

The Problem of Zoonosis, etc during Emergency Crises

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[Slide 1] My name is Masaru Sato. I am a veterinarian and I have my own established animal hospital in Tokyo's Itabashi Ward.

In September 2000, Itabashi Ward and the Itabashi Ward Veterinary Medical Association exchanged an agreement on animal rescue in times of disaster. Within this agreement it clearly states that, in the event of a disaster occurring, pet owners will be evacuated accompanied by their pets. This provides a certain guarantee of physical safety for pet owners and their pets as well as safeguarding the ties between them. But it has been pointed out that this has also created a new problem.

[Slide 2] This new problem is zoonosis, a word that refers to any disease that can be transmitted from animals to humans or vice versa. In general, infectious diseases do not cross the barriers between species. For example, most human diseases only circulate among people, while most canine diseases only circulate among dogs. But there are some diseases that pass across the barriers between species. These diseases are called zoonoses. As Morita-sensei introduced earlier, one definition of zoonosis is a disease or infection that can be naturally transmitted between humans and other vertebrates. Synonyms that mean much the same thing include zoonotic diseases, zoonotic infections, and animal-derived infectious diseases. [Slide 2]

[Slide 3] I think that in times of disaster, zoonosis will emerge as a secondary problem associated with the deterioration of the public health environment that occurs at such times.

[Slide 4] Also, as a manmade problem, terrorism can be considered to be a contributing factor in generating

outbreaks of zoonoses. There are people who attempt to incite public anxiety by spreading pathogenic (disease-causing) agents.

[Slide 5] For instance, we can all imagine a biohazard situation occurring in which a pathogenic agent accidentally leaks from a laboratory. But today, I would like to talk specifically about zoonoses associated with natural disasters.

Firstly, there are three factors that must come together in order for zoonoses to break out. These are sources of infection, infection routes, and human problems. When all three of these conditions are present, Zoonoses can break out and spread.

[Slide 6] Because many of these problems derive from animals, I will speak of animals as sources of infection. However, zoonoses are diseases that can come and go, and they do not necessarily spread only from animals to people. For example, monkey dysentery was originally a human disease, but now it is a disease that can spread from humans to monkeys and vice versa. Naturally, there are diseases that can be transmitted from humans to animals.

Regarding measures to counter the sources of infection, the first requirement is to ensure animal health. This was emphasized by Morita-sensei also. It is difficult to identify which individuals are carrying pathogenic agents. In almost all cases of zoonoses, the animals do not exhibit visible symptoms. So, while there are sometimes visible symptoms to allow us to diagnose a disease, it is usually very difficult to grasp the situation.

In addition, animals should be vaccinated so that they do not contract diseases unnecessarily.

Moreover, it is important to maintain a certain degree of distance from animals. Morita-sensei also told us earlier that people should avoid excessive contact with animals. Some people bring their pets into the bedroom. As well as sleeping side by side, some people even bathe with their pets. Such excessive contact should be avoided.

As for security measures we can take regarding animals, their nails should be trimmed when necessary. Only animals that are normally gentle should be selected for keeping. I think it is better not to keep an animal that has a tendency to bite deliberately.

Next, animal waste must be disposed of properly, quickly and hygienically. There may be pathogenic agents in the waste.

Also, animals should always be given safe food. For example, when animals eat food contaminated by bacteria such as *Salmonella enterica* or *Escherichia coli*, these bacteria can propagate inside the animals' bodies and then go on to infect and harm humans. This can be avoided by only feeding animals with food that is safe. For example, there is a disease called toxoplasma, which can be transmitted to humans by cats that have eaten raw pork.

This is something that Yamaguchi-san also told us about earlier, there have been cases of infected cats brought into shelters that have soon spread diseases (such as colds) to the other cats. So when a new cat is brought in, it should be placed in isolation for a certain period in order to check if it is carrying a disease that may be infectious to humans or other animals.

[Slide 7] Moving on to infection paths, direct routes include wounds such as bites and scratches. To minimize the chance of receiving such wounds (and thereby closing off these infection routes) it is important to wear long-sleeved tops, long trousers and gloves. This way, such wounds can be avoided.

