

Special Articles

PMH/PWH Interim Guideline on the Management of Children with SARS

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Foreword

This interim guideline has been prepared by Dr Leung Chi Wai, Consultant Paediatrician, Princess Margaret Hospital and Dr Li Chi Kong, Consultant Paediatrician, Prince of Wales Hospital. It should be noted that there is no evidence yet available to support any of the recommendations made and this interim guideline will need revision when new information becomes available. However it is hoped that this guideline can help clinicians care for children with suspected or confirmed SARS in the meantime. (12 April 2003)

A. Interim Case Definition for Severe Acute Respiratory Syndrome (SARS) in Children Requiring Specific Treatment (Antiviral and Steroid) and 'Strict' Isolation

Fever (rectal temperature $\geq 38.5^{\circ}\text{C}$ or oral temperature $\geq 38^{\circ}\text{C}$).

AND

Chest X-ray findings of pneumonia or acute respiratory distress syndrome (ARDS).

AND

Suspected or probable contact with a person under investigation for or diagnosed with SARS, **OR** exposure to a locality with suspected or documented community transmission of SARS, either through travel or residence, within 10 days of onset of symptoms.

AND one or more of the following:

Chills, malaise, myalgia, muscle fatigue, cough, dyspnoea, tachypnoea, hypoxia, lymphopenia, falling lymphocyte count, or failure to respond to antibiotics covering the usual pathogens of community acquired pneumonia (e.g. a broad spectrum beta-lactam plus a

macrolide) after 2 days of therapy in terms of fever and general well being.

Please note that the followings are not typical findings of SARS:

- Physical findings of prominent crepitations and/or rhonchi on auscultation of chest.
- Chest X-ray findings of lobar consolidation or significant pulmonary effusion.
- Leukocytosis, neutrophilia or left shift of neutrophils with toxic granulation.

Patients fulfilling the Hospital Authority SARS case definition but not the above 'treatment criteria' should still be isolated with appropriate infection control measures.

B. Interim Management Strategy for Children with Suspected SARS

Investigations

- Microbiological studies to rule out common pathogens – minimum should include blood culture, NPA for direct antigen detection of common respiratory viruses by immunofluorescence, RT-PCR for coronavirus and viral culture, and viral serology (repeat at 2-3 weeks). (**must**

put on mask, gloves, face shield/visor or goggle and gown while performing nasopharyngeal aspiration).

- CBC, D/C with peripheral blood smear – daily or alternate day to monitor for falling Hb (especially if receiving ribavirin) and falling lymphocyte count (reflects progression of disease).
- LFT, RFT, CK, LDH – monitor frequently if abnormal
- Clotting profile – PT, APTT, FDP and D-dimer – monitor frequently if abnormal.
- Daily CXR or more frequent as clinical condition warrants.

Treatment Plan

3rd generation cephalosporin (e.g. **Cefotaxime**) *plus* macrolide (e.g. **Erythromycin** or **Clarithromycin**) for coverage of usual pathogens of CAP.

Commence **Ribavirin 40-60 mg/kg/day po div Q8H** (a higher dose of 60 mg/kg/day or 1.2 g Q8H has been used for some adult patients) if contact history definite and with fever (*oral bioavailability of ribavirin is 20-64%*).

If fever persists for 2 days and no improvement or deterioration in general well being despite above regimen, commence steroid: **Prednisolone 1-2 mg/kg/day po div BD** or **Hydrocortisone 1-2 mg/kg iv Q6h** (a lower dose of prednisolone 0.5-1.0 mg/kg/day daily has been used in PWH and also appears effective in mild cases).

If at any time there is clinical deterioration or progressive CXR changes, pulse **Methylprednisolone 10 mg/kg/dose iv Q24H** (a higher dose of 500 mg Q12H or 1 g single doses have been used for some adult patients) for up to 3 doses, depending on clinical response *plus* **Ribavirin 20-30 mg/kg/day iv div Q8H**.

Continue with prednisolone 1-2 mg/kg/day or Hydrocortisone 1-2 mg/kg iv Q6H after pulse methylprednisolone. If condition improves at 1-2 weeks after commencement of steroid therapy, start tapering of steroid dose over 1 week. If CXR returns to normal by 2-3 weeks, may stop steroid or rapid tail off over a few days. If CXR is still abnormal by 3 weeks, try slow tapering of the steroid according to clinical and radiological improvement.

Ribavirin will be given for a total of 10-14 days. Antibiotics may be discontinued if afebrile for 5 days. However patients started on pulse steroid should be carefully watched out for secondary infection.

The antibiotic regimen can be modified on clinical grounds if secondary or hospital acquired infection is suspected after prolonged stay in ICU and course of high dose steroid.

Special Precautions

- Use of BiPAP, CPAP, and nebulizer or nebulized medication for patients with suspected SARS is ***not*** advised.
- If intubation and assisted mechanical ventilation is required, a closed suction system should be incorporated into the ventilator circuit and scavenging should be provided by the vacuum wall suction.
- Methylprednisolone ***must*** not be administered via central venous catheters to avoid precipitating cardiac arrest or arrhythmia.
- Hypokalaemia, hyperglycaemia and hypertension are commonly seen after administration of high dose steroid. Concomitant anti-ulcer prophylaxis should also be given.
- Ribavirin may be accumulated in patients with impaired renal function but not in patients with decompensated liver disease.
- Adverse events associated with the use of Ribavirin:

Haematological	haemolytic anaemia, reticulocytosis
Cardiovascular	cardiac arrest, hypotension, bradycardia, tachycardia
Neurological	dizziness, asthenia, seizure
Renal	nephrolithiasis
Hepatic	elevated serum bilirubin and ammonia
Metabolic	increase in uric acid
Dermatological	pruritus, rash, skin eruptions