who went to her ward spread it to his brother who in turn spread it to his family and fellow stallholders in the Pasir Panjang wholesale Centre, etc
• Singapore: 33 dead, 238 infected from Feb – May 03
1. Avian Flu

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B. Policy and Legal Challenges

   (a) Policy Challenges on Culling: Conservation Issues

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      • Precautionary Principle

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2. SARS

A. Introduction

B. Policy and Legal Challenges

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• Issues Relating to Protection of Wildlife and Domesticated Animals

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TOP OF THE NEWS

Region sees more bird flu and Sars cases

The hot spots

- 1.8 million birds slaughtered.
- Three confirmed Sars cases.
- No bird flu cases. Ban on imports of poultry, eggs and feathers from affected countries.
- Ban on imports from affected sources.
- All live chicken imports to be vaccinated.
- 23 people suspected of bird flu infection. Four confirmed deaths.
- Two million chickens culled.
- Ban on poultry sales in Ho Chi Minh city.
- Two outbreaks of bird flu.
- 20,000 birds culled in Changhua farm. Area is quarantined.
- 35,000 chickens culled in Chiayi farm.
- Farmers urged to put up nets to keep out migratory birds.
Thailand battles fresh outbreak of virus amid fears of resurgence gathering pace

Bird flu spreads to 18 Thai provinces

BANGKOK - Bird flu outbreaks have spread to three more Thai provinces, health officials said yesterday, in the latest sign that a resurgence of the disease that killed 24 people in Asia this year is gathering pace.

At least 14 Thai provinces are battling renewed outbreaks of avian influenza which spread through 10 Asian countries earlier this year, killing 16 people in Vietnam and eight in Thailand, and decimating poultry stocks.

New cases have been reported in recent weeks in China, Vietnam and Thailand, raising concerns that the virus may be staging a comeback in the region.

"Lab results show the latest province affected by bird flu is Kho Kaeo in Thailand's north-east," a livestock development department official, who asked not to be identified, said.

"Now we can confirm that we have found bird flu in 15 provinces.

Earlier this month, Prime Minister Thaksin Shinawatra sought to play down the crisis, saying outbreaks were appearing only sporadically across the country's 16 provinces.

He told reporters that the government ordered prompt calls when suspected cases were identified, but ruled out any vaccination programme because of fears that the virus could mutate.

Only a few thousand birds reportedly have been killed this time around, compared with tens of millions that were killed in the earlier outbreaks this year. - AP

Thais expect more bird flu outbreaks

BANGKOK

THAILAND, where 12 people have died in the bird flu epidemic, is bracing itself for more outbreaks of the deadly virus as the winter cold in the next few weeks and migratory birds fly south, an expert said yesterday.

An intense one-month campaign to wipe out the virus, which ended on Sunday, was extended for a third year to prevent more outbreaks, Deputy Prime Minister Chuan Leekpai, chairman of the national bird flu panel, told reporters.

"We expect to see more outbreaks when the cold season comes" later this month, Mr Chuan said. "It is very likely that we will see many recurrences."

He reiterated his comments in September that Thailand, a leading rice exporter before the disease hit early this year, was to be a key front in the three-to-five-year battle to wipe out the H5N1 virus, which has also killed 20 Vietnamese.

Premier Thaksin Shinawatra ordered his ministers to wipe out the bird flu virus by the end of October so that Thailand would be free of the disease by mid-December.

The country's first case of human transmission of bird flu was on Sunday and yesterday that the concerted efforts had yielded satisfactory results, but the minister said there was still a long way to go before the problem would be solved.

The cool season in which experts say the virus thrives starts in the middle of this month and moves migratory birds which they say are probably the main spreader of it.

Mr Chuan said after the meeting that the government's fight against the virus would focus on 12 of Thailand's 74 provinces, which had been hit by repeated outbreaks.

"So far there is no guarantee that when the cold season comes, chickens won't die in large numbers like the last time, but we have made preparations so that we are not caught by surprise," he said. The government has not vaccinated migratory birds, he added.

REUTERS
Bird flu outbreak: ‘Worst yet to come’

The WHO says that the world risks facing a bird flu pandemic if more is not done to detect and eradicate the disease.

SHANGHAI – Asia faces a bird flu outbreak of unprecedented proportions, according to the World Health Organisation (WHO).

It warned that avian influenza could develop into a global pandemic if more was not done to detect and eradicate it.

“This outbreak is historically unprecedented. Its infectious agents don’t respect international boundaries,” Dr Shigeru Omi, the organisation’s director for the Western Pacific region, told some 300 member-state delegates here.

Health officials from across Asia raised alarm bells yesterday over the outbreak.

Since last November, 20 cases of the H5N1 strain of avian flu have been detected among humans in the region, with 28 people killed in Thailand and Vietnam.

The delegates stressed that increased collaboration between nations and more study was needed to combat the virus, which reappeared in July in Malaysia, Indonesia, Vietnam and China after an earlier crisis ended.

The WHO has said the virulent virus was circulating more widely in the region than originally believed.

A huge flow of people, goods and foods around Asia and lax animal husbandry practices are prime concerns.

But worstworries is the fact that humans lack immunity to the virus.

WHO Director-General Lee Jong-Wook said the ultimate goal was to contain the virus’ spread before it developed the ability to jump from human to human.

Currently, the avian flu is very infectious among birds, but does not spread as easily from animals to humans.

To prevent the virus from mixing with a human one and forming a new disease, Dr Lee said, “will require a sustained effort of investment.” The WHO is pushing for a 12-per-cent increase in its budget, partly to deal with avian flu.

The organisation also warned that new diseases similar to the avian flu and SARS originating in animals – known as zoonotic diseases – are almost certain to keep appearing. “We must be ready for them,” Dr Omi said.

To deal with the threat, he said the WHO must work more closely with the United Nations’ Food and Agriculture Organisation, which deals with livestock.

WHO official Hitoshi Oshitani, the regional adviser for surveillance and response, said the region “still had a long way to go in terms of preparedness” in dealing with bird flu.

Malaysia, which detected three possible human bird flu cases last weekend, said it had strengthened infections disease surveillance and drawn up a rapid-response plan.

A Malaysian representative suggested countries around the region adopt a common framework to prepare for a potential national pandemic.

Singapore proposed wider use of vaccinations.

“The outbreak of avian influenza in the region is potentially more dangerous than SARS and we should not ignore a pandemic arising from this,” a Singapore representative said. “We cannot wait for a pandemic to appear. Rapid vaccine development is necessary and needed urgently.”

Thailand, the world’s fourth-largest chicken exporter and supplier of the disease-halted its exports to Europe and Japan, could decide this week whether or not to vaccinate fowl.

Thousands of chickens on farms oppose such a move. They say governments should halt at eating vaccinated chickens because of sensitivities about chemical residues in food.

Delegates to the regional meeting are also looking into threats to food safety. They are expected to propose regulations on the sale of live animals for food.

AP, Reuters

[Left: Malaysian health officials catching chicken in Tumpat, Kelantan. A bird flu outbreak began in the state last month. ]

[Right: Asian chicken farmers raise alarm bells as bird flu cases increase.]

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Global pandemic warning from WHO

More bird flu cases in Kelantan villages

KUALA LUMPUR

MALAYSIA yesterday announced new bird flu cases and said a veterinary worker had been hospitalised with a fever and cough.

Officials said eight birds had died from the H5 strain of avian flu in three villages near the border with Thailand, which is also battling the disease.

"Culling of poultry in the infected area will begin later today," said Mr Hawari Hussein, director-general of the Veterinary Department.

More tests are needed to determine whether the virus is of the H5N1 strain, he added. This lethal strain has killed 28 people in Asia this year, including nine in Thailand.

Meanwhile, a top World Health Organisation official, Dr Shigeru Omi, warned yesterday of a likely global pandemic unless tougher efforts are made to combat the spread of the virus and improve sanitation in the poultry industry.

No humans have been infected by H5N1 in Malaysia since the first outbreak was recorded last month. The new cases were discovered in Kebakat, Paloh Hilir and Cabang Tiga villages all within a 10-km radius of a quarantine area set up last week in Kelantan, the AP reported.

The Federation of Livestock Farmers Associations said the poultry industry is losing RM10 million (S$4.5 million) daily after Singapore and other countries slapped import bans.

In Singapore, the authorities are monitoring the situation.

Second Minister for National Development Lim Swee Say told reporters last night that officials from the Agri-Food and Veterinary Authority had visited Malaysia to check if its proposed bio-security measures were adequate for Johor and Malacca to be declared free of bird flu. The officials have returned and Mr Lim will be meeting them tomorrow to hear their report.

Said Mr Lim: "At this moment, I'm unable to say whether we are able to lift the import ban earlier, because we have to give our technical experts enough time to go through the proper evaluation and assessment."