Earlier, cases were introduced of volunteers who had been bitten by animals at the Rescue Centers following

the Great Hanshin-Awaji Earthquake. It is essential to reduce the risk of receiving such wounds by taking adequate precautions. Also, people should strictly observe a routine of gargling and washing their hands after being in contact with animals or cleaning their living areas. In this way, it is possible to shut off infection routes.

It is also important to keep the general environment in good condition. We can avoid animal-keeping places becoming sources of infection by never leaving animal waste or mess around and never permitting contaminated situations to persist. Maintaining proper food management is also vitally important.

Morita-sensei told us earlier about the importance of countermeasures against disease vectors such as mosquitoes. We refer to those living organisms that transmit pathogenic agents as 'vectors'. Countermeasures against vectors include eliminating water puddles in which mosquito larva can generate. Also, they include installing mesh-screen doors or mosquito nets that prevent mosquitoes from entering rooms, using expellants and repellents, etc. Also, it is very important to provide people with information about these things and thereby educate the public.

[Slide 8] On the human side, we all want to try to live healthily in order to enhance our resistance to disease. We need to be vaccinated on occasion, and we should try to avoid unnecessary stress which can cause a lowering in our resistance to disease.

Stronger countermeasures are required to protect people with an increased susceptibility to infection. These include infants, the elderly, people whose immunity level is lower (such as those with diabetes and alcohol dependency), who can very easily succumb to diseases and who are more prone to infection than more healthy adults.

More than that, it is important to carry out public relations. We need to give the public more information about infectious diseases through publicity campaigns, so that people will acquire this knowledge.

[Slide 9] When a major disaster happens, people evacuate to shelters, but there are various kinds of shelter. For example, there are wide-area evacuation centers, temporary shelters, accommodation shelters, and temporary housing. There are also other styles of evacuation, such as when individuals continue to live at home but go to a shelter to obtain water which they then take home.

[Slide 10] In every kind of evacuation, zoonosis can occur to some degree. Firstly, in the case of wide-area evacuation centers and temporary shelters, while they only tend to be short-period facilities they are likely to have a variety of animals present as they are located outdoors.

[Slide 11 and 12] Of course, there will be pet animals brought there by their evacuated owners, but there may also be contact with wild animals such as raccoon dogs, rats, crows, or feral dogs and cats. Moreover, there is a possibility that arthropods such as mosquitoes, flies, fleas and mites will function as vectors in spreading disease. And although the following animals have little relation to spreading infectious diseases, in some places there are snakes and snapping turtles.

Next, accommodation shelters and temporary housing are facilities with roofs and walls in which people are accommodated indoors. Earlier, we were told about an instruction issued after the Chuetsu (Niigata) Earthquake to keep pet animals indoors. But when animals and people live together in closed room conditions various problems may occur.

[Slide 13] Different zoonoses can break out depending on the environment. Let me give you a list of the specific kinds of diseases that may occur.

Firstly, there are problems that are common to dogs and cats. As Morita-sensei introduced earlier, one of these is rabies. Strictly speaking, flea bites and tick bites are not infections, but when animals are infested with fleas, etc., they can cross over to people and bite them also. Because such bites are so itchy, such infestations can be a major problem in shelters from the standpoint

of maintaining public hygiene.

Also, the mouths of dogs and cats commonly contain extremely high levels of *Pasteurella* bacteria. When volunteers taking care of animals are bitten by canine or feline carriers of the bacterium the wounds are prone to festering. So this infection, called pasteurellosis, is a problem that we cannot afford to ignore.

Apart from this, echinococcosis is listed at the bottom. In the case of the Mount Usu eruption event in Hokkaido, echinococcus parasites were detected in two dogs at a shelter, which were probably feral dogs. When the parasites infect humans, the result is 'echinococcosis', a highly virulent and chronic parasitic disease.

[Slide 14] Next, we come to cat problems. Although it doesn't happen in Japan, cats in Thailand can become infected with a highly pathogenic strain of avian influenza, which often kills them. In addition, there are infections such as toxoplasma, etc. Also, with avian species, there are mycotic fungal diseases such as cryptococcosis and the chlamydial disease parrot fever. As was introduced earlier, when bird droppings become dry and turn to dust, the people looking after the birds can inhale the pathogen with this dust and become infected with psittacosis.

