



"skcng"



04.04.2003 02:29 PM

Urgent

Return Receipt

To: sliac [redacted]

cc:

Subject: Fw: Update April 4, 03

Dear Sarah,

Nice talking to you. Anytime you need help just call. Enclosed please find note I wrote to the group. My involvement with your bureau will be strictly personal and not involving the group.

Regards,

Stephen

----- Original Message -----

From: skcng

To: ng [redacted] ; [redacted]@cuhk.edu.hk ; [redacted]@cuhk.edu.hk ; Dr. [redacted] YU

Sent: Friday, April 04, 2003 10:38 AM

Subject: Update April 4, 03

Dear All,

Dr. Victor Fung, Prof. Lap-chee Tsui and I met with Mr. Tung for about 20 minutes yesterday. Obviously he was quite stressed to have some answers to the epidemic and welcomed our help. He called EK on the phone and we went over to see EK immediately. He told us that he has requested Paul Saw to come out of retirement to co-ordinate the epidemic investigation. I said that it will then be appropriate that we work with Paul (who is also a volunteer like us) to look over the investigation. I said that because they are busy with Amoy we would like to look at Metropole. He was quite receptive to that idea and said that he would handle the situation with Margaret and let us know thru Thomas Tsang.

I don't know how soon we can start working on the data collection at Metropole or look at data on Amoy. But I guess we better be prepared ourselves by listing the research questions that we want to be answered. There are a lot of questions on Metropole that the Amoy case brings up. Metropole actually may be more educational since it is a small outbreak.

Coming back to the Amoy case I guess there are several important points to consider for any hypothesis:

1. Is it single source and from where.

I guess we all agree that it is single source. From where or whom is not settled. Now there is this theory of urination at the construction site. EK said that the timing of contamination coincides with the renal patient's visit to his brother.

2. How does this single patient pass his viruses to the environment?

Urine, feces, sputum, droplet? If it is aerosol then it must have occurred outside Block E.

3. Is this single contamination of sufficient quantity to deliver sufficient dose to infect over 200 people?

I guess if it is airborne, waterborne, or foodborne this is possible. Any other method, such as passive carriage by rodents or insects (as suggested by EK) would probably need amplification of dose, ie infection of the carrier. EK does not believe in infection of the carrier. He thinks the patient left enough virus for cockroaches to carry

Y5

around to all the blocks. His theory is that roaches were the carriers and visited all the infected household to spread the disease by contact.

### 3. Distribution system

Airborne or waterborne are both effective distribution systems from a single source. Airborne is definitely possible here. We are not thinking about foodborne at this point. Waterborne is more difficult here since 4 blocks are involved. Therefore anything other than airborne would need a sub-distribution system. In this case the most likely sub-distributors are rodents and insects.

### 4. Infection of the patients

Airborne is straightforward. But the challenge is for the single source to infect all the 200 people and then disappear, as it is likely here looking at the epidemic curve. Those infected people have to be at home during the time of the aerosol formation to be infected. This aerosol formation probably did not last very long. We will know about this by looking at the data. Infection by contact of contaminated surfaces would need a lot of contamination for 200 people to be infected. Even cockroaches do not wander around all parts of a household. Therefore the kitchen and bathroom are more likely areas of contamination and therefore housewives should be at higher risk. We can tell from the data. I still believe some contamination of common source within a block or household, e.g. flush water system, is a more likely and efficient distribution system to the patients directly. EK said there were a lots of leaks in the pipes at Amoy Garden.

Pass around your thinkings and hope we can start work next week. Anybody interested to visit Amoy Gardens?

Stephen



"stephen ng"

< [redacted] >

07.04.2003 11:37 AM

Urgent

Return Receipt

To: ekyeoh [redacted]

cc: sliao [redacted]

thomas\_tsang [redacted]

skong [redacted]

Subject: Some Recommendations

April 7, 2003

Dr. E.K. Yeoh  
Secretary for Health, Welfare and Food  
The Hong Kong SAR Government  
Hong Kong

CONFIDENTIAL

Dear Dr. Yeoh,

Thank you for allowing me to work on the outbreak investigation of SARS at Amoy Gardens. I believe I have presented to your team a viable hypothesis that has been initially corroborated by evidence so far collected. Further work needs to be done to elucidate epidemiologic risk factors and mode of transmission from host to human. In addition more studies on infection and transmission among rats are paramount. We are at the epicenter of the world epidemic and we owe it to humanity to elucidate every single aspect of this disease that we are capable of doing.

Whether rats are the cause or result of the initial outbreak at Amoy Gardens is important for control of future outbreaks. I therefore urge your team to start detailed autopsy studies of rats found at Amoy Gardens, since pathological changes within rats disappear 30 days after infection by other rat coronaviruses. We should still be able to determine approximate date of infection of rats caught at this time. Further delay of autopsy studies would lose forever a valuable chance to elucidate the mode of transmission of this very deadly virus and the origin of the Amoy Gardens outbreak. Serological tests of rats should also be done with other viral studies to determine length of infection, existence of immunity, and more importantly the existence or not of a carrier state. Needless to say, rats from other parts of Hong Kong should also be studied and a rat monitoring system be set up in Hong Kong.

