

**Other issues raised at the meeting on 5 April 2003 attended by  
Dr Stephen NG Kam-cheung, Dr YEOH Eng-kiong,  
Dr Trevor Maxwell ELLIS, Dr Thomas TSANG Ho-fai,  
Mr YUEN Ming-chi, Dr LO Su-vui and Dr Paul SAW Thian-aun**

Reaction to the rat hypothesis

According to Dr Stephen NG, Dr Paul SAW arrived at the meeting in an agitated state and announced that the results of the tests on rats were Polymerase Chain Reaction (PCR)-positive. Dr SAW was quite convinced that rats were responsible for the outbreak at the Amoy Gardens. Everyone was worried as the test results of the rat droppings and one throat swab were positive. Dr NG did not recall that there was mention of domestic cats kept by residents being tested positive.

2. Dr YEOH Eng-kiong informed the Select Committee that Dr NG considered that the results had confirmed that rats were the cause of the Amoy Gardens outbreak. Dr YEOH himself was certainly concerned about the test results. However, as there had already been earlier reports of domestic cats being tested positive for the coronavirus but with subsequent evidence pointing to cats being carriers rather than the cause, the meeting recognized that the PCR-positive results in respect of the rat droppings could have been due to a number of factors, including contamination, and that rats could be the carriers rather than the cause.

3. Dr Trevor ELLIS told the Select Committee that finding PCR-positive results in tests on faeces or in the throat swabs from an animal trapped from a contaminated environment and particularly an animal that continually licked its environment and its perineum had to be investigated carefully to establish if true infection or only contamination was occurring. Regarding the cause of the outbreak at the Amoy Gardens, Dr ELLIS considered that rats were no stronger a contender than the contaminated environment while cats were a weaker contender.

4. Mr YUEN Ming-chi told the Select Committee that he had doubts about the rat hypothesis. He explained to the Select Committee that rats left droppings and marks in their territory and it could be observed whether or not

the rat infestation situation in an area or a building was serious. He had personally conducted investigation into the rat infestation problem at the Amoy Gardens and did not find the problem to be serious.

5. Dr Thomas TSANG told the Select Committee that Dr NG seemed convinced that an infected population of rats had caused the outbreak. Dr TSANG himself was a little puzzled about this hypothesis as it did not fit the observations in the field investigations at that time. As to the cause of the outbreak at the Amoy Gardens, he considered rats to be the weaker contender while the greater possibility was the sewerage system. The meeting on 5 April 2003 had discussed what the PCR-positive results meant, whether the SARS virus was actively multiplying in rats, and whether rats were only passively carrying virus material around as a result of environmental contamination. Dr TSANG thought that the attendees were concerned about this new finding and that they wanted to find out the significance as soon as possible.

6. Dr LO Su-vui's recollection of the attendees' reaction could be grouped into two types: one of excitement as expressed by Dr NG, citing the finding as affirmation that rats were the cause of the Amoy Gardens outbreak; and one of prudence with emphasis on the need for further tests to be undertaken to ascertain whether the rats were actually infected.

7. Dr Paul SAW informed the Select Committee that when he reported the findings at the meeting, naturally the attendees were concerned about this new piece of information particularly since its significance was unknown at that stage. He emphasized that, contrary to the statements given by Dr NG, he was not in an "agitated state" when he talked about the results of the tests. It was also presumptuous on the part of Dr NG to say that he was convinced at that stage of the investigation that rats were responsible for the outbreak at the Amoy Gardens merely on the basis of such preliminary results. What he was convinced of at that time was that further studies would have to be carried out to determine the significance of these results, including whether the rats were merely passive carriers of the virus or had been infected and, if so, the implications of such infection in terms of the subsequent pathogenicity of the virus, i.e. the ability to cause infection in human beings.

## Discussion on the evacuation of all residents of the Amoy Gardens

8. According to Dr NG, noting that there were new confirmed SARS cases in the Amoy Gardens, he went to Dr YEOH's office immediately before the meeting on 5 April 2003 and asked that the rest of the residents be evacuated immediately as the epidemic was not yet over and the residents were living in a very dangerous environment. Dr YEOH told him that the evidence so far was not sufficient to warrant such a drastic move as there were over 17 000 residents living in the Amoy Gardens.