Furthermore, in the case of rabbits, problems include pasteurellosis, mold and dermatophytosis or ringworm.

[Slide 15] Now, when it comes to wild animals, in the case of wild rabbits and other rodents, etc., there is a zoonosis called tularemia. This can be infectious to rabbits raised as pets, but I think its occurrence is rare. In addition, raccoon dogs and raccoons can spread zoonoses, not necessarily if they are only pets in shelters, but also if they are living wild in the vicinity of a shelter. [Slide 14]

Then again, turtles, which are reptiles, can cause problems with salmonellosis and mold, and venomous snakes, although they don't cause infections, can poison people with toxins. That itself is another problem that

needs consideration.

[Slide 16] So, in times of disaster, how should we carry out zoonosis countermeasures? All in all, I think that taking precautions on a routine basis is very important. As for measures that should be applied to animals as infection sources, keeping animal bodies clean should be normal practice as well as efforts to maintain their health. This includes, for example, eradicating fleas and mites. When roundworm parasites living in dogs, cats and raccoons infect humans they can cause a disease known as toxocariasis. Such gastrointestinal parasites should therefore be expelled as well. Also, we should inject animals with as many vaccines as possible. As there is a vaccine for leptospirosis I recommend vaccinating animals if working in areas where it occurs.

My next point does not directly concern zoonosis but, when a disaster occurs, even if people evacuate together with their pets to a shelter, it is virtually impossible for them to shelter in exactly the same spot. Usually, a place or space for keeping pet animals will be designated and the pets are kept in cages there. So it is necessary for people to train their pets to be able to remain in a cage quietly and not become stressed by the experience.

Also, general contact between people and animals is usually banned within shelters except between the pets and their owners, and the people who are taking care of the animals. This is because evacuation into a shelter is an unusual situation for the animals and it is very likely that they will become upset. So contact is prevented in order to avoid accidents such as biting, etc. Also, in order to avoid unnecessary wounds, it is best to prevent different animals from coming into contact with each other.

Furthermore, not all dogs and cats placed in shelters will necessarily have been cleared of fleas and mites. So when such animals are sheltered they need to be checked for fleas and mites. These should be eradicated as necessary. Also, shelter workers need to figure out good ways and control methods so that pet owners do not cause unnecessary stress to their pets when visiting

the sequestration site to look after them.

Regarding infection-route countermeasures, let me repeat what I said before. Those working with or treating animals should take measures to ensure that they will not be bitten or scratched. That means wearing long-sleeved clothes and gloves. As I said earlier, in order to reduce the stress placed on the animals, we need to be skillful in handling animals too.

[Slide 17] When dealing with animal waste products in shelters, sometimes water is in short supply, so latrine facilities should be contrived in such a way that there is little need to perform cleaning. For instance, use pet sheets and place waste, sheets, etc., in plastic bags for disposal.

Also, if the preference is for dogs to defecate or urinate outside when taking them for walks, they should be allowed to relieve themselves but within a limited area. Alternatively, they should be kept within the grounds of the shelter in order to minimize any public health problems.

People who look after animals should protect themselves by strictly observing a protocol of washing their hands and gargling after taking care of animals, etc.

Moreover, uneaten food can become very unsanitary, attracting flies and wild animals, which creates additional problems. So it is necessary to dispose of uneaten food in a timely fashion after putting it into plastic bags, etc.

It is also necessary to take measures to prevent outbreaks of rats, flies and mosquitoes in the environment, and to prevent such animals from getting into the shelter.

[Slide 18] With regard to human countermeasures, people need to pay attention to their own health on a routine basis. Also, when a disaster occurs, consider that animals are likely to be in an abnormal psychological state, so people should not try to protect or carelessly

touch an unknown animal on a whim just because it is in a sorry state. That is also important.

Also, it is necessary for vaccination to be performed on any pets being kept by owners. We have to more intensively consider the issue of people who are more susceptible to infection, as I have just described, and to deal with this appropriately.