"We have one consideration — that the lifting of the ban will not mean unnecessary risks," he added.
Cock fighting is popular in Thailand and Kelantan (Malaysia) and owners have resisted previous culls by hiding their expensive birds (source: CTV News, 19 October 04)
BACKYARD PURSUIT: Most cockfighting breeders rear their birds in the backyards of their homes. An estimated 30 million fighting cocks are owned by at least six million households, according to the Thai Cockfighting Association.

PORTRAIT OF A CHAMPION: At the Pho Tong cockfighting farm, a mini shrine dedicated to one of its past champions hangs above the farm’s entrance.

RUFFLED FEATHERS: Contests are banned but training goes on. At this cockfighting arena in Soi Sanaam Khli, training sessions are held at least four days a week. The birds go through four rounds of fighting, each lasting about 20 minutes. The first one to stop flapping its wings is the loser.

PHOTOS: DESMOND FOO
Bird flu checks now cover all of Kelantan

As the virus is found in a sixth village, poultry smugglers are threatened with detention under the Internal Security Act

KUALA LUMPUR — Malaysia expanded its intensive surveillance for bird flu yesterday, to cover the entire state of Kelantan, after the virus was discovered in a sixth village.

State veterinary authorities said clinical checks would be conducted in high-risk areas like wet markets, pet shops and bird sanctuaries.

Until now, intensive monitoring had been confined to a 10km radius of the village where bird flu was first discovered on Aug 17, in fighting cocks believed to have been smuggled from Thailand.

The virus has since been discovered in five locations within the zone, despite the efforts of hundreds of veterinary and health workers to cull thousands of birds and screen residents to contain it.

Yesterday, veterinary officials said they had found the H5 virus in quail in a village in the 10km quarantine area. In previous cases, tests have shown the H5 virus to be the deadly H5N1 variety.

The H5N1 strain, which has left 28 people dead in Thailand and Vietnam, is not confirmed to have infected anyone in Malaysia, although a 10-year-old girl was under hospital observation yesterday.

The stepped-up surveillance comes amid warnings from the World Health Organisation that it is more worried about bird flu than Sars.

Dr Shigeru Omi, director of WHO’s regional office for the Western Pacific, said ahead of a meeting in Shanghai yesterday that avian flu was circulating far more widely than predicted — a huge concern as humans had not built up an immunity, and in view of the massive movement of people, goods and food around the region.

He said member states must strengthen reporting systems and improve animal husbandry practices before it develops into an infectious disease among humans. “Unless we intensify efforts made to halt the virus, a pandemic is very likely,” he warned.

WHO sounded the alarm after a sudden return of the H5N1 virus in China, Thailand, Vietnam, Indonesia and Malaysia, putting an end to a all of several months.

Malaysian Agriculture Minister Mohd Yassin warned yesterday that detention under the Internal Security Act may be used to show poultry smugglers how serious the Government was about containing the virus, the New Straits Times reported.

“If there is a need to use the ISA to overcome this problem, we will do it,” he said, noting the current RM1,000 (S$447) maximum fine for smuggling animals into the country was not enough of a deterrent.

Kelantan state authorities yesterday also urged residents who frequently went to Thailand for cockfights to stop.

Culling of birds in the state has raised friction with some villagers. One threatened veterinary workers with a spear and sword on Sunday as they took away his peacocks.

Meanwhile, thousands of Thai chicken farmers demonstrated in Bangkok yesterday against a proposed bird flu vaccination programme.

They say European consumers would baulk at eating vaccinated chickens, because of sensitivities about chemical residues in their food.

Malaysia also expressed concerns about vaccination during a meeting with Thai officials in Bangkok yesterday.

International health authorities question the effectiveness of vaccines and say culling is the best weapon against bird flu.

— AP
Bird flu can spread among cats

Findings of a Dutch study highlight need to probe role of animals in spreading the virus among poultry and to humans

WASHINGTON — The bird flu virus that has spread widely in South-east Asia and infected some people there has also crossed another species barrier to infect cats, and can be spread among them as well, say Dutch scientists.

The finding is extraordinary because domestic cats are generally considered to be resistant to disease from influenza A virus infections that of the avian strain, the researchers report in the latest issue of the journal Science.

In the Dutch study, some cats with the infection died of it while others survived.

A few did not even show any symptoms that they were carrying the disease.

Whether cats can transmit the virus strain A(H5N1) to humans is not known.

The World Health Organisation has received reports that cats played a role in afflicting the 45 people who have developed A(H5N1) infection, all in Thailand and Vietnam, said Mr Dick Thompson, a spokesman for the agency in Geneva. Those cases were traced chiefly to direct contact with sick birds.

Even so, the Dutch study has important implications for human and animal health, said research scientist Dr Maria Lubroth at the Food and Agriculture Organisation. According to the officer and the study's authors, the findings underscore a need to investigate the possible role of cats and an array of other animals in the spread of avian influenza among poultry and to humans.

An estimated 200 million birds have either died of A(H5N1) or been slaughtered to control the outbreak since last winter, when the strain simultaneously appeared in eight Asian countries.

UN officials have described the scale of the epidemic geographically and economically as unprecedented for an avian flu outbreak.

The strain has also been particularly lethal for humans, killing 25 of the 35 people infected.

Many influenza experts and health officials fear a worst case scenario in which a person becomes infected with both an avian influenza virus and a human one.

Under such a circumstance, the viruses might swap genes, creating a new virus that could cause an epidemic all over the planet much like that of the so-called Spanish flu of 1918-19 which killed 500,000 people in the United States alone and more than 20 million around the world.

The Dutch study in Rotterdam that reported the new finding has conducted research on A(H5N1) since 1997, when its scientists detected the strain in a child who had died of the disease in Hong Kong.

The Hong Kong case was a scientific bombshell because it was the first in which a new avian influenza virus had been transmitted from birds to humans without first mixing with mammalian influenza strains in pigs.

Since then, the A(H5N1) virus has mutated to become more virulent. Last January, a clouded leopard died, apparently of avian influenza, at a zoo in Thailand after eating infected chickens. Thai health officials recalled in recent interviews in Bangkok.

A month later, scientists identified the A(H5N1) virus in three dead cats and in a white tiger that recovered after becoming ill in the same zoo where the leopard died.

The cats belonged to a Thai woman who had 15 in all, 14 of which apparently died of avian flu, although the remains of only those three could be found for testing. The woman did not develop bird flu.

Tests showed that the molecular makeup of the viruses isolated from the cats and the tiger was the same as that of the virus found in chickens.

After learning about those infections, the Rotterdam team, led by Dr Thijis Kuiken, conducted three laboratory experiments by using the A(H5N1) virus isolated from a Vietnamese patient who had died of it. The findings confirmed what had been observed in the cats in Thailand.

— NEW YORK TIMES
It is not known whether cats can transmit the virus strain A(H5N1) to humans. Before the Dutch study was conducted, it was believed that cats were resistant to the virus.

THE DUTCH EXPERIMENT

Dutch researchers led by Dr Thijjs Kuiken conducted the following laboratory experiments on cats infected deliberately with the A(H5N1) virus:

◆ First, the team introduced the virus into the airways of three European short-hair cats, the breed generally used in animal experiments. All three became sick the following day, and one died on the sixth day of illness. In comparison, none of three cats infected with the most common type of human influenza virus became ill.

◆ In the second experiment, three cats were fed infected chicken. Examination of their tissues under a microscope showed that all three developed severe lung damage similar to that seen among birds and humans. People are not vulnerable to infection by eating chicken that is cooked, but the person who cooks it may be at risk from handling it, health officials say.

◆ In the third experiment, the researchers put two healthy cats in the same cage two days after infecting a third cat. The healthy cats also became ill.

Dr Kuiken said he did not know whether these two cats had caught the infection by licking, through droplets or through the air. His study, he said, was not devised to determine how the cats spread the virus. — NEW YORK TIMES
BIRD FLU CRISIS

SINGAPORE'S BATTLE PLAN

'A quick response is crucial. Even if Malaysia hasn’t declared it has bird flu yet, we will declare a ban the minute we get one case. Those chickens already here will all be destroyed.'

Dr Chua Sin Bin, AVA's deputy chief executive officer, on being vigilant against chicken imports.
BIRD FLU CRISIS

Fears over what virus could mutate into

Experts dare not rule out the possibility that the H5N1 virus strain could turn into the dreaded "Big One" - a global pandemic"
FIVE-PHASE PLAN: WHO swings into action

THE World Health Organization's five-phase influenza-pandemic preparedness plan has already swung into action.

At present, the agency is at phase zero, level two. This means a new influenza strain has appeared and human infection has occurred.

The plan moves to phase zero, level three when there is clear evidence of the virus spreading from human to human.

Phase one confirms the onset of a pandemic in at least one country and phase two means that the outbreak of the new virus is spreading round the world.