9. At the meeting, Dr NG raised the point that rats could never be completely eliminated and suggested that all the other residents of the Amoy Gardens be evacuated for the same reason as the residents of Block E. Dr YEOH responded that he did not have the facilities to house so many people. Dr NG then raised the possibility of using vacant public housing flats but was told that they were not furnished and not ready for occupation. Dr YEOH then said, "for the sake of the majority, some people would have to be sacrificed". Although Dr YEOH did not specifically say that the residents of the Amoy Gardens had to be sacrificed, Dr NG's understanding was that Dr YEOH was referring to the residents of the Amoy Gardens in his remark.

10. Dr YEOH told the Select Committee that he did not have any recollection of the part of the discussion with Dr NG on the evacuation of residents of the Amoy Gardens in his office immediately before the meeting on 5 April 2003. There was no discussion on the evacuation of all the residents of the Amoy Gardens. Evidence at that time, and even in retrospect, did not provide a basis for any further evacuation plan other than the removal of residents of Block E.

11. Dr YEOH also told the Select Committee that at no point during the meeting nor at any other point in time did he make any statement to the effect that the residents of the Amoy Gardens would have to be sacrificed.

12. Dr ELLIS did not recall hearing anything about the evacuation of residents of the Amoy Gardens or they having to be sacrificed while he was at the meeting.

13. Mr YUEN informed the Select Committee that there was no discussion on evacuation of all the residents of the Amoy Gardens during his presence at the meeting. Dr YEOH did not make any statement to the effect that the residents of the Amoy Gardens would have to be sacrificed.

14. Dr TSANG did not recall any discussion on the evacuation of all the residents of the Amoy Gardens. He did not recall Dr YEOH making any statement at the meeting with regard to sacrificing the residents of the Amoy Gardens.

15. According to Dr LO, there was no discussion at the meeting on the evacuation of all the residents of the Amoy Gardens. Dr YEOH did not make any statement to the effect that the residents of the Amoy Gardens would have to be sacrificed.

16. Dr SAW's recollection was that there was no discussion on the evacuation of all the residents of the Amoy Gardens at the meeting. Dr YEOH did not make any statement to the effect that the residents of the Amoy Gardens would have to be sacrificed.

#### Problem of rat infestation at the Amoy Gardens and rat elimination

17. According to Dr NG, rat elimination was discussed at the meeting. Mr YUEN was called to the meeting by Dr SAW and he arrived around 10:00 am. Mr YUEN estimated that there were at least 400 rats around the Amoy Gardens. Trapping was not very efficient as rats had become quite smart. Warfarin was not very lethal and rats had to digest it more than once to bleed to death. The more toxic rat poisons were not environmentally safe. It was decided at the meeting that more potent rat poisons be used and an all-out effort be made to trap and kill as many rats as possible. The instruction to kill rats was given by Dr YEOH.

18. Dr YEOH told the Select Committee that it was he who summoned Mr YUEN to the meeting in order that the participants could better understand the rat infestation situation in the Amoy Gardens. Mr YUEN explained to the meeting that sewer rats and roof rats were commonly found in Hong Kong. He also explained that no obvious signs of rat infestation had been detected in the common areas of Block E, including the roof top, staircases, light wells,

utility rooms as well as pipes on walls. He did not recall that Mr YUEN had actually said that there were 400 rats around the Amoy Gardens. He did not give any instructions to kill rats. There was no policy to kill rats and he would leave it to the experts to deal with the problems of rats.

19. According to Dr ELLIS, Mr YUEN arrived half way through the meeting to present up-to-date information on the rat situation in the Amoy Gardens. Mr YUEN indicated that there did not appear to be a serious rat infestation problem at the Amoy Gardens. He did not recall Mr YUEN estimating the number of rats likely to be present. His recollection was that Mr YUEN mainly discussed the trapping programme of the Food and Environmental Hygiene Department (FEHD) for rats at the Amoy Gardens and this was by the use of physical trapping, and not poisoning.