[Slide 19] Finally, what I have said can be summarized as follows. In times of disaster, sanitary conditions deteriorate due to the collapse of infrastructure. Zoonoses occur more readily under poorer sanitary conditions. In order to avoid the occurrence of infectious diseases, routine advance preparations are very important - for example, training our animals, vaccination, etc., and measures aimed at individual dogs and cats such as eradicating fleas and ticks. Moreover, if we pro-actively seek out places where we can keep animals during times of evacuation, and areas for walks and exercise, we can reduce some of the confusion that occurs when disaster strikes.

Since we have a little more time, I will explain briefly about the agreement we have made in Itabashi Ward, which I mentioned at the beginning.

This agreement clarifies the roles played by Itabashi Ward and the Itabashi Ward Veterinary Medical Association concerning animal rescue and protection. It states that, at the time of a major disaster, the Itabashi Ward Veterinary Medical Association will rescue pets and that Itabashi Ward will cooperate with this activity. In the agreement, it also clearly states that, "pet owners will be evacuated accompanied by their pets." But regarding animals that are impossible to bring along with their evacuating owners, Itabashi Ward will establish a rescue center where it will keep these animals. This agreement was concluded in September 2000. Since then, Itabashi Ward has carried out animal-accompanied evacuation disaster prevention exercises periodically. The comprehensive disaster prevention priority district system divides the ward into 18 districts, and each year an exercise is carried out in designated districts. The animal-accompanied evacuation exercise

is conducted as part of the overall evacuation exercise. In this exercise, a temporary animal rescue center is set up to accept the animals. In the picture, we can see a dog and a volunteer holding its lead. And at the reception point, the rescue center exchanges documents with the owners and then takes in the animals. In this case, the shelter was set up in the corner of a local school. The animals taken in were placed in cages and managed separately. Among them, there were dogs that had been separated from their owners for the first time. A considerable number of these dogs were pining, yelping or barking. Even now, volunteers are continuing to train to look after such animals in ways that minimize the chance of accidents while providing mental support for their charges.

My explanation may have been a little patchy, but I will end my talk here. Thank you very much for listening.

災害時におけるZoonosis




生産動物科 佐藤 聖
平成21年12月12日(土)
神戸市国際会議場 ワーキンググループ

中野地区にある被災の母子 提供: 神戸市入アパース

【Slide 1】

バイオハザード



- 定義 有害な生物(特に微生物)が環境中に混入することによって発生する災害
- カテゴリ わが国では国立感染症研究所の「病原性安全管理規定」により、レベル1(BSL1)～レベル4(BSL4)に分類している。
わが国にはBSL4に対応する施設は存在するが、現在稼働していない
- バイオハザードを起こす可能性のある施設(概観区内)
 - 動物実験施設 アスチラス製薬(130頭の犬)、日大(26頭の犬)
 - 衛生検査施設 概観区保健所を含む、7ヶ所

※この表は「生物兵器」のリスクを評価するものではありません。また、この表はあくまで概観的なものであり、詳細な情報は別途お問い合わせください。

【Slide 5】

はじめに

Zoonosis(ズーノーシス)とは

人獣共通感染症、人畜共通感染症、ヒトと動物の共通感染症、動物由来感染症と同義

WHO: Zoonosis is an infection or zoonotic disease transmitted between animals and humans.

WHO: Zoonosis is an infection or zoonotic disease transmitted between animals and humans.

1959年 WHO/FAO 共同発表

Zoonosisと考えられている感染症は200以上といわれ、わが国には100程度存在すると推定されている。

【Slide 2】

感染源対策(動物対策)

- 拡散防止移動制限
- 感染源との距離の確保 隔離 接触制限
- 動物の健康管理 ワクチン接種、多頭飼育によるストレス 環境対策、衛生対策
- 検疫(新しい動物を収容する際に隔離して管理する)

【Slide 6】

災害とZoonosis

- Zoonosisと係る災害
 - 災害による公衆衛生環境の悪化に伴う二次的問題
 - バイオテロリズム
 - バイオハザード
- Zoonosis成立要素
 - 感染源
 - 感染経路
 - ヒト側の問題