Experts say pandemics usually run their course in waves and are likely to wind down after two to three years. Phase three is declared at the end of the first wave and four at the second or later waves. Phase five marks the end of the pandemic.

HK CASE: Virus jumped from birds to humans

DOCUMENTED infection of humans with an avian influenza virus occurred in Hong Kong in 1997. That year, the H5N1 strain caused severe respiratory disease in 18 people. Six of them died.

The infection of humans coincided with an epidemic of deadly bird flu, caused by the same strain, in Hong Kong's poultry population.

Investigations of that outbreak determined that close contact with live infected poultry was the source of human infection. Further studies determined that the virus had jumped directly from birds to humans.

Hong Kong's entire poultry population of around 1.5 million birds was killed in three days.

That reduced opportunities for further direct transmission to humans and may have averted a pandemic.

The Spanish Flu outbreak of 1918-19 occurred before laboratory diagnosis and characterisation of viruses was possible.

In contrast, today:

- There are four WHO Collaborating Centres for Reference and Research on Influenza in Australia, Japan, Britain and the US;
- Among the countries which have joined the international surveillance programme, China is an active participant;
- Methods of identifying new viruses include rapid genome (an organism's genetic material) sequencing;
- Communication about events and transportation of laboratory samples can be achieved rapidly and
- Considerable knowledge exists about animal-influenza viruses.

FIERY END: Chickens trying to flee as the people of Bolangan village burn alive hundreds of them to halt the spread of bird flu in Indonesia's Bali island. Jakarta's welfare minister has said about 10 million chickens in the country will have to be culled to check the deadly avian influenza.
Thaksin slams WHO bird flu speculation

Thai PM hits out at suggestion bird flu is transmitted between humans; WHO says there is no evidence yet to confirm this

By NIRMAL CHOSID

THAILAND CORRESPONDENT

THAI Prime Minister Thaksin Shinawatra yesterday slammed the World Health Organisation (WHO) for speculating that the bird flu virus had been transmitted between humans in Vietnam.

"Normally the ethics of researchers is such that if there is only a slight possibility of something happening, then they will dismiss it among themselves, they will not say anything to the public to cause concern," Mr Thaksin told reporters.

The Thai premier, who is trying to contain public panic and prop up sagging faith in the poultry industry, added: "If the possibility is higher than 5 per cent, they should say something, but if it is under 5 per cent they should not say anything. If the possibility is higher than 5 per cent they should say something, but if it is under 5 per cent they should not say anything." - That PM Thaksin, on the ethics of researchers

The WHO, however, said there was "no evidence of efficient human-to-human transmission of H5N1 occurring in Vietnam or elsewhere.

"It doesn't seem that we have crossed the threshold into the scenario of general human-to-human transmission in the population," the WHO's Vietnamese spokesman Bob Dietz said.

"This case remains an anomaly but one that has to be fully understood before we can draw any general conclusions about the course of infections."

The WHO has been warning that the bird flu virus might mutate into one that can spread from person to person. So far it has drawn a distinction between a general transmission of the disease among humans and a newer "limited transmission", which is limited to a short chain of people with the virus apparently "contaminated" after coming in contact with infected poultry.

The WHO's representative in Thailand, Mr. Johann Melika, said yesterday he did not think the virus would spread widely in humans.

"The initial information we have about the current virus is it is a purely avian virus. It's not a very efficient virus in terms of infecting humans," he said.

"The risk is if we transmit a new virus through the combination of the current avian virus with the human virus. Health experts are concerned that another aggressive human influenza virus from the Northern Hemisphere may reach South-East Asia and combine with the bird flu virus.

"We are getting some reports of human influenza now but it is difficult to say how widespread it is," Mr. Dietz said yesterday in Hanoi.
More bird flu deaths likely, WHO warns

Not enough is being done to contain the spread of lethal virus, which is endemic to region: Experts

BANGKOK — The World Health Organisation (WHO) warned yesterday that more people are likely to die from bird flu after a man who raised fighting cocks became Thailand's ninth victim this year.

The country's latest death shows not enough is being done to contain the spread of the deadly disease, said Mr Kumarat Rai, the WHO representative in Bangkok.

"If control among poultry is good, there wouldn't be human cases," Mr Rai said, adding that despite efforts by the Ministry of Agriculture to improve surveillance of poultry, there were still undetected outbreaks.

"The FAO and OIE will be looking into control mechanisms and propose recommendations," he said, referring to the Food and Agricultural Organisation and a Paris-based international animal disease control body.

"Tragically, the broad picture is that cases will continue to pop up in humans as well as in poultry," said Mr Peter Cordingley, spokesman for the WHO's Western Pacific Office in Manila.

"The virus is still there and we don't think any real progress has been made in fully eradicating it," he noted, adding that handlers of fighting cocks were particularly at risk because training the birds required extensive handling.

The Thai Health Ministry says three more people are being tested for the H5N1 virus.

Thai Prime Minister Thaksin Shinawatra has also appealed for calm in his country. He told reporters: "Don't worry, there's no need to panic." The government is in a much better position now to handle the situation than in the past, he said, adding: "Now we have enough experience...I think we can handle this well enough."

The Thai man who died on Wednesday — 18-year-old Komsan Fu-khorn — is from eastern Thailand's Prachin Buri province. He is the 28th Asian fatality from the lethal strain of the virus that has swept the region this year.

He was stricken with the H5N1 form of the virus late last month after his 30 fighting cocks died, but initially refused hospital treatment, Thai officials said. He was eventually admitted on Saturday.

A 16-year-old was placed under surveillance by health officials as he was close to the man who died and was known to have handled the fighting cocks.

The latest death in Thailand is unlikely to be the last as the virus is endemic in Asia, Mr Cordingley said.

Thailand, Vietnam, Indonesia, China and Malaysia have all reported cases since July, after the worst of the outbreaks of H5N1 left eight dead in Thailand and 16 deaths in Vietnam. Poultry industries have also been crippled. — AFP, Reuters
More culling as Malaysia reports new bird flu cases

KUALA LUMPUR — Malaysia launched a new wave of poultry culling yesterday after bird flu cases were detected for the second time in less than a week.

"We are continuing with our efforts to cull chickens, ducks and birds in the affected areas," said Veterinary Department director-general Hawari Hussein.

Malaysia announced new bird flu cases for the second time in five days on Saturday after a veterinary worker had been hospitalised with a fever and cough.

Officials said eight birds had died from the H5 strain of avian flu in three villages near the border with Thailand — which is also battling the disease — and just kilometres from Malaysia's previous outbreaks.

Mr Hawari said there was a ban on imports of birds from Thailand and no birds could be taken out of the infected state, Kelantan.

All birds and eggs sold in the market were safe for consumption, he said.

More tests were needed to determine whether the virus was of the H5N1 strain, which has killed 28 people in Asia this year.

In Thailand, four children were hospitalised with avian flu symptoms yesterday, according to a health official.

Two boys, aged six and eight, and a three-year-old girl were hospitalised in the Krabin Buri district of Prachinburi province. A two-year-old girl in Bangkok's Minburi district was also hospitalised.

China, Vietnam and Indonesia have also reported bird flu outbreaks since July after an earlier crisis this year.

The World Health Organisation has said it is more worried about bird flu than Sars, warning a pandemic is likely to occur unless effective measures are taken.

After the most recent outbreak on Sept 6, about 1,200 birds, chickens and ducks within a 1km radius of Belian village were killed to curb the spread of the disease.

Belian is near Pasir Pekan, where the H5N1 strain was discovered for the first time in Malaysia last month.

The Federation of Livestock Farmers Associations said the poultry industry was losing RM10 million ($4.5 million) daily after Singapore and other countries imposed import bans. — AFP
To keep bird flu out of Singapore, all live chickens imported here are put through stricter checks. SHARMILPAL KAUR follows a chicken from the Tuas checkpoint toAVA’s laboratory for a behind-the-scenes look at how the birds are tested.

1. Every day, between 50 and 60 trucks trundle into Singapore, bringing 120,000 live chickens from Malaysia. Each consignment is visually inspected at the Tuas checkpoint for signs of infection, including chickens with purple necks, combs and legs or swollen heads and legs. Documents detailing each chicken’s journey from farm to market are also verified. This is a form of contact tracing. If a bird is found with the virus, the entire consignment can be traced and destroyed immediately.

2. At the lab, the randomly picked chickens are gassed with carbon monoxide. A necropsy is then done — each chicken is cut open and its breast bone removed so the organs are exposed.

3. AVA’s virology team, which has 13 staff, look out for obvious signs of bird flu, such as lesions on the lungs. If the organs look healthy, then tissue samples from the lung and trachea are taken since bird flu is a respiratory illness. The carcass is then disposed of.

4. The tissue samples are carefully placed and capped into a small bottle. To detect bird flu, researchers need to see if the samples contain the virus. This means any virus present has to survive the testing. So, the tissue samples are ground up, and nutrition is added to the mix to help keep the virus alive and “grow” it, thus confirming its presence. This process takes about two hours.