20. Mr YUEN told the Select Committee that he was notified by phone around 11:00 am on 5 April 2003 by a lady from the Health, Welfare and Food Bureau that Dr YEOH wanted him to join a meeting. He arrived around 12:00 noon and briefed the attendees on the common types of rats found in Hong Kong and their behaviour. He mentioned at the meeting that trapping and poisonous baiting were the methods used for controlling rat infestation. Acute poison had not been used in Hong Kong for many years. He told the attendees that the rat infestation problem could be as serious as having a few hundred rats in a small area. He quoted the example of having collected 400 rats within two weeks from the Central Market in 1997. He told the attendees that he had inspected the Amoy Gardens and found that the rat infestation problem at the Amoy Gardens was not serious. He did not tell the attendees that there were at least 400 rats around the Amoy Gardens. Dr YEOH did not give any instruction to kill rats.

21. Dr TSANG told the Select Committee that Mr YUEN was the last one to join the meeting and that he was summoned by Dr YEOH to present his observations about rats in the Amoy Gardens. Mr YUEN explained that there were two types of rats which had different habitats, and that there were not many rat marks in the common areas of the Amoy Gardens. He recalled that Mr YUEN briefed members on the trapping of rats in the Amoy Gardens, and Dr YEOH directed that rat control activities be extended to the neighboring areas of the Amoy Gardens.

22. According to Dr LO, Mr YUEN was asked by Dr YEOH to join the meeting to shed further light about rats in Hong Kong. Mr YUEN came in later than the others, and he briefed the meeting on the common pest control measures and the investigations on rats carried out by FEHD in the Amoy Gardens. Those present at the meeting did not engage in a discussion on the killing of rats. Dr LO could not recall Mr YUEN giving the number of rats in the Amoy Gardens but remembered the statement that the housing estate did not have a serious problem of rat infestation. Dr YEOH did ask that investigations on rats be intensified and the pest control efforts be stepped up, but he did not give any specific instruction to kill rats.

23. According to Dr SAW, he was not the one who asked Mr YUEN to join the meeting. Mr YUEN was summoned to the meeting by Dr YEOH. After his arrival, Mr YUEN explained to the meeting the situation of rat infestation in the Amoy Gardens and what he proposed to do with the rats. The meeting deferred to his advice on the best ways to deal with rat infestation.

Suggestion made by Stephen Dr NG on keeping virus positive rats alive

24. According to Dr NG, he suggested at the meeting that rats that were virus positive should be kept alive to observe how long the virus stayed active in them.

25. Dr YEOH explained to the Select Committee that the fastest way to find out whether a rat had been infected was to conduct autopsies and not test blood samples as the effectiveness of the latter method would depend on when the rat was infected.

26. Dr ELLIS did not recall hearing the matter of keeping virus positive rats alive discussed while he was at the meeting.

27. Mr YUEN could not recall whether Dr NG made the suggestion. There was no discussion on keeping rats which were virus positive alive to observe how long the virus stayed active in them.

28. Both Dr TSANG and Dr LO could not recall Dr NG making the suggestion.

29. According to Dr SAW, Dr NG did make such a suggestion. However, the overriding priority at the time was to confirm whether or not the rats had been infected and for this, autopsy of the rats was the best and fastest method to find out whether there were any signs of virus replication in these animals. With some samples tested coronavirus PCR-positive, the importance of public health and the urgency of infection investigation of the rats through autopsies overrode the importance of the suggested study on the active duration of the virus in the rats alive.

Suggestion made by Dr Stephen NG on warning people to keep their premises rats-safe

30. According to Dr NG, he suggested to Dr YEOH that people should be warned to keep their premises rat-safe by closing windows and covering their food. Dr YEOH replied that he would consider his suggestion.

31. Dr YEOH explained to the Select Committee that Dr NG's suggestion of closing windows might, in the case of the Amoy Gardens, perpetuate the sewage problem because of the negative pressure in the bathroom created by closed windows.

32. Dr ELLIS did not recall the suggestion of warning people to keep their premises rat-safe being discussed while he was present at the meeting.

