CYSTIC FIBROSIS: INFECTION CONTROL - SCH

PRACTICE GUIDELINE ©

DOCUMENT SUMMARY/KEY POINTS

- Children with cystic fibrosis (CF) are at risk of respiratory tract infection because of difficult to clear thick airway secretions.
- Acquisition of some organisms, such as *B. cepacia, P. aeruginosa* and *Mycobacterium abscessus* are known to cause respiratory morbidity and accelerate respiratory decline.
- Some organisms, including *B. cepacia*, some strains of *P. aeruginosa, Mycobacterium abscessus* and methicillin resistant *Staphylococcus aureus* (MRSA), may be transferred from one patient with CF to another.
- Respiratory pathogens associated with CF are spread by the contact, droplet, aerosol and/or fomite routes.
- Children with CF requiring admission ideally must be placed in single rooms if available or on separate wards if not available. Admission of more than one CF child to the same ward is not ideal but may be necessary in situations of limited bed availability.
- CF patients are cohorted into infection groups. Physical contact between CF patients is strongly discouraged as person-to person transmission is possible.
- Children with CF with signs and symptoms of chest infections should be separated from immunocompromised children and other at-risk patients

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1st May 2020	**Review Period:** 3 years
Team Leader:	Clinical Nurse Consultant	**Area/Dept:** Respiratory Medicine

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This Guideline may be varied, withdrawn or replaced at any time.

CHANGE SUMMARY

- Document due for mandatory review; No change in practice.
- Title changed. Replaces SCH document: i.2.C.2 **Cystic Fibrosis: Guidelines for Management – SCH** to reflect emphasis on Infection Control and Prevention in children with Cystic Fibrosis
- Note addition of Infection Prevention and Control Summary Table p 6-8

READ ACKNOWLEDGEMENT

- Ward Nursing staff, members of the Respiratory Team, Outpatient Staff, Hospital in the Home [HiTH] staff and Physiotherapists should read and acknowledge that they understand the contents of this document.

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Minimising Transmission of Respiratory Pathogens in Children

Policy Statement

Children with cystic fibrosis (CF) are at risk of respiratory tract infection because they have thick airway secretions that are difficult to clear. Acquisition of some organisms, such as *B. cepacia*, *M abscessus* and *P. aeruginosa* are known to cause respiratory morbidity and accelerate respiratory decline. Some organisms, including *B. cepacia*, some strains of *P. aeruginosa, M abscessus* and methicillin resistant *Staphylococcus aureus* (MRSA), may be transferred from one patient with CF to another. Respiratory pathogens associated with cystic fibrosis are spread by the contact, droplet and fomite routes.[1,2]

Purpose and Scope

The aim of this guideline is to minimise the risk of hospital acquired infections in children with cystic fibrosis attending the Sydney Children's Hospital, Randwick.

General Principles

1. Hand hygiene is one of the most important practices for minimising the transmission of infective agents. Adherence to hand hygiene is mandatory.
2. Use a liquid soap or a waterless, alcoholic based antiseptic hand rub before and after touching a patient, before or after a procedure and after touching a patient's surrounding. ("The 5 Moments in Hand Hygiene"). [3]
3. Staff must observe "Standard" and "Contact" precautions when in close contact with patients who are coughing. Appropriate personal protective equipment (PPE) and droplet precautions are required to protect the mucous membranes prior to procedures that may induce cough in patients.
4. Physical contact between patients with cystic fibrosis should be discouraged.
5. Children with cystic fibrosis with signs and symptoms of chest infections should be separated from immunocompromised children and other patients at risk of severe lower respiratory tract infections.
6. Children with cystic fibrosis and their carers must be educated and encouraged to observe good hygiene practices such as covering their mouth when coughing or coughing into their elbow, coughing into disposable tissues and hand hygiene after properly disposing of used tissues.
7. Attendance at the Physiotherapy Department and Gym is limited to one child with cystic fibrosis at any given time. Any equipment used by the individual will be cleaned with a disposable disinfectant wipe after use. Staff and patients apply alcohol based hand rub when entering and leaving the Gym.
8. Attendance in the Respiratory Laboratory is limited to one child with Cystic Fibrosis at any given time. Children must attend the Respiratory Lab according to their clinic colour-cohort, such that a child with *P. aeruginosa* attends after a child without. Staff and patients apply alcohol hand rub when entering and leaving the lab. Single-use bacterial filters and nose clips are used for every patient.

9. Any reusable instrument or respiratory equipment that comes into contact with the mucous membranes of a patient with cystic fibrosis must be cleaned and disinfected or sterilised prior to its use. Respiratory equipment must be cleaned after use according to manufacturers' instructions or Hospital or NSW Health protocols. Any equipment in the vicinity e.g. computer key boards, should be wiped down with a disinfectant wipe.
10. Attendance at the Starlight Room must be restricted to one child with CF at any given time. Bookings for this attendance can be made with the Starlight Room directly. Parents are educated to check with the Starlight Room staff that no other children with CF are present in the Starlight Room before entering. Individuals with CF or their parents are responsible for wiping