Chapter 14
Radiographers’ Perspective in the Outbreak of SARS

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Introduction

Modification of Routine Radiographic Practice

Emotional Impact of SARS Outbreak on Radiographers

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Introduction

Heath care workers are routinely exposed in a variety of diseases during their daily work. Although most health care workers would consider this as a part of their job, the general public is unaware of the risks taken by health care workers and the sacrifices they routinely make. The arrival of SARS changed that. Attention was focussed on the health care workers since prior to SARS there was no precedent for an infectious disease that struck down hundreds of health care workers in a short period of time in a hospital setting. Hospitals were suddenly considered to be dangerous places to be in. As very little was known about this disease there was significant fear and anxiety among the hospital staff, and emotional disturbances in health care workers was inevitable.

During the SARS crisis, radiographers were indispensable in imaging patients for the diagnosis, management and follow up of SARS patients. Similar to other medical staff, frontline radiographers needed to overcome their emotional stress and apprehension in order to deliver high quality radiographic service to the SARS patients efficiently and safely. Radiographic practice had to be modified to minimize the risk of cross infection within the hospital and the radiology department. At short notice, radiographers at all levels of seniority had to familiarize themselves with infection control measures and the correct use of personal protective equipment within the radiology department, the hospital and other departments they served.

Key Points

Introduction

During the SARS crisis, radiographers were

- indispensible in imaging patients
- required to overcome emotional stress
- needed to modify radiographic practice
- required to familiarize with infection control measures

Modification of Routine Radiographic Practice

Plain chest radiography and computed tomography (CT) of the thorax were the two major services requested for patients with suspected or confirmed SARS.
Plain Radiography

During the SARS epidemic, plain chest radiography was primarily performed for three categories of patients: patients with clinical signs and symptoms suspected of or confirmed with SARS, hospital staff and their family members for excluding SARS, patients recovered from SARS for follow-up. In routine practice, plain radiography is undertaken primarily in the radiology department. Bed-side or portable radiography is provided in the wards for patients who are clinically unfit to be brought down to the radiology department. During the SARS outbreak, this practice was changed to cover both non-ambulatory patients and ambulatory patients with suspected or confirmed SARS to reduce the risk of cross infection within the hospital. Plain radiography was hence performed at sites outside the radiology department.

Satellite X-ray units utilizing portable X-ray machines, lead screens and chest stands were set up at different sites within the hospital to provide safe and readily accessible chest radiography for different categories of patients (Figure 1). The satellite x-ray units were set up in the vicinity of the SARS wards and in clinics where patients’ waiting area was spacious with good ventilation. Meticulous attention was paid to radiation protection and infection control measures.

Figure 1

a. Satellite X-Ray unit in a cubicle next to SARS ward
b. Satellite X-Ray unit in cubicle next to SARS clinic

To ensure smooth running of the service in the satellite x-ray units, senior radiographers coordinated the radiographic service with the involvement of the medical officers in charge of SARS patients, the nursing staff in the SARS wards and clinic, and the hospital administration. They also undertook duties in the SARS wards so that they could respond rapidly to problems and changes arising from the service.
As the demand of plain chest radiography was high during the SARS outbreak and the service was scattered in different locations within the hospital, radiographer workforce was re-organized to cover duties in these locations. This was possible as during the outbreak most routine clinical and radiological services were suspended.

All radiographers in the department took turn to perform their duties in the satellite X-ray units for SARS patients. This duty arrangement was aimed to avoid overloading or overstressing radiographers or team of radiographers that normally performed general and portable radiography.

Pregnant female radiographers were exempted from all duties that possessed any potential risk of SARS and the hospital management granted them special early maternity leave till the 14th week of their gestation.

All student radiographers were immediately withdrawn from clinical attachment early during the course of the outbreak.

Some radiographers chose to quarantine themselves during and after their rotation through the SARS duty to reduce the possibility of transmitting the infection to their families. The early notification of the SARS duty roster to all frontline radiographers helped them to prepare and make necessary arrangement for self quarantine.

It is absolutely essential to staff to strictly follow infection control guidelines, particularly while performing bed side radiography in the SARS wards and intensive care units. The risk of contracting the disease is high in this environment as the patients are quite sick and there is close contact with the patients during the procedure. Therefore it was recommended that radiographers work in pairs when undertaking bed-side radiography for SARS patients in order to smoothen the radiographic procedure and hence reduce patient contact time and stay in the wards. Another advantage of working in pairs was that they could remind each other of complying with stringent infection control measures during the procedure.

Whenever possible, digital radiography should be used to minimize ‘retake’ due to inaccurate exposure settings. To ensure uninterrupted service in the satellite x-ray units, ample supply of film cassettes is necessary. Designated porters are necessary to transport contaminated exposed film cassettes back to the radiology department for decontamination before film processing, and to return the decontaminated unexposed film cassettes with processed films.
to the satellite x-ray units. With this arrangement, chest radiographs taken for the SARS patients were promptly available for review by the medical officers during their ward rounds.

During the outbreak, radiographers were encouraged to acquire basic knowledge of the radiographic appearances of SARS and pay additional attention to all chest radiographs for any evidence of pneumonic change when they checked the films. Suspicious radiographs were sent for immediate reporting by radiologists and the patients managed appropriately.

**Key Points**

**Modification of Routine Radiographic Practice**

**For Plain radiography**
- Bed-side or portable radiography provided for both non-ambulatory and ambulatory SARS patients
- Satellite X-ray units set up near SARS wards and clinics
- Radiographers took turn to perform SARS duty and worked in pairs
- Film cassettes decontaminated before film processing
- Radiographers checked films carefully for evidence of pneumonic change
- Pregnant female radiographers granted with special early maternity leave
- Routine clinical and radiological services suspended
- Student radiographers clinical attachment withheld

**CT**

Since CT of the thorax is more sensitive than plain chest radiography to identify early pneumonic change in SARS, CT became an important diagnostic tool in patients with high index of clinical suspicion of SARS but no radiological abnormality on a chest radiograph ¹.