5. If all is clear, the ground tissue is then used to test eggs. It is injected into five eggs produced by hens kept by AVA officers. The eggs are between nine and 11 days old, and are free of specific viruses. The eggs are then monitored for five days. If bird flu is present, the virus will kill the healthy egg within one to three days. If there is no virus, the egg will continue developing normally.

The checks for ornamental birds are stricter. The liquid injected into ornamental bird eggs is re-harvested and re-introduced into another five eggs. This is because it may take longer for the virus to present itself in such birds. If there is still no sign of the virus after this, the eggs are destroyed and the all-clear for the batch is given.
World poultry market jolted

With import bans on Asian chicken, other exporters around the world such as Brazil and the US are struggling to fill orders

By LING CHANG HONG

WHEN a chicken in Asia succumbed, the whole world caught a cold.

The deadly avian flu, which has killed at least 10 people and led to the culling of millions of birds in 19 Asian hotspots, has dealt a devastating blow to the region's multi-billion-dollar poultry industry.

And the rest of the world is feeling the jolt.

Impact bans slapped on Asian poultry have sparked a frantic search for alternative sources, highlighting a growing dependence on the developing world for chicken supplies.

"The setback is having a tremendous impact on the world poultry market," said Mr James Stuiver, president of the USA Poultry & Egg Export Council.

He told The Straits Times there was a worldwide shortage of poultry for export.

The world's top exporter is the United States, followed by Brazil, the European Union and Thailand.

Last year, Thailand shipped about 3.8 million tonnes of chicken, worth $81 billion (S$112 billion).

The European Union, despite being the world's No. 2 exporter, bought 1.1 million tonnes of chicken from Thailand last year, making it the kingdom's second-largest customer after Japan.

While some regions have been ruing for poultry exporters in Brazil and the US as major suppliers of chicken to Asia, they are finding it difficult to meet the demand.

"We cannot fill all the orders," said Mr Stuiver.

He said in a telephone interview that the US, facing a shortage of chickens, had little left for export.

"We can export poultry products to get more expensive throughout the world, as we can already see," he said.

Demand for chicken from countries unaffected by bird flu is surging, causing worldwide supply problems.

According to a Dow Jones report, the wholesale price of fresh, dark chicken meat imported to Japan from Brazil for example, has jumped 44.2 per cent since Jan 20.

Bill McKinnon, chief financial officer of Salsic, one of Brazil's top three chicken companies, "Every day, the international price is higher,

The impact on the Brazilian poultry industry.

Hazim HAHN
STUDIES ON SPANISH FLU VIRUS

1918 epidemic sheds light on current outbreak

WASHINGTON — The Spanish Flu that killed 20 million people in 1918 seems more birdlike than previously thought — like the current H5N1 strain, it had a bird-based protein that was deadly, say researchers.

Their work — published in the journal Science — has no direct implications for the current outbreak in Asia.

But it highlights how important it is to monitor flu in poultry, since the study suggests it might take fewer genetic adaptations than believed for a bird virus to spread from person to person.

In separate studies at the Scripps Institute in La Jolla, California, and at Britain’s Medical Research Council, scientists used preserved lung samples from the 1918 flu victims to reconstruct a protein crucial to their infection.

As with the current flu, the 1918 flu seemed to have jumped from birds to people with little change, they said.

However, the H5N1 strain has not — so far — developed the mutation that allowed the Spanish flu to decimate human populations 80 years ago.

“What this study says is this transmission between birds and humans seems to be able to happen in more than one way,” said Mr John Skehel, one of those who led the study in Britain.

Two teams analysed samples of the 1918 virus and said it bore the clear hallmarks of a bird virus that mutated very little before jumping to people.

When the H5N1 strain appeared in Hong Kong in 1997, it was contained quickly because it spread from birds to people and not human to human.

The teams scrutinised a part of the 1918 virus called hemagglutinin, a protein the virus uses to infect cells.

Each virus strain has a unique hemagglutinin structure. Scientists believe small mutations of the protein are what allows the virus to infect new species.

The 1918 virus was an H1 virus — different from H5N1.

The researchers say it had unique structures that may have given it “novel mechanisms” for infecting people.

This may explain why the epidemic killed so many young, healthy adults.

And this explains why the current avian flu outbreak has, so far, not lived up to fears, said Mr Skehel, adding: “Presumably, what’s blocking this current flu from spreading person-to-person is that its hemagglutinin structure has not yet evolved so that it can efficiently infect humans.” — AP, REUTERS
1. Avian Flu

A. Introduction

- Zoonotic diseases - diseases of animals transmitted to humans.

- Interface between animal and human health, and the conservation of biodiversity.
• Avian flu - infectious disease of birds caused by type A – H5N1 strains of the influenza.

• Disease affects “domesticated” and wild species (eg chickens, turkeys, ducks and wild migratory birds).
• Other “natural reservoirs”. Recently, expanded to include pigs, cats, dogs, mice, sheep, ferrets, horses, tigers, leopards, etc.

  > Thailand – avian flu killed 23 tigers at zoo; another 30 tigers sick – tigers ate chicken carcasses (source: CTV, 19 Oct 04);

• Direct or indirect contact with “natural reservoirs.”
• Some of the viruses produce a highly contagious and rapidly fatal disease, leading to severe epidemics. These virulent viruses are known as "highly pathogenic avian influenza (HPAI).”

• Humans - avian flu causes flu- like symptoms: fever, cough, sore throat, muscle aches, conjunctivitis; severe cases can cause severe breathing problems and pneumonia - fatal.
• **Migratory Birds to Blame?**

- Swallows
- Plovers
- Sandpipers
- Egrets
- Terns
BIRD FLU CRISIS: THAI GOVT ADMITS...

‘We screwed up’

Officials made mistakes and were not trying to cover up outbreak, government says in response to criticism, vowing to punish those involved

By NIRMAL GHOSH
THAILAND CORRESPONDENT

BANGKOK — It was a screw-up, not a cover-up.

This was the message dished out by Thai officials yesterday as critics continued to blame the government for covering up the country’s latest outbreak of bird flu.

“The most appropriate word is screw-up. Some agencies screwed up in Thailand,” government spokesman Jatuphat Penkair told journalists huddled through a regional ministerial conference on avian flu in Bangkok yesterday.

Laying the blame on the agencies, he said there had also been a “misinterpretation of procedures” and inadequate information released.

“Thailand has now been accused of covering up the outbreak of bird flu. The Prime Minister denied this,” said Mr Jatuphat.

He made a distinction between a screw-up and a cover-up.

A cabinet Prime Minister Thaksin Shinawatra told the conference yesterday that the situation made him realise that no matter how much the government was mindful of past losses, mistakes and human errors were always possible.

He assured delegates from 10 countries that his government’s top priority was to get the situation under control.

He spoke as two places in Bangkok — including the world famous Chatuchak Weekend market — tested positive for the virus and poultry trading continued.

The toll was estimated to have destroyed 30.7 million chickens in affected areas by Tuesday night.

Mr Jatuphat said the people responsible for the “screw-up” would be punished, but declined to identify how many would be affected.

“It depends on how grand a scale this mess goes up to,” he said.

Earlier on Tuesday, several senators said they could impeach ministers responsible for the inaccurate information that had delayed Thailand’s eventual admission about the bird flu outbreak.

Despite Thailand’s strenuous denials of a cover-up, more donors have been cast over the kingdom’s credibility.

Only last week, the European Union (EU) offered Thailand funds for its defence against a possible bird flu outbreak. Now, the EU — sounding visibly stung by Thai denial — said the kingdom’s effort was not enough for it to lift a ban on Thai chicken imposed last week.

In those circumstances in which we have seen non-transparent, possibly a complete reliance on Thai assurances does not seem to be the best way to go forward,” an EU spokesman was reported as saying by the Associated Press.

Japan — which together with the EU is the largest markets for Thai poultry — has also not lifted a similar ban on Thai chicken.

Meanwhile, Thailand’s Cabinet has approved 3 billion baht (£61.8 million) in compensation for farmers hit by the outbreak. Earlier this week, two Thai children were confirmed to have died of bird flu.

Thailand’s change of fortune is ironic, given that it had earlier declared this year to be the year of food safety.

MORE REPORTS INSIDE

- Singapore bans imports of Chinese poultry:
- Tan Tock Seng Hospital to handle any S’pore cases:
- Asia could lose billions if virus mutates:
- Reactions to outbreak don’t inspire confidence:
Migratory birds to blame?

'Don't feed wild birds, don't go near them, don't touch them.'

