This Roundtable organised by the Hospital Authority brought forth experts from different disciplines and institutions to share data and ideas on the epidemiology, control and management of SARS and nosocomial infections. It aims to speed up exchange of information and to identify opportunity for further research.

The following is a summary of core findings presented by the experts at the Roundtable session held on 2 Aug 2003.

### Summary of discussion

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<tr>
<th>Introductory Remarks</th>
<th>Dr Vivian Wong, Hospital Authority Head Office</th>
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<td>The purpose of the Roundtable was to develop evidence-based measures to prevent future transmission SARS transmission in the community and hospitals.</td>
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<td>The work and contributions of HASCOG (HA SARS Collaborative Group) were introduced to the meeting participants.</td>
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<td>HA is currently working towards a better ‘preparedness’ for a major outbreak of infectious disease, including Severe Acute Respiratory Syndrome (SARS).</td>
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<th>The Rat Vector Hypothesis for the Amoy Gardens Outbreak</th>
<th>Dr Stephen Ng, Former Professor of Public Health, Columbia University</th>
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<td>Hypothesis of a possible role of rats as vector of transmission in SARS outbreak at Amoy Garden was presented.</td>
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<td>Close proximity of light wells and clothes-lines installed outside the bathrooms of each unit provided convenient bridges for rates as they traveled up and down the building could provide explanation for the subsequent spread of the disease to 150 households.</td>
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<td>Proposed future work includes epidemiological case-control studies to identify behavioural risk factors and possible mechanisms for rat-to-man infections.</td>
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<th>Presence of Animal Vector- Preliminary Evidence</th>
<th>Prof TK Ng, Dept of Physics, HKUST</th>
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<td>Preliminary work based on data derived from government source and the media, had shown the spread of the disease from the Amoy Gardens outbreak (taken as the original source) is very slow (~100m/day). Similar behavior is found in Shatin and Tai Po.</td>
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<td>The data suggested the possibility of the presence of non-human vector. However, the data was too crude to make definite conclusion, and further investigation could be performed with better data set.</td>
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### Outbreak Investigation
*Dr WH Seto, Dept of Microbiology, QMH*

- Outbreak investigation in the hospital must explore broadly many possible hypotheses for causation and data to verify this hypothesis must be obtained.
- In hypothesis verification, laboratory data or stimulation studies must be done. However it must be noted that a successful simulation is not sufficient. It simply affirms that this is a possible cause. This is like affirming that a “gun can kill” but one has still to show that it is the “murder weapon”.
- To show that the hypothesis is actually related to the outbreak, studies with concomitant controls must be done. A case-control study is usually conducted in a hospital outbreaks investigation.

### Environmental investigations in Amoy Gardens
*Prof HN Lam, Dept of Mechanical Engineering, HKU*

- Airborne transmission involving four possible processes could be the mode of transmission in Amoy Gardens:
  - The drainage system generates virus-laden aerosols, release back to bathroom or the re-entrant.
  - Buoyant plumes in the re-entrant space spread the virus.
  - Air flows between flats, driven by wind pressures.
  - The plume is carried away by north-easterly winds.
- Further work on case-control study, field measurement and investigation (drainage & air flows), Computational Fluid Dynamics and wind tunnel study.
- Novel DNA technology is now ready for testing of airborne transmission via drainage system or airflow.

### SARS Viral Load & Viability
*Prof Malik Peiris, Dept of Microbiology, HKU*

- Quantitative reverse-transcriptase (RT) PCR on respiratory and faecal samples, together with serology, could confirm the diagnosis of SARS-associated coronavirus infection in most SARS patients. The progression of the disease (peak viral load at day 10) to respiratory failure (an inverted V viral-load profile in week 2) might not be associated with uncontrolled viral replication, but may, in fact, be immunopathological in nature.
- The SARS CoV could be detected as long as 72 hrs on glass surface to 24 hrs on paper file cover demonstrating the strength of the virus infectivity.
- Inactivation of the SARS CoV by heat (at 56°C for 15 min) and disinfectants were discussed.

### Transmission of SARS CoV
*Prof TW Wong, Dept of Community Medicine, HKU*

- Droplet spread supported by evidence from a medical student study.
- Airborne route of transmission could not be ruled out but was in agreement with the ventilation studies findings in PWH outbreak.
- Transmission by fomites likely.
- Environmental experimental studies in the SARS ward needed to assess the risk of disease transmission by the airborne mode.
SARS-CoV Genomics Research  
Prof Dennis Lo, Dept of Chemistry Pathology, CUHK
- Viral isolates cultured from clinical specimens from seven patients with SARS were sequenced.
- Complete genomic sequence of virus obtained from:
  - Mother of the index patient in PWH outbreak (isolate Su-10).
  - A patient who had traveled to Shenzhen six days before symptoms onset (CUHK-W1).
- At least two strains of SARS CoV had emerged since the first reporting of SARS in Nov 2002 in Guangdong Province,
- It is epidemiology significant that these two strains of CoV already emerged in Hong Kong, which meant that there was more than one source of infection (other than the Metropole Hotel outbreak) present at the beginning of the epidemic.
- More data needed on correlation between virus mutation and clinical manifestations.

Modeling SARS Transmission  
Prof Michael Wong, Dept of Physics, HKUST
- Using an “Infection Model” with 4 control measures to simulate patients and medical staff in hospital wards, the following observations were made:
  - Early quick test alone would reduce rate of infection of medical staff, but not patients.
  - Early quick test + quarantine would further reduce the proportion of both patients and medical staff infections.
  - The addition of personal protection equipment would reduce the rate of infection from patients to staff.
  - The rate of staff infection could be further reduce by the replacement of the whole team with an uninfected team, when a staff was infected.

Epidemiology Strengthening  
Prof PL Ho, Dept of Microbiology, HKU
- Established mechanism with a task force, expert committee and a surveillance unit in place.
- Enhanced surveillance with a system for monitoring and investigating rumours and anecdotal reports of local SARS cases.
- Active surveillance in hospital settings by relying on ICN or survey high-risk areas regularly.
- Active surveillance must be matched with planned response such as a strategic plan, stockpiling of barrier nursing supplies, hospital infection control and an efficient laboratory service.

Hospital Authority 28 August 2003