33. Mr YUEN told the Select Committee that there was no discussion at the meeting on warning people to keep their premises rat-safe by closing windows and covering their food. If Dr NG had made such a suggestion, he should have recalled it because he would have explained to the meeting that it was not necessary to close windows to keep premises rat-safe. Mr YUEN explained that it was possible for rats to climb along pipes on walls provided that the pipes were of a certain size. However, putting barbed wire around the pipes near windows was very effective in preventing rats from getting into premises through windows. Mr YUEN pointed out that rats could enter through holes in a wall or a slit as narrow as six mm or one cm, such as the slit between the door and the floor.

34. Mr YUEN also told the Select Committee that complaints had been received by FEHD from the public in the past about the Government advising

the public to close windows to prevent rats. This was because not every household had air-conditioning and air-conditioning cost money.

35. Mr YUEN told the Select Committee that FEHD would give the public specific advice on the prevention of rat infestation in the transmission of SARS when the role of rats in the transmission of SARS was clarified. He pointed out that FEHD had issued to the public general warnings on rat infestation regularly and a publicity campaign on the prevention of infestation of cockroaches and rats, etc. was launched in April 2003 in collaboration with the Department of Health.

36. Dr TSANG recalled that Dr NG had “suggested warning people to keep out their houses from rats”, but he did not recall the specifics.

37. Dr LO could not recall Dr NG making the suggestion of warning people to keeping their premises rat-safe.

38. According to Dr SAW, Dr NG did make the suggestion and Dr YEOH agreed to consider it.

“Involvement” of Dr Stephen NG in the investigation into the outbreak at the Amoy Gardens

39. According to Dr NG, he left the meeting on 5 April 2003 early because he was faced with the dilemma of not wanting to breach the promise of confidentiality while feeling duty-bound to warn the public of the danger of rats spreading the disease. He considered that the honest thing to do was to extricate himself from further involvement in official investigations and to remain an independent observer. He left the meeting around noon while the rest stayed on to discuss the report to the Chief Executive.

40. Dr NG told the Select Committee that he had known Dr YEOH, though not very well, for over 30 years. They both studied medicine at the University of Hong Kong and Dr YEOH was “half-a-year” his senior.

41. Dr YEOH told the Select Committee that he did not know Dr NG personally. Dr NG had never been employed or commissioned by the Government in any capacity, or at any stage, during the SARS epidemic.

Neither was he a consultant to the Government. He also did not participate in the field investigation into the outbreak at the Amoy Gardens in association with the relevant government departments. Dr NG was not active in research and he was invited to attend the meetings on 4 April and 5 April 2003 to provide insight into the SARS outbreak, and the Amoy Gardens outbreak in particular.

42. Dr ELLIS informed the Select Committee that his observation was that Dr NG had provided a hypothesis on rat involvement and made some suggestions on investigating this to the meeting. Dr NG was still at the meeting when he left to conduct the autopsies.

43. Mr YUEN told the Select Committee that he did not work with Dr NG on the investigation into the outbreak at the Amoy Gardens. Dr NG gave him the impression of being a businessman as Dr NG talked about taking a trip to Beijing, and Mr YUEN himself did wonder why a businessman was present at the meeting. Dr NG stayed until the end of the meeting and Mr YUEN remembered everyone walking to the lift lobby and Dr YEOH thanking them. Mr YUEN told the Select Committee that if Dr NG had left the meeting early, he would have remembered it because Dr NG was sitting next to him and Dr NG had to walk past him in order to reach the door. As the meeting room was very small, he would need to get up to let Dr NG leave.

44. Dr TSANG informed the Select Committee that Dr NG did not join the Government's field investigation team at the Amoy Gardens. He could not recall whether Dr NG stayed until the end of the meeting.

45. Dr LO's understanding was that Dr NG was not involved in the investigation into the outbreak at the Amoy Gardens. His recollection was that Dr NG stayed until the end of the meeting on 5 April 2003.

46. Dr SAW informed the Select Committee that Dr NG did not participate in the investigation of the outbreak at the Amoy Gardens, and that Dr NG left when the meeting ended.