- Mr Ronel Avila, quarantine chief at the Philippines Agriculture Department
• Spread of Avian Flu

- Wild migratory birds – these birds are also the most resistant to infections

- Live bird markets (eg in Thailand) have also played an important role in the spread of Avian flu

- Illegal smuggling of infected chickens and birds
Asian Eagles (mountain hawk eagles native in Asia) smuggled in to Brussels airport infected with bird flu (source: Yahoo News, 23 October 04)

Bird flu fears rise in Pakistan ahead of winter migration – 5.5 million birds migrate from the colder regions of Central Asia to Pakistan every year to avoid a harsher winter (source: NewsDesignerz.com, 25 October 04)
• Outbreaks in Asia and other Parts of the World

- 1997 and 2003 - Hong Kong
- October 2003 – 26 May 2004: Cambodia, China, Hong Kong, Indonesia, Japan, Laos, Pakistan, South Korea, Taiwan, Thailand and Vietnam
- Spread to Europe, Netherlands, Belgium, Germany, France, UK and Iberia. At risk – Canada and USA
- July, August 2004, recurrence in China, Thailand (18 provinces), Vietnam and Malaysia (Kelantan), and fears that the disease has become endemic in the region
- Thailand fourteen year old girl from North died and also her mother – led to fears that this might be a case of human to human transmission of bird flu (source: CTVNews, 19 Oct 04)
B. Policy and Legal Challenges

(a) Policy Challenges on Culling: Conservation Issues

• Extent of Culling as at 18 January 2004

- China: culled many migratory birds in Taizhou City and Jiangsu Province. Also 35,000 chickens culled in Chiayi farm.
- Taiwan: 20,000 birds culled in Changhwa farm.
- Japan: 34,600 sick birds culled.
- South Korea: 1.8m birds slaughtered.
- Vietnam: 2m chickens culled.
• Unwarranted fears of public leads to unnecessary culling:

➢ See Straits Times, 9 October 04, supra
Singapore – reported action by Wildlife Reserve Singapore (WRS) in culling all the chickens, ducks and geese as ‘pre-emptive culling’ was criticised by the Singapore Nature Society (source: ‘Birdpark, Zoo to cull birds’, see Straits Times, 27 August 04; Wild Pigeons and Crows Pose Danger, ST, 3 Sept 04)

Proposals to chip their wings

Nature Society Singapore criticised WRS’s as birds with clipped wings unable to fly and find sufficient food to survive. It cited FOA’s statement that eliminating wild birds is not an appropriate measure (source: ST, 9 Oct 04)

Also unwarranted actions by WRS give rise to misconception among public that all wild birds are dangerous carriers of avian flu
• Precautionary Principle: Crucial to Sustainable Development and Policy

➢ Principle 15 Rio Declaration: “where there are threats of serious and irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation.”
PP is an approach to risk management that has been developed in circumstances of scientific uncertainty, reflecting the need to take prudent action in the face of potentially serious risk without having to await the completion of further scientific research.
Role of Precautionary Principle (PP) in Determining Culling Policy

- PP unclear in setting standards – it stipulates that the absence of scientific certainty should not be used as a reason for taking action
- It is a practical means of responding to risk management in wildlife conservation and can be used for other serious threats (eg, in Avian Flu context - to animal and human health, food security, economy)
- Urgency in culling risk of endemicity?
Is culling justified? If so, to what extent justified - precautionary principle.

Should there be a threshold to culling?

- Estimated more than 100 million birds culled (perhaps 200 million died or destroyed). As at January 2004.
➢ How does PP apply to this situation where there is culling of migratory birds, which may affect ecosystems. The ‘victims’ of avian flu (chickens, etc) are also culled (sustainable?)

➢ Adaptive management – taken together with the PP approach – better as continuous.
• Does culling solve the problem?

- FAO: “Eliminating wild birds is not an appropriate way to control the spread of avian flu virus... killing wild birds will not help to prevent future bird flu outbreaks...”

- How to prevent: good animal husbandry; control, surveillance and monitoring, vaccination of chickens (?), see below. Apply EIA.
( b ) Legal Challenges

( i ) MEAs on Biodiversity

• Convention on Migratory Species of Wild Animals 1979 (Bonn Convention):

  ➢ Protection of migratory birds from threats including deliberate killing and destruction of their habitats. Effect of culling of birds, etc on nature conservation and impact on ecosystems.

  ➢ Parties must endeavor to conserve habitats for migratory species and to prevent reduce or control factors that endanger or are likely to endanger these species

  ➢ Migratory birds - shared resources of Range States - responsibility
• Ramsar 1971

- Waterfowls – avian flu virus endemic in waterfowls; habitat of migratory species in wetlands:

- Management and wise use of wetlands. What if their habitats are destroyed as a means of culling wild waterfowl?
• **Convention on Biological Diversity (CBD):**

  ➢ “Sustainable Use” of Genetic Resources

  ➢ Are poultry, pigs, etc (farmed for exports) “domesticated species” of genetic resources under CBD? If so, concept of “sustainable use” applies.

  ➢ What constitutes “sustainable use” (Article 10, CBD) in this context? Term still being developed. Uses can be sustainable or unsustainable depending on eg. questions relating to good/bad animal husbandry.
Article 10 (b) calls for adoption of measures to minimise adverse impacts on biological diversity and ecosystems.

Production of poultry for export (they are reared in crammed cages and the chickens are stressed). Also, they are crowded together with thousands of birds where disease can be spread easily (e.g. in Thailand).

Adopt ecosystem approach in production.
( ii ) National Laws dealing with Avian Flu

- **Singapore: Animals and Birds Act**
  - Article 20 Director General may require isolation or destruction of any animal or bird if it is affected with disease; or has reasonably cause for believing that the animal or bird is infected with disease

- **Other countries in the region – Japan, Hong Kong, Thailand, Vietnam, etc have similar laws**
C. FAO – OIE Guidelines to Prevent and Control Avian Flu: Policies and Strategies

• ASEAN and SAARC to coordinate regional policies for animal health
• The preliminary FAO- OIE assessment of needs defined in the Bangkok Conference (26 – 28 Feb, 2004 – Emergency Regional Meeting on Avian Influenza Control in Animals in Asia) to be guide for bilateral and regional arrangements
• Regional avian influenza coordination group to be formed to facilitate joint decision making, information sharing and training
• Strengthen national capacity of national animal and public health service surveillance, response, control and prevention activities
• Zoning approach to place animals into small pockets for facility of control
• Establish a regional laboratory network close to other neighboring ones so as to facilitate cooperation
• Research into the disease
• Emergency preparedness
• Reporting
• OIE standards (quality of vaccines, diagnostic methods and quality and evaluation of veterinary services) to be used in the definition of new policies on animal health and zoonosis to be implemented through national and regional programmes
• National surveillance and notification procedures of animal disease to OIE
• WHO guidelines for occupational human health and safety to be followed
• Infected animals to be disposed within 24 hours
• Regular inspection of susceptible animals and suspect premises for over 2 or more incubation periods of the disease
• Biosecurity procedures to prevent the spread of avian influenza to be implemented within 24 hours of the identification of the first presumptive positive premises
• Development of common educational materials for biosecurity and public health
• Establish Veterinary Task Force for emergency control
• Public awareness to focus on health hazards of handling infected or diseased birds, etc
• Introduce good hygienic practices in food preparation
• Diseased or culled animals should not enter the food chain
• Strategic vaccination of birds. Vaccine must be produced in accordance with OIE guidelines
• Wild birds should not be depopulated in an attempt to control avian influenza but separation as much as possible should be attempted
• Reduce contact rates between wild birds and large commercial poultry operations to prevent wild waterfowl from direct or indirect contact
• Village poultry health care programmes (surveillance operations)
- Reduce trafficking of wild birds, and ban the mixing of domestic and wild animals in live markets
- Integrate health monitoring programs into natural resource management efforts
- Reestablishment of poultry industry in a more biosecure position and protect livelihoods

D. Conclusion (Avian Flu)

• Multi-disciplinary experts – scientists, veterinarians, lawyers, wildlife conservationists, health, food and agriculture experts, etc should cooperate to find solutions.
• Adopt preventive approach.
• Establish policy on threshold for culling of wildlife /domesticated species based on sound science.
• Cooperation among countries, international regional, national organizations and other stakeholders in taking preventive measures.
• To build capacity on zoonotic diseases and conservation issues. The Vth IUCN World Congress, 2003, identified “Disease and Protected Area Management” as a Key Emerging Issue: “….improvements in the health of domestic and wild animals and their productivity can lead to dramatic improvements in human livelihoods and the reduction of poverty. Alien invasive pathogens should be addressed with vigor equal to that devoted to addressing more ‘visible’ alien invasive species. The role of disease in protected areas and the land-use matrix within which they are embedded must be recognised and addressed within the contact of protected area and landscape-level planning and management….,”
2. SARS

ESTIMATE BY ECONOMISTS

Sars ‘cost world trade at least $69b’

WASHINGTON — The Sars epidemic is believed to have cost the world’s economies between US$40 billion (S$69 billion) and US$140 billion, according to one estimate by Australian economists.