In contrast to plain radiography, patients requiring high resolution CT had to come to the radiology department for the procedure. Therefore, stringent infection control measures had to be implemented in CT service. Designated hours during the day and sessions outside office hours were arranged for SARS patients. During these sessions, radiographers
put up warning signs outside the CT scanning suite and only restricted staff with proper personal protective apparel were permitted to the scanning room. Whenever possible, radiographers worked in pairs in the CT suite, one responsible for patient positioning in the scanning room and the other concentrating on manipulating the control panel inside the control room.

As CT service for SARS patients was also offered outside office hours, CT radiographers on evening or night shift have to familiarize themselves with the appropriate infection control measures and to provide assistance to the medical officers escorting the patients for CT scans in case of emergency. They also had to instruct and supervise staff for room cleansing after SARS sessions. The room is thoroughly cleaned and disinfected before it is open for use for non-SARS patients.

### Key Points

For CT
- **Stringent infection control measures implemented**
- **Designated hours and sessions for suspected/confirmed SARS patients**
- **Radiographers in CT worked in pairs**
- **Thorough cleansing of CT room before open for use for non-SARS patients**

### Emotional Impact of SARS Outbreak on Radiographers

**In the Early Days of the Outbreak**
When faced with an infectious, potentially lethal, previously unknown disease, it is understandable that frontline health care workers would be under enormous stress leading to emotional disturbance/outbursts. At the time, we believed the best way to deal with this was to provide support and empathy but more importantly make sure that the staff were well equipped and protected in their working environment.

Therefore the Radiology management adopted and implemented a set of infection control measures with the help of the hospital Infection Control Unit that were applicable to different radiological practices within the department. Radiographers were provided with infection
control training with continual update of their knowledge on the infection control measures. Radiographic practice was closely monitored by the infection control officers in the department and amply supply of working clothes and personal protective equipment was provided for each radiographer.

**During the Outbreak**

After a short period of anxiety and panic, radiographers were acclimatized to their precarious working environment and became more cautious but calm. They were fully aware of the significance of infection control measures and accepted that future radiographic practice would change. Teamwork with frontline staff of different disciplines was essential to combat the disease and at the same time it was important to pass useful feedback to their seniors to streamline service delivery.

Because of the heavy workload and underlying emotional stress, more radiographers reported sick and were unable to work. Those who remained had to shoulder the additional burden in their workplace. The situation was further aggravated in some radiographers during the SARS outbreak, by self-imposed quarantine removing themselves from emotional and social support from family and friends that might have helped diffuse the stress. This created a vicious cycle leading to a significant drop in staff morale. Open and direct communication between senior radiographers and their frontline staff was especially essential at this time to address the immediate need and grievances of the frontline staff, and to convey important information from hospital management. Messages of appreciation from the general public expressing their gratitude to the frontline health care workers provided a boost to the sinking morale.

**Towards the End of the Outbreak**

After a three-month battle with SARS, things began to improve. As the number of cases fell, radiographers became relaxed and felt blessed they could survive this ‘battle’. They also realized they were in a unique position to significantly help the community and offer support to the patients who had unfortunately contracted the disease and had been quarantined in the hospital for a long time. This episode of SARS reminded the radiographers that their role is not only to provide radiographic service but also to demonstrate a caring attitude and comfort to the patients.

**Key Points**

*Emotional Impact of SARS outbreak on Radiographers*
**Radiographers’ Perspective in the Outbreak of SARS**

Although our experience during SARS crisis was bitter and stressful, it was valuable and revealing. It stimulated us to re-evaluate our professionalism and our role in the health care provision. In the early days of the outbreak, it exposed our inadequacy in professional training especially in the aspects of infection control and risk management. The difficult

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<th>SARS Outbreak</th>
<th>Remedies</th>
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<td><em>In the early days</em></td>
<td>• To provide support and empathy</td>
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<td>• Radiographers were</td>
<td>• To provide infection control training and supply of personal protective</td>
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<td>emotionally disturbed</td>
<td>equipment</td>
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<td>• Staff morale was sinking</td>
<td>• To closely monitor radiographic practice</td>
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<td><strong>During</strong></td>
<td>• To have open and direct communication</td>
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<td>• Radiographers were</td>
<td>• To address immediate need and grievances of staff</td>
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<tr>
<td>calm but cautious</td>
<td>• To convey important information form hospital management</td>
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<td>• Staff morale was sinking</td>
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<td><strong>Towards the End</strong></td>
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<td>• Radiographers were</td>
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**Radiographers’s Perspective in the Outbreak of SARS**

Although our experience during SARS crisis was bitter and stressful, it was valuable and revealing. It stimulated us to re-evaluate our professionalism and our role in the health care provision. In the early days of the outbreak, it exposed our inadequacy in professional training especially in the aspects of infection control and risk management. The difficult
working conditions made us realize the importance of teamwork and good communication between frontline staff and senior radiographers. The radiographers’ commitment and professionalism during the SARS outbreak earned appreciation and recognition from the public and the community we serve. This increased our self-esteem as medical professionals. Most importantly, after the SARS outbreak, we have adopted a safer radiographic practice and are better equipped to face future challenges.

**Key Points**

*Radiographers’ Perspective in the Outbreak of SARS*

*After the Outbreak, radiographers were*

- Stimulated to re-evaluate their professionalism and role
- Aware of their inadequacy in professional training
- Having more self-esteem as medical professionals
- Better equipped to face future challenges
References