SARS and the removal of personal protective equipment

In a reported cluster of cases of SARS among Canadian health care workers, infections occurred despite apparent compliance with recommended infection control precautions. In the report it was noted that contact with a patient or with a contaminated environment might have led to health care workers infecting themselves as they removed their personal protective equipment (PPE). Many health care workers apparently lacked a clear understanding of how best to remove PPE without contaminating themselves. However, the correct order of removal as presented in the report was extremely condensed (gloves first, followed by mask and goggles). In fact, little information about the appropriate sequence of removing PPE is available, and what is available often contains contrasting recommendations (Table 1). Moreover, for several of these sets of recommendations, hands potentially contaminated through contact with patients’ droplets and secretions present on the PPE could contaminate the nose, mouth or eyes while the health care worker is removing his or her mask and eye protection.

Careful hand hygiene plays a pivotal role in reducing the risk of transmission of SARS. Accordingly, the National Institute for Infectious Diseases in Italy has developed a procedure whereby the health care worker removes most PPE while wearing mask and eye protection and carefully decontaminates the hands before removing protection of the mucous membranes of the face. This procedure must be carried out in the health care worker’s change area, outside the patient’s isolation room.

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References

Rehabilitation in developing countries

As Mohan Radhakrishna and Lalith Satkunan point out in their introduction to the recent CMAJ series on rehabilitation, this important topic is not covered appropriately in medical schools. Furthermore, rehabilitation of those affected by physical and mental disability is neglected in developing countries, often as a result of corruption, poor management of financial resources and lack of natural resources. Almost 10% of the global population is disabled in some way, and most

Table 1: Procedures for removing personal protective equipment worn while caring for patients with SARS

<table>
<thead>
<tr>
<th>Order</th>
<th>Ontario Ministry of Health and Long-Term Care</th>
<th>WHO, Western Pacific Regional Office</th>
<th>Australian Government Department of Health and Ageing</th>
<th>Department of Diagnostic Imaging, Prince of Wales Hospital, Hong Kong</th>
<th>Tertiary neonatal centre, Prince of Wales Hospital, Hong Kong</th>
<th>National Institute for Infectious Diseases, Rome, Italy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gloves*</td>
<td>Wash gloved hands</td>
<td>Gloves</td>
<td>Gloves</td>
<td>Hair and shoe covers, gown</td>
<td>Hair and shoe covers, gown</td>
</tr>
<tr>
<td>2</td>
<td>Hand hygiene†</td>
<td>Aprons, gowns and shoe covers</td>
<td>Eye protection</td>
<td>Hair cover</td>
<td>Gloves</td>
<td>Gloves</td>
</tr>
<tr>
<td>3</td>
<td>Eye protection</td>
<td>Gloves</td>
<td>Gown</td>
<td>Eye protection</td>
<td>Hand hygiene</td>
<td>Hand hygiene</td>
</tr>
<tr>
<td>4</td>
<td>Mask</td>
<td>Goggles</td>
<td>Mask</td>
<td>Gown</td>
<td>Hand hygiene</td>
<td>Hand hygiene</td>
</tr>
<tr>
<td>5</td>
<td>Hair cover</td>
<td>Hair cover and mask</td>
<td>Hand hygiene</td>
<td>Mask</td>
<td>Hand hygiene</td>
<td>Hand hygiene</td>
</tr>
<tr>
<td>6</td>
<td>Hand hygiene</td>
<td>Hand hygiene</td>
<td>Hand hygiene</td>
<td>Hand hygiene</td>
<td>Hand hygiene</td>
<td>Hand hygiene</td>
</tr>
<tr>
<td>7</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Note: WHO = World Health Organization.
*Second pair. First pair and gown to be removed soon after providing direct patient care, while still inside the patient’s room.
†Hand-washing or hand-rubbing, or both, with alcohol or other antiseptic agents.

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of those affected are elderly. Limitation of daily activities and inability to perform economically productive activities cause decreases in family income and deterioration in living standards. Reduced income, poor housing, and lack of safe drinking water and sanitation result in increases in infectious and nutritional deficiency diseases. Thus begins a vicious cycle: disability leading to poverty leading to disease leading to more disability.

There is an urgent need to establish an international centre to coordinate efforts to rehabilitate affected patients and limit their disability.

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References

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[The authors respond:]

In North America, rehabilitation is often viewed as a process that is required after a distinct health-related event. Examples of such events, including musculoskeletal injury, stroke and spinal cord injury, are listed in our commentary. Maulik Baxi presents the perspective of the developing world, where poverty, sociopolitical unrest and poor infrastructure combine to cause impairment and hence disability.

Where health care and rehabilitation services are lacking, impairments lead to greater disabilities and hence have a greater impact on an individual’s level of function. This problem occurs not only in the developing world but also in certain isolated regions in developed countries. A person living with spinal cord injury will have a better chance of achieving the highest degree of function possible if he or she lives where there is adequate access to health care and employment opportunities, as well as wheelchair-accessible roads and buildings, than would be the case in a region without such infrastructure.

We concur with Baxi that rehabilitation is an integral aspect of health care and that the setting where the patient lives has a central effect on his or her level of function.

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Reference
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Correction

In a recent review article on hyponatremia, the corresponding author’s contact information (page 369) should have read as follows: Dr. Karen E. Yeates, Etherington Hall, Queen’s University, 94 Stuart St., Kingston ON K7L 2V6; fax 613 548-2524; yeatesk@post.queensu.ca.

Reference

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