【Slide 3】

感染経路対策

- 環境整備 水・土壌の汚染防止、糞尿処理、残飯処理
- 食品 食品管理
- ベクター対策 発生源対策(水溜りを作らないなど)、物理的対策(網戸蚊帳など)、駆除剤、忌避剤など
※ベクター= 病原体を運ぶ生物
- 広報活動 教育啓発、情報提供
- その他 ヒト-動物-ヒト経路対策

【Slide 7】

バイオテロリズム

- 定義 バイオテロ(bioterrorism)とは、テロリストが政治的・宗教的・経済的パニックを引き起こし、社会に対して混乱を起こすために生物兵器を用いること
- 特長
 - 安価
 - 人手や製造が比較的簡単
 - 目に見えない 恐怖やパニック
 - 管理や持ち運びが容易
 - テロリスト自身は事前に予防・治療可能
- カテゴリ
 - A: 天然痘、炭疽、ペスト、野兔病、ボツリヌス毒、ウイルス性出血熱
 - B: 口蹄疫、ブルセラ症、鼻疽、アルファウイルス、シリンなどの毒素、ヤシキリ、サルマ、細菌性出血性大腸菌、コレラ菌、アフリカスズメバチ
 - C: ニューカッセル病、ハンタウイルス、エボラ出血熱ウイルス、黄熱病ウイルス、多剤耐性緑膿菌

【Slide 4】

ヒト対策(Zoonosisに特化しない)

- 抵抗力の増進(健康管理) ワクチン接種、ストレス対策など
- 衛生指導 手洗い、うがいなどの励行
- 易感染性宿主対策
- 広報活動 教育、啓発、情報収集と公開など

【Slide 8】

時系列における要素

1. 発災直後
2. 短期(おおむね7日まで)
避難所開設
3. 中期(おおむね1ヶ月まで)
4. 長期(1ヶ月以上)

【Slide 9】

動物種別Zoonosis

動物種別	種別	感染経路	感染源	感染時期	感染場所	感染経路	感染源	感染時期	感染場所	感染経路	感染源	感染時期	感染場所
豚	豚	接触	豚	発災直後	避難所	豚	豚	発災直後	避難所	豚	豚	発災直後	避難所
鶏	鶏	接触	鶏	発災直後	避難所	鶏	鶏	発災直後	避難所	鶏	鶏	発災直後	避難所
牛	牛	接触	牛	発災直後	避難所	牛	牛	発災直後	避難所	牛	牛	発災直後	避難所
羊	羊	接触	羊	発災直後	避難所	羊	羊	発災直後	避難所	羊	羊	発災直後	避難所
馬	馬	接触	馬	発災直後	避難所	馬	馬	発災直後	避難所	馬	馬	発災直後	避難所
犬	犬	接触	犬	発災直後	避難所	犬	犬	発災直後	避難所	犬	犬	発災直後	避難所
猫	猫	接触	猫	発災直後	避難所	猫	猫	発災直後	避難所	猫	猫	発災直後	避難所
魚	魚	接触	魚	発災直後	避難所	魚	魚	発災直後	避難所	魚	魚	発災直後	避難所
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【Slide 13】

避難所とZoonosis

- 広域避難所・一時避難所
- 収容避難所
- 仮設住宅
- 個人宅

【Slide 10】

動物種別Zoonosis

動物種別	種別	感染経路	感染源	感染時期	感染場所	感染経路	感染源	感染時期	感染場所	感染経路	感染源	感染時期	感染場所
豚	豚	接触	豚	発災直後	避難所	豚	豚	発災直後	避難所	豚	豚	発災直後	避難所
鶏	鶏	接触	鶏	発災直後	避難所	鶏	鶏	発災直後	避難所	鶏	鶏	発災直後	避難所
牛	牛	接触	牛	発災直後	避難所	牛	牛	発災直後	避難所	牛	牛	発災直後	避難所
羊	羊	接触	羊	発災直後	避難所	羊	羊	発災直後	避難所	羊	羊	発災直後	避難所
馬	馬	接触	馬	発災直後	避難所	馬	馬	発災直後	避難所	馬	馬	発災直後	避難所
犬	犬	接触	犬	発災直後	避難所	犬	犬	発災直後	避難所	犬	犬	発災直後	避難所
猫	猫	接触	猫	発災直後	避難所	猫	猫	発災直後	避難所	猫	猫	発災直後	避難所
魚	魚	接触	魚	発災直後	避難所	魚	魚	発災直後	避難所	魚	魚	発災直後	避難所
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哺乳類	哺乳類	接触	哺乳類	発災直後	避難所	哺乳類	哺乳類	発災直後	避難所	哺乳類	哺乳類	発災直後	避難所
昆虫	昆虫	接触	昆虫	発災直後	避難所	昆虫	昆虫	発災直後	避難所	昆虫	昆虫	発災直後	避難所
植物	植物	接触	植物	発災直後	避難所	植物	植物	発災直後	避難所	植物	植物	発災直後	避難所

