

## Medication Safety and Infection Control

Of immediate interest in Canada is the occurrence of Severe Acute Respiratory Syndrome (SARS). The exact etiological agent in SARS is unknown; therefore treatment of suspected cases includes a combination of antiviral and antibacterial agents, as well as supportive therapy. Health Canada has reported that there are approximately 129 confirmed or suspected cases of SARS in Ontario, British Columbia, Manitoba and New Brunswick.<sup>1</sup> At the time of writing there have been four deaths in Canada. These cases occurred in persons who traveled to Asia or had contact with SARS cases in the home or in a healthcare setting.<sup>2</sup>

Based on what the investigations have shown so far, the major mode of transmission is through droplet spread when an infected person coughs or sneezes and droplets are spread to a nearby contact. There are concerns about the possibility of airborne transmission across broader areas and also the possibility that objects that become contaminated could serve as modes of spread.<sup>3</sup>

Hospitals that are treating or preparing for the possibility of managing SARS patients have had to review their infection control and patient isolation procedures. This has provided an opportunity to review medication use systems to ensure that optimal infection control practices are in place when preparing, delivering, storing and administering medications. Some elements to consider under such circumstances are:

- Review current hospital patient isolation procedures with consideration of medication distribution issues, e.g., storage of patient-specific drugs on nursing units; preparation, labelling and handling of specialty medications; and disposition of unused patient medications.  
All staff should be aware of their roles and responsibilities and communication channels.
- Adequately protect staff and materials from potential sources of infection.  
“Universal precautions are infection control guidelines designed to protect workers from exposure to diseases spread by blood and certain body fluids.”<sup>4</sup>  
In situations where SARS is suspected, because the exact mode of disease transmission is uncertain, additional precautions are required for the safety of workers and others in a healthcare facility.
- Staff members should use frequent hand washing or hand disinfection procedures.
- Perform medication preparation using techniques to minimize contamination, e.g., aseptic technique, not directly handling oral medications.
- Whenever possible, supply medications in a ready-to-administer format in restricted quantities. This should minimize risk of contamination and drug wastage.
- Ensure adequate information is obtained and available where rare and uncommon medications are used. Staff should become knowledgeable before the handling and administration of unfamiliar medications. Hospitals should be prepared with information appropriate for patients, caregivers, and healthcare workers.

Isolation procedures that include algorithms facilitate staff education and adherence to procedures for ensuring staff and patient safety. Sunnybrook and Women’s College Health Sciences Centre (SWCHSC) in Toronto has developed a SARS management algorithm for adult patients. It is available for your information on the ISMP Canada website ([www.ismp-canada.org](http://www.ismp-canada.org)). The Algorithm was developed, for internal use, by the Infectious Diseases and Microbiology team at the hospital. The use of the algorithm (including the chart reprinted) by those outside SWCHSC should be at the user’s own risk. SWCHSC is not responsible, nor liable for the use by any other facility, of the information contained in the algorithm. Users are advised that the SARS management algorithm should be individualized to the user’s facility and should be modified/updated as new information becomes available.

The following chart, reprinted with permission, is taken from SWCHSC algorithm and provides an example of an adult treatment regimen currently used for SARS. ISMP Canada is not responsible for the accuracy or completeness of these materials.

**SUGGESTED ANTIMICROBIAL THERAPY for PROBABLE/SUSPECT CASES OF SARS REQUIRING ADMISSION**

1. Broad-spectrum antibiotics for pneumonia as per the Canadian Guidelines for the Management of Community-Acquired Pneumonia or Sunnybrook & Women's College Guidelines:

- Levofloxacin 500 mg PO once a day (or IV if not able to tolerate oral)

**OR**

- Ceftriaxone 1gm IV once a day  
**AND**
- Azithromycin 500 mg PO once a day (or IV if not able to tolerate oral)

**AND**

2. Intravenous ribavirin\*:  
Dosage: 2.0 grams IV loading dose *then*  
1.0 gram every 6 hours for 4 days *then*  
0.5 gram every 8 hours for 6 days

\*  $\beta$ -HCG screen on females prior to starting ribavirin. BOTH men & women should be cautioned to use at least 2 forms of contraception for 6 months after therapy with ribavirin.

\* Change to oral ribavirin will be decided by Infectious Diseases Consult Service.

In addition, guidelines for intravenous administration of ribavirin (for adult patients) have recently been developed by the University Health Network (UHN) in Toronto. The guidelines contain information such as ribavirin's adverse effects; occupational safety, patient monitoring; dosage and administration; preparation; storage and stability. With UHN's permission, the document containing the guidelines is posted on the ISMP Canada website ([www.ismp-canada.org](http://www.ismp-canada.org)). Similar to the algorithm developed by SWCHSC, these guidelines were prepared solely for use at UHN. UHN is not responsible for use of this information by anyone not associated with UHN.

**IMPORTANT DRUG SAFETY INFORMATION ON RIBAVIRIN.** Ribavirin is an antiviral agent that has been extensively used in the treatment of SARS. The drug product monograph identifies hemolytic anemia as a known adverse effect of ribavirin. Health Canada has notified all hospitals that have obtained the drug through the Special Access Program that there have been seven reports of hemolytic anemia associated with the use of intravenous ribavirin in the treatment of SARS.<sup>5</sup> Educate staff and patients to monitor for signs of hemolytic anemia and report all suspected ribavirin adverse drug reactions to the Health Canada Special Access Programme at 613-941-2108.

#### REFERENCES:

1. United Press International. Canada reports fourth death from SARS. Sunday, March 30, 2003.  
At <http://www.upi.com/view.cfm?StoryID=20030330-060523-8903r>. Accessed March 30, 2003.
2. Health Canada. Update #16 - Severe Acute Respiratory Syndrome. Saturday, March 28, 2003.  
At [http://www.hc-sc.gc.ca/english/protection/warnings/2003/2003\\_11update16.htm](http://www.hc-sc.gc.ca/english/protection/warnings/2003/2003_11update16.htm). Accessed March 31, 2003.
3. CDC Telebriefing Transcript. SARS Update. March 29, 2003.  
At <http://www.cdc.gov/od/oc/media/transcripts/t030329.htm>. Accessed March 30, 2003.
4. Canadian Centre for Occupational Health and Safety. Universal Precautions.  
At <http://www.ccohs.ca/oshanswers/prevention/ppe/universa.html>. Accessed March 30, 2003.
5. Personal communication from Health Canada. March 28, 2003.

Further information on SARS is available at:

Information on Severe Acute Respiratory Syndrome (SARS). Health Canada -

<http://www.hc-sc.gc.ca>

Severe Acute Respiratory Syndrome (SARS). Centres for Disease Control -

<http://www.cdc.gov/ncidod/sars/index.htm>

Latest information: Severe Acute Respiratory Syndrome (SARS). World Health

Organization - <http://www.who.int/en/>

Severe Acute Respiratory Syndrome (SARS), Health Canada - <http://www.sars.gc.ca>

ISMP Canada is a national voluntary medication incident and 'near miss' reporting program founded for the purpose of sharing the learning experiences from medication errors. Implementation of preventative strategies and system safeguards to decrease the risk for error-induced injury and thereby promote medication safety in healthcare is our collaborative goal.

To report a medication error to ISMP Canada: (i) visit our website [www.ismp-canada.org](http://www.ismp-canada.org) or (ii) email us at [info@ismp-canada.org](mailto:info@ismp-canada.org) or (iii) phone us at 416-480-4099. ISMP Canada guarantees confidentiality and security of information received. ISMP Canada respects the wishes of the reporter as to the level of detail to be included in our publications.