Sars, or severe acute respiratory syndrome, sickened about 8,000 people and caused 774 reported deaths when it broke out early this year.

But in a world in which news coverage is intense and international trade vital to most economies, the impact of the disease was magnified, said Mr Warwick McKibbin, an economist at the Australian National University in Canberra.

“Had it been a larger epidemic, the cost would have been astronomical.

“It would have produced a major disruption of the international trading system,” he said on Tuesday.

He spoke at a conference called by the National Academy of Science’s Institute of Medicine for health officials to discuss how the lessons from this year’s epidemic could be applied to another Sars outbreak — or some future outbreak of an unknown disease.

Mr McKibbin cautioned that his calculations were “coarse”, based on estimates of the cost in terms of empty hotels, unused airline seats and other expenses associated with the disease in China, Hong Kong and Singapore.

These costs were extrapolated to other countries where the disease appeared, he said.

Such calculations, attempting to reckon on the cost of trade and economic activity of an epidemic, are new.

Normally, cost estimates of an epidemic have consisted of health care expenditures, loss of productivity and loss-of-life calculations involving those who die of the disease. — NEW YORK TIMES
How HK scientist blew the lid on Sars and wildlife

Virologist Guan Yi takes samples from different wildlife markets in Guangdong and proves conclusive link to Sars virus

GUANGZHOU — For the past year, Hong Kong-based virologist Guan Yi has been making weekly trips up north to collect samples from wildlife markets in the Chinese cities of Shenzhen and Guangzhou.

Despite doubts cast by other scientists, Dr. Guan, a microbiology associate professor at the University of Hong Kong, believes the Sars coronavirus lurked in the wildlife markets of Guangdong province, where the two cities are located, and was determined to prove his claims.

His findings, however, were later challenged by a mainland Chinese team which found no evidence of the Sars coronavirus in civet cats. Other scientists also voiced doubts, claiming that Dr. Guan's work was based on too narrow a range of samples drawn from just one market.

But what bothered Dr. Guan most was China's decision last August to lift the ban on sales of civet cats, the magazine said. In October, he began returning to the Guangdong wild animal markets every week to collect samples.

Working with the Guangzhou CDC and the Shenzhen CDC, he conducted tests on wild animals from Shenzhen's Dongmen market and Guangzhou's Xinyuan market.

When he brought those samples back to Hong Kong, a frightening picture started to emerge.

Not only did the Sars coronavirus appear again in a host of rodent species in addition to the civet cat, he also detected the virus in hog badgers, Eurasian badgers, raccoon badgers and ferret badgers, according to the magazine.

Genomic sequencing found that these coronavirus samples had mutated to become more similar to the Sars coronavirus that causes Sars.

His findings, however, were later challenged by a mainland Chinese team which found no evidence of the Sars coronavirus in civet cats. Other scientists also voiced doubts, claiming that his data was based on too narrow a range of samples drawn from just one market.

On March 28, the ministry of Health in Beijing announced the test results on the first Sars case and named civet as the primary cause.

The next day, Dr. Guan was invited to Guangzhou to present his research at a meeting of experts.

He did what he thought was the fastest way to alert the Chinese authorities to a possible new outbreak. He framed a simple letter to Beijing's Hong Kong and Macau Affairs Office, which he copied to the Ministry of Health and the China CDC.

"With winter coming, the wildlife markets have reopened, providing the perfect conditions for another outbreak of Sars," he wrote.

He went on to list his findings that the civet is the major carrier of the Sars coronavirus and that the virus exists in different animals from different regions.

"The transmitting mechanism for the resuscitation of Sars is in place," he warned.

He enclosed four pages of genomic sequence tantalizingly referring to civet cats and had the letter hand-delivered on Jan. 2.

Within hours, the Ministry of Health in Beijing passed the letter to the Guangdong Department of Health.

The next day, he was invited to Guangzhou to present his research to some of the province's highest health officials, including China's authority on Sars, Dr. Zhong Nanshan, director of the Guangzhou Institute of Respiratory Disease.

Dr. Guan's hosts were skeptical of this unscrupulously impetuous virologist, remembering that in the early days of the first epidemic, he had kept on insisting, incorrectly, that Sars was a novel form of avian influenza.

But any doubts they had were soon dispelled.

A detailed analysis of the genomic sequences for the new Sars cases in Guangdong, when compared to that of wild animals presented by Dr. Guan, revealed that the two viruses were almost identical.

The next day, Dr. Zhong made a call to the Guangdong governor. The order was given later that day to the relevant departments to launch a campaign to wipe out civet cats.

Dr. Guan's mentor, Dr. Rob Webster of St. Jude's Hospital in Memphis and a pioneer in establishing the zoonotic origins of many influenza viruses, said, "The research is solid and, still, Guan Yi has certainly stuck his neck way out there on this one."

"I felt like I had to do something. I mean, why do you do science? To write papers? Or to make a difference in the real world?"

— Dr. Guan
A CHINESE researcher checking a civet cat which was recently destroyed to see if it carries the Sars virus. Merchants in southern Guangdong province face fines of up to US$12,000 (S$20,300) if they are found hiding civet cats after the deadline to slaughter the animals expires today. A "carpet-style investigation" would be carried out to root out hidden animals, the Guangzhou Daily reported. SEE PAGE AC
**THE VIRAL-ANIMAL**

**Monkeys**

**FEAR FACTOR**

Although there are drugs to slow down HIV and reduce damage to the immune system, there is no cure for AIDS. As for SARS, no specific treatment exists; victims die painfully - bleeding internally as well as from their eyes, nose and mouth.

**CULLING FIELDS**

When a breeding farm in the Philippines failed to control the spread of a strain of the Ebola virus in 1997, more than 600 Philippine monkeys were exterminated by lethal injection, followed by incineration.

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**HORRORSCOPE**

**Masked palm civets**

**FEAR FACTOR**

The coronavirus has also been found in four kinds of badgers and in China’s wildlife markets. These could be carriers too.

**Chickens**

**FEAR FACTOR**

WHO warns that the bird flu virus could leap on to a human influenza virus and “cause serious international damage” because we don’t have any defences against bird flu.

**CULLING FIELDS**

Millions of chickens and ducks in Vietnam, South Korea, Taiwan and Japan have been slaughtered. In Hong Kong, 800 chickens were culled in Hong Kong to prevent the spread of a variant bird flu that killed six out of 18 infected.

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**Cows**

**FEAR FACTOR**

Who has declared that variant Creutzfeldt-Jakob disease (vCJD) can be passed on by blood transfusions. In 1999, a British cow died of a 20-year-old vegetation that did from the disease got it from eating beef burger as a child.

**CULLING FIELDS**

The slaughter of affected cattle in Britain cost the government £3.5 billion ($5.7 billion) in 1997. This year, a single Holstein cow with BSE in Washington has resulted in the culling of 579 cows by US agriculture officials.

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**Pigs**

**FEAR FACTOR**

A factory-farm pig can get swine flu, bird flu and human flu. In 2007, a “swine variant” major swine in viral genetics can result in pandemics, as reported in Current Biology.

**CULLING FIELDS**

Tests on all Australian pig farms resulted in more than 1 million animals killed in a few weeks.

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**News**

**Masked palm civet**

Hong Kong virologists have found that a strain of bird flu virus that has mutated to become more similar to human coronavirus samples found in infected humans. The sequence of alteration is still unclear.

**Chicken**

Human infections of bird flu appear to be from contact with droppings of sick birds. The virus could be transmitted from sick animals. It’s also possible for the bird flu virus to spread from chickens to pigs — before jumping to humans.

**Pig**

Pigs harbour the H5N1 virus, which is named after the Negri Schmidt strain of the virus. Pigs can pass it on to humans. In 1999, 105 Malaysian pig farmers were killed by a H5N1 strain.

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**Cow**

Monsanto can put variant Creutzfeldt Jakob disease (vCJD) on to livestock, by mixing meat from cows with beef from plants.

**Monkeys**

The SARS virus and HIV are thought to have mutated from hantaviruses, which can pass on to between humans. As of 2001, more than 13 million people have died of AIDS. Hantaviruses can cause fever that has a mortality rate of 1-2% with 50-60% per cent.

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**Other options**

Dr. Paolo Martelli thinks thit are more a public relations...
By Teh Jen Lee

PEOPLE are killing the animals that are thought to be killing people.
Civet cats, chickens, cows... The culling continues as panic-stricken countries strive to contain the spread of deadly viruses (See graphic).

Bird flu, Sars, mad cow disease, and a few years ago, the Nipah virus, which mosquitoes can transmit from pigs to humans, have all led to the culling of animals.

Even migrating birds are suspect.

But are the animals really to blame?
No. The fault, say experts, lies with people, their eating and breeding habits.