【Slide 14】

広域避難所・一時避難所におけるZoonosis

- 特徴 屋外 短期の避難
- 感染源 飼育動物(イヌ、ネコ、小鳥、ウサギその他)
野生動物(タヌキ、ハクビシン、ネズミ、カラス、ハト、猪、鹿、カメ等)
放浪動物(ネコ、イヌ)
蹄足動物(イエカ、ヤブカ、ハエ、ノミ、ダニ等)
その他(ヤマカガシ、カマキリガメ等)

【Slide 11】

動物種別Zoonosis

動物種別	種別	感染経路	感染源	感染時期	感染場所	感染経路	感染源	感染時期	感染場所	感染経路	感染源	感染時期	感染場所
豚	豚	接触	豚	発災直後	避難所	豚	豚	発災直後	避難所	豚	豚	発災直後	避難所
鶏	鶏	接触	鶏	発災直後	避難所	鶏	鶏	発災直後	避難所	鶏	鶏	発災直後	避難所
牛	牛	接触	牛	発災直後	避難所	牛	牛	発災直後	避難所	牛	牛	発災直後	避難所
羊	羊	接触	羊	発災直後	避難所	羊	羊	発災直後	避難所	羊	羊	発災直後	避難所
馬	馬	接触	馬	発災直後	避難所	馬	馬	発災直後	避難所	馬	馬	発災直後	避難所
犬	犬	接触	犬	発災直後	避難所	犬	犬	発災直後	避難所	犬	犬	発災直後	避難所
猫	猫	接触	猫	発災直後	避難所	猫	猫	発災直後	避難所	猫	猫	発災直後	避難所
魚	魚	接触	魚	発災直後	避難所	魚	魚	発災直後	避難所	魚	魚	発災直後	避難所
鳥	鳥	接触	鳥	発災直後	避難所	鳥	鳥	発災直後	避難所	鳥	鳥	発災直後	避難所
爬虫類	爬虫類	接触	爬虫類	発災直後	避難所	爬虫類	爬虫類	発災直後	避難所	爬虫類	爬虫類	発災直後	避難所
両生類	両生類	接触	両生類	発災直後	避難所	両生類	両生類	発災直後	避難所	両生類	両生類	発災直後	避難所
哺乳類	哺乳類	接触	哺乳類	発災直後	避難所	哺乳類	哺乳類	発災直後	避難所	哺乳類	哺乳類	発災直後	避難所
昆虫	昆虫	接触	昆虫	発災直後	避難所	昆虫	昆虫	発災直後	避難所	昆虫	昆虫	発災直後	避難所
植物	植物	接触	植物	発災直後	避難所	植物	植物	発災直後	避難所	植物	植物	発災直後	避難所

【Slide 15】

収容避難所・仮設住宅におけるZoonosis

- 特徴 屋内 密着 人と動物は隔離可
- 感染源 飼育動物(イヌ、ネコ、小鳥、ウサギその他)
野生動物(ネズミ、カラス、ハト等)
- ベクター 蹄足動物(イエカ、ヤブカ、ハエ、ノミ、ダニ等)

【Slide 12】

災害におけるZoonosis対策

1. 感染源対策
 - 平時時 動物の体を清潔に保つ
動物の健康維持に努める
寄生虫駆除
ワクチン接種
クレートレーニング
 - 避難後 隔離 関係者以外の接触禁止
他の動物との接触を避ける 施設間の移動も慎重に
ノミ・ダニの駆除
メンタルケアによるストレス軽減

【Slide 16】



Slide : : A



Slide : : A



Slide : : A