Case-control studies of Amoy Gardens residents should also be done to elucidate other risk factors for infection. Since we are still unsure how viruses are transmitted from rat to man, we must look into all aspects of difference between cases and controls, especially those living in very similar environments such as household members. I believe the answer lies in daily personal habits such as time of work, time of use of toilet or kitchen, hygiene, breakfast habit, etc. which allow patients to come into contact with rat saliva or excreta within 3-6 hours of deposit.

For prevention I think rat control is of utmost importance. This does not consist only of environmental removal of rats. Households should be made rat-proof and residents alerted to close their windows at night to prevent rat entrance (in contrast to present recommendation to leave windows open for better ventilation.) In addition sewage should be disinfected before being discharged from each household. For example bleach can be added to the toilet bowl before each flushing. Chlorination of the salt water flushing system should be strengthened. Garbage should be disposed quickly

3/5

and safely out of reach of rats. These measures will, I believe, go a long way to cut down on the number of newly infected cases at Amoy Gardens and other areas where similar transmission may arise.

On a more positive note I think it is unlikely that rat contamination occurred through the sewage system. Our flush water is chlorinated and viral discharge from a single patient, no matter how big, would be diluted in the sewage system. The suspected index patient did not lead to any outbreak in his own apartment, nor did any other SARS patients in their own building. So my hypothesis is that the rat infection at Amoy Gardens was an

unfortunate fluke and occurred in the apartment of the brother of the suspected index patient. He probably left some infected material such as tissue paper, left over food, etc. in the garbage where it was picked up by a rat. If this is true then the chance of another outbreak like Amoy Gardens will be greatly decreased with rat control and tightened garbage handling procedures.

Epidemiologic work on this outbreak must continue at full speed, since we have a responsibility to ourselves and the rest of the world community. WHO

is eagerly watching and waiting for our results. Our neighbors in China and

South-east Asia will benefit greatly from our experience. We have a lead-time in this fight and we must not waste it. While I know there are political and administrative difficulties that I may not comprehend, I think

'see no evil' is a greater moral lapse than 'say no evil.' Moreover, researchers in other countries may soon find out what we have found.

I want to congratulate the dedication and hard work of your team. They have accomplished a lot in the last few weeks. I will be happy, as always, to assist in any further work that needs to be done.

I remain,

Yours truly,

Stephen K. Ng, MB,BS, DrPH, DABPed

c.c. Dr. Thomas Tsang  
Dr. Sarah Liao

---

No masks required! Use MSN Messenger to chat with friends and family.  
<http://go.msnsnserver.com/HK/25382.asp>

Sarah ST LIAO

08.04.2003 04:26 PM

Urgent

Return Receipt

To: "stephen ng" <[REDACTED]>

CC:

Subject: Re: Fwd: Update April 4, 03

Dear Stephen,

Thanks for the memo.

The state of affair is panicky- we must have calm and cool headed scientists and doctors to conduct thorough investigations. It is most dangerous to draw conclusions before the hypothesis is put to the test. I am sure it will be very useful to bounce ideas with you. The problem right now is to find the time.

Please keep in touch by email.

Sarah

"stephen ng" <[REDACTED]>



"stephen ng"

<[REDACTED]>

07.04.2003 01:25 PM

Urgent

Return Receipt

To: sliao [REDACTED]

CC:

Subject: Fwd: Update April 4, 03

Dear Sarah,

I forwarded this email to you last Friday using my china server. Apparently you did not receive it. I am sending it to you again to clarify my arguments. I hope you will consider carefully what I put in my letter to EK today.

Regards,

Stephen

>From: "skcng" <[REDACTED]>  
>To: "ng stephen" <[REDACTED]>, [REDACTED]@cuhk.edu.hk,  
> [REDACTED]@cuhk.edu.hk, "Dr. [REDACTED] YU" <[REDACTED]@cuhk.edu.hk>  
>Subject: Update April 4, 03  
>Date: Fri, 4 Apr 2003 10:38:22 +0800  
>  
>Dear All,  
>  
>Dr. Victor Fung, Prof. Lap-chee Tsui and I met with Mr. Tung for about 20  
>minutes yesterday. Obviously he was quite stressed to have some answers  
>to  
>the epidemic and welcomed our help. He called EK on the phone and we went  
>over to see EK immediately. He told us that he has requested Paul Saw to  
>come out of retirement to co-ordinate the epidemic investigation. He said  
>Paul was a seasoned epidemic investigator but may not be up-to-date with  
>sophisticated data analysis. I took that up and said that it will then be  
>appropriate that we work with Paul (who probably is a volunteer like us)  
>to  
>look over the investigation. I said specially that because they are busy  
>with Amy we would like to look at Metropole. He was quite receptive to

5/2