Culling provides only temporary relief. People’s habits must change.

There are many reasons why animals can make us ill with what is known as zoonotic diseases, said Associate Professor Vincent Chow, head of the National University of Singapore’s microbiology department.

First, we are making the animals sick by our rearing methods.

“Animals are huddled closely together in cramped conditions, thus allowing infections to spread rapidly.

“Whereas such as southern China, it is common for farmers to rear chickens, ducks and pigs simultaneously, allowing viruses specific to different animals and humans to exchange their genes, resulting in new virulent strains,” said Prof Chow.

This has happened with the influenza virus, as new strains arise from areas where large numbers of humans and animals are in close contact.

He also listed other factors:

■ Feeding cows with the remains of other animals, leading to variant Creutzfeldt-Jakob Disease (vCJD), the human form of mad-cow disease;
■ Demand for exotic meat from animals like palm civets;
■ Human encroachment into jungles, resulting in contact with wild animals.

Similarly, wildlife veterinarian Dr Paolo Martelli believes that the bush meat and wildlife trade has exposed us to diseases that we, as a species, had no history of contact with previously.

“The problem here is not the wildlife, it’s our vandalistic attitude towards them. Through habitat destruction and mindless criminal commercialism, often marketed as progress, we force nature into contact with us, harming us and the animals in the process,” said Dr Martelli.

MEAT THE PROBLEM?

Some think the problem lies with the eating of meat.

While Vegetarian Society (Singapore) president George Jacob acknowledged that many factors besides food affect our health, he said: “Evidence does suggest that meat can be bad for us and that increasing our consumption of plant foods can be good for us.”

Prof Chow wants to see less crowded and more hygienic livestock rearing practices, reduced transfer of animals across large distances to avoid transporting diseases, and constant monitoring for infections on farms.

He also thinks animal feed made with bone meal and other animal remains, and the rearing and consumption of exotic animals with unknown microbes, should be banned.

And culling, he said, is only a short-term solution to zoonotic outbreaks.

So what do we do? It looks like we have to take stock of our relationship with animals while we wage war on these deadly outbreaks.

Otherwise, we will end up being our own worst enemy.
Beans excreted by the animals still popular

JAKARTA — The fear of Sars may have stopped the Chinese from eating civet cats.

But that hasn't turned off others from sipping the strangest of brews — one they insist is made from coffee beans eaten, partly digested and then excreted by the weasel-like animals.

The story goes like this: Civets live in the foliage of plantations across South-east Asia. These fussy foragers pick the best and ripest coffee berries.

Enzymes in their digestive system then break down the flesh of the fruit before the animals expel the bean.

Workers later collect the beans from the plantation floor, wash away the dung and roast them to produce a unique drink that devotees might say is good to the last dropping.

Sceptics, though, dismiss it all as a weird and unverifiable marketing gimmick.

Still in Indonesia's capital Jakarta, the owner of three fashionable cafes, Mr Agus Susanto, sells what he claims is a mix of regular beans and those that have passed through civets.

The blend and the cafes are both called "kopi luwak" — in English, "civet coffee".

"Our coffee has a strong taste and an even stronger aroma," Mr Susanto said.

In Vietnam, now the world's second-largest regular coffee grower, a blend supposedly containing some civet beans is produced by the Trung Nguyen company under the Weasel Coffee brand.

In the Philippines, the Old Manila Coffee House used to sell a civet brew, but supplies have dwindled over the years, said Ms Ellen Tuason, its finance officer.

"Some of our guests said it was an aphrodisiac. It has a strong coffee smell, but different. There is a distinct colour and flavor," she said.

Several US-Internet based coffee traders claim to offer them for up to US$325 a kg (S$552), making kopi luwak among the world's most expensive beverages.

And although the World Health Organisation and health authorities in southern China see a potential relationship between civet cats and the disease that killed 774 people worldwide last year, Mr Susanto isn't worried.

He expects to keep selling what he claims is 100 tonnes of civet coffee a month.

"There are many different kinds of civets in this world. The Indonesian ones are different from those in China," he said.

The coffee-chomping civets are known as common or brown palm civets (Paradoxurus hermaphroditus), whereas the ones that are at the centre of the Sars scare are the masked palm civets (Paguma larvata). — AP
A. Introduction

• SARS (severe acute respiratory syndrome is caused by corona virus).

• The illness usually begins with a high fever including headache and body aches. After a few days, a dry cough may develop followed by low oxygen levels in the blood. It is a new form of pneumonia-like disease with symptoms that are similar to those of common flu. It is highly contagious and potentially fatal.

• Outbreak of SARS – 2003: Global Hot Spots: Hong Kong, China, Singapore, Taiwan, Toronto, Vietnam

• Deaths from SARS – Known Deaths Tolls – BBC News (5 July 2003)

• China 348; Hongkong 298; Taiwan; 84; Singapore 32; Canada 38
Bustling Guangzhou wildlife market now quiet

By CHUA CHIN HIONG
THE STRAITS TIMES
GUANGZHOU — The cages are mostly empty, many stalls are closed and the infamous stench of animal faeces is almost gone.

The Xinyuan wildlife trading market on the outskirts of southern Guangzhou city is now a pale shadow of its former bustling self.

Vendors spend their time playing pool, knitting or complaining to visiting journalists about how business is dead.

“I don’t even have enough money for the trip back to my parents’ homes in Hunan,” said a stall holder.

Officials have seized thousands of civet cats and other exotic animals from markets across China, restaurants and breeding farms since China confirmed its first Sars case in six months last Monday.

Arrests have been made in the southern city of Guangzhou, where the Sars outbreak started last December.

Restaurant managers such as Fan Bowen, who runs the Min-lisheng ge xin jia, the Qianjin No. 1 Village, complained that their business had plunged by as much as 90 per cent since January.

Business was still slow when the patient was just classified as a suspected Sars case, said another vendor. “I have never seen such a decline in business.”

A woman who came to buy medicinal plants for her sick child said she would not buy any more caviar.

“I don’t need expensive food to make my child healthy,” she said.

The market on the outskirts of southern Guangzhou city is now a pale shadow of its former bustling self.

The cages at Xinyuan wildlife market are mostly empty, with only chickens remaining to be sold.

Wildlife market

Despite the Sars outbreak, much of Guangzhou’s wildlife market is still open but the animals are not for sale.

A visitor to the market was surprised to see a group of monkeys being held by their tails.

“I have never seen monkeys being sold here before,” he said.

The monkeys were being held by a group of men who claimed they were for sale.

“I don’t think they are for sale,” said another vendor.

The visitors were not sure what the men were planning to do with the monkeys.

Wildlife market

Many of the animals in the market are still alive and well.

A group of snakes were being kept in a cage, but one of the snakes escaped and was later found by a vendor.

“I think the snake was trying to get away,” said the vendor.

The snake was returned to its cage.

Wildlife market

A group of frogs were being kept in a cage, but one of the frogs escaped and was later found by a vendor.

“I think the frog was trying to get away,” said the vendor.

The frog was returned to its cage.

Wildlife market

A group of birds were being kept in a cage, but one of the birds escaped and was later found by a vendor.

“I think the bird was trying to get away,” said the vendor.

The bird was returned to its cage.

Wildlife market

A group of rabbits were being kept in a cage, but one of the rabbits escaped and was later found by a vendor.

“I think the rabbit was trying to get away,” said the vendor.

The rabbit was returned to its cage.

Wildlife market

A group of turtles were being kept in a cage, but one of the turtles escaped and was later found by a vendor.

“I think the turtle was trying to get away,” said the vendor.

The turtle was returned to its cage.

Wildlife market

A group of fish were being kept in a cage, but one of the fish escaped and was later found by a vendor.

“I think the fish was trying to get away,” said the vendor.

The fish was returned to its cage.

Wildlife market

A group of snails were being kept in a cage, but one of the snails escaped and was later found by a vendor.

“I think the snail was trying to get away,” said the vendor.

The snail was returned to its cage.

Wildlife market

A group of bees were being kept in a cage, but one of the bees escaped and was later found by a vendor.

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The bee was returned to its cage.

Wildlife market

A group of spiders were being kept in a cage, but one of the spiders escaped and was later found by a vendor.

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B. Policy and Challenges

(a) Culling and Conservation: Policy Challenges

• Similar to Avian Flu Policy Challenges, see above
(b) Legal Challenges: Biodiversity Conservation

- Issues Relating to Protection of Wildlife and Domesticated Animals

- Impact of the culinary delights of exotic species among the Chinese in China and other places – consumption of civet cats, porcupines, squirrels and raccoon dogs, Chinese ferret badger and peacocks.
Civet cats from the wild (endangered species under Appendix 1 of CITES);

Farmed civet cats – “domesticated” species under CBD? Question of “sustainable use” (Art 10(b) CBD)

- Unhygienic conditions where animals are kept – many interested with worms and other parasites.
• CITES and Application of the Precautionary Principle to control SARS

- Civet cats raccoon dogs and other animals might spread SARS.
- Scope of CITES to be widened to prevent trade in CITES species which might spread zoonotic disease such as SARS?
- Domestic laws permitting the expansion of imports of threatened and endangered species for wild life conservation should be prohibited
Evaluation of the Precautionary Principle (PP) in CITES restricting trade in CITES species that might cause SARS or its spread. Lack of clear guidelines in operationalizing.

PP precludes sustainable exploitation or trade. Banning trade can also pose serious threat to conservation when it reduces incentives to conserve species.

Call to minimize threat of serious or irreversible harm by using precaution to ban trade under PP.
• Sustainable exploitation and trade – justified by application of PP?

• Query: Should a country like US expand imports of animals under CITES under a substantive conservation programme for species if some of the species may cause a spread of SARS or other zoonotic diseases?
C. Singapore experience: Legal Measures to Control SARS

- Infectious Diseases Act – Amendments:

  (1) Notification of infectious diseases. For example, every medical practitioner who has reason to believe or suspect that any person attended or treated by him is suffering from an infectious disease or is a carrier of that disease shall notify the Director within the prescribed time and in such form or manner as the Director may require having medical examination and treatment.
The Director may require any person who is, or is suspected to be, a case or carrier or contact of an infectious disease to submit to medical examination or medical treatment at such times and at such hospital or other place as the Director may determine.

(2) If any person fails to comply with the requirements of the Director under this section –

(a) that person shall be guilty of an offence; and

(b) the Director may order the removal of that person to any hospital or other place where the person may be detained and (if necessary) isolated until he has been medically examined or treated.

(3) Other amendments include post mortem examination treated of premises or vessels isolation of persons, surveillance, isolation area, closure of food establishment.
D. Policies and Strategies to control and Prevent SARS: Regional & International Responses

( a ) ASEAN + 3

ASEAN Health Ministers meeting including the Peoples Republic of China, Japan, Republic of Korea, Canada, Mongolia and WHO:

• Regional cooperation to control and prevent SARS

• Measures include quarantine, surveillance exchange of information- Action Plan on Prevention of SARS and other infectious diseases. The following are priority areas:
• Guidelines for International Travel
• ASEAN SARS Containment Network
• Capacity Building for Outbreak Alert and Response
• Public Education and Information
• The Ministers reaffirmed that a multi-sectoral response was the only effective way to deal with SARS. The collective efforts paid off as the last SARS case was on 11 May 2003.
Joint Resolution: ASEAN +3 (China, Japan, Korea) Aviation Forum on the Prevention and Containment of SARS 15-16 April 2003

- Screening for departing passengers
  - Standardised Health Declaration Card (passengers’ name)
  - Nationality and passport no, flight information, questions recommended by WHO, signature of passenger)
  - Temperature screening for departing passengers
  - Screening for arrival passengers
Customs Procedures for Medical Equipment and Supplies Related to SARS
Managing SARS Suspect or Probable Cases
Sharing of Records for Contact Tracing Purposes

Recommend that the International Civil Aviation Organisation (ICAO) as the supervising body over airports, be informed of the common procedures reached in this Joint Resolution.
(b) APEC

- APEC also launched a strategy to combat infectious diseases – meeting in Shanghai in 2002
- Initiative - Infectious Diseases in the Asia Pacific Region:
  - Electronic networking
  - Surveillance
  - Outbreak response
  - Capacity building
  - Partnering across sectors, including business and NGOs
- Political and economic leadership
WHO, at its 56th Assembly passed a Resolution on SARS urging Member States, *inter alia*, to collaborate and provide assistance to WHO’s Global Outbreak Alert and Response Network as an operational arm of the global response.
E. Conclusion (SARS)

- Enact local laws to deal with all aspects and follow international guidelines. Impose heavier punishments, in fines, imprisonment, etc.
- International and regional cooperation
- Research, surveillance and monitoring
- Exchange of information
- Exploring alternatives to culling of animals in both Avian flu and SARS diseases
- Examine the application of precautionary principle in culling of animals
- Amendment of CITES, IATA in regard to transportation of animals
- CITES legislation – increase fines for consumption of civet cats, etc.
- Capacity building, public awareness
- Ecosystem approach
Are virus-spreading animals the enemy?
No, say experts. It’s our dirty habits...

People, you are the problem
Good communication helped S’pore beat Sars: WHO adviser

Expert praises Govt’s strategy of telling people what to expect, responding to their fears and yet not being overly reassuring

By LEE HUI CHIEN

GOOD logistical planning and medical science were not the only reasons Singapore beat Sars quickly.

Effective communication was also crucial in controlling last year’s outbreak of the deadly respiratory disease.

During Sars, the Singapore authorities “came as close as many risk communicators have seen” to the best outbreak communication practices, said Dr Jody Lanard, a risk communications adviser to the World Health Organisation (WHO).

Among the things she felt were done right: Telling people what to expect, not overly reassuring them, responding to their fears and involving them in decision-making.

Dr Lanard was among 110 epidemiologists, health officials and communication experts from around the world gathered here for a three-day meeting, which began yesterday, to help develop guidelines for good communication in fighting outbreaks.

Knowing the importance of the task, and fearing a possible influenza pandemic, the WHO will publish the guidelines to help governments by the end of this year.

In a videotaped statement to open the conference, WHO director-general Lee Jong-wook said that communication is “as critical to outbreak control as laboratory analyses or epidemiology”, noting that “poor outbreak communications can undermine good decisions”.

WHO communications officer Dick Thompson later told reporters: “Often, an expert technical person might not view the risk the same way the rest of the public does, but those concerns have to be addressed.”

“If the public can work cooperatively with technical experts, then you bring an end to outbreaks more quickly.”

This was what Singapore managed to achieve, said Dr Lanard at yesterday’s meeting.

For example, when the Government warned Singaporeans to be prepared for the long haul and closed schools in reaction to parents’ fears, it might have raised public anxiety, but also boosted public confidence that the leaders would be honest and would listen, she said.

This belief that they could communicate with their government made Singaporeans comply with Sars precautions, she said, citing a study published this year in the United States Centres for Disease Control and Prevention’s Journal of Emerging Infectious Diseases.

Nobody in Singapore had any experience in outbreak communications when Sars emerged, confessed Senior Minister of State for Information, Communications and the Arts and Health, Dr Balaji Sadasivan, when opening the conference.

But even as the authorities shaped the communication strategies, they were committed to telling it like it was.

He said: “Honesty, accuracy and transparency must be the bedrock of any communication strategy, and our Sars experience has reinforced our belief in this.”
**S’pore team uncovers new Sars clue**

The way the virus is attracted to white blood cells could explain why some patients become ‘super-spreaders’

By CHANG YUHENG

RESEARCHERS here have uncovered an affinity the Sars virus has for white blood cells, particularly in some patients, and they say this could help explain why certain patients are more infectious than others.

“Against the notion of ‘super-spreaders’ of the virus, and point the way towards better treatments,” they said.

While the virus has been known to invade various cells in such organs as the lungs and intestines, the white blood cells are the first line of defense and multiplies,” said the study’s principal investigator, associate professor, Law Tze Liang.

“When the virus is present, the body’s immune system is activated, and the white blood cells are mobilized to fight off the virus. If the virus is able to replicate within white blood cells, it could potentially spread more quickly,” he said.

There are known drugs which can dampen the damaging effects of the virus such as by preventing the patient’s white blood cells from releasing toxins.

Dr Ooi Eng Long, a researcher at the Singapore General Hospital, who was also part of the group, said that the anti-viral drug remdesivir, for example, had shown in lab studies that it could potentially knock out the virus.

“Remdesivir is one of the drugs that can be used to treat Sars-CoV-2 infections,” he said.

More research will soon be done to confirm if stopping the virus growth in this way will also stop the extensive destruction of the lungs, he added.

“The virus is more aggressive in patients with white blood cells, where it can replicate within the cells and cause the cells to release more toxins,” he said.

This explains why some patients can become ‘super-spreaders’,” he added.

Most viruses are picky; they have a very specific host range. For the Sars virus to be replicating within 48 hours of entry into a white blood cell indicates that this is a very specific site for the virus.

Dr Ooi added: “We believe this is the first time we have been able to confirm that the virus is replicating within white blood cells in patients with Sars-CoV-2 infections.”

The study also shows the need to study the relationship between white blood cells and the virus.

Dr Ooi said: “Our findings suggest that the virus is replicating within white blood cells, and this could explain why some patients are more infectious than others.

“This could help explain why certain patients are more infectious than others. We believe this is the first time we have been able to confirm that the virus is replicating within white blood cells in patients with Sars-CoV-2 infections.”

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Thank you

End

2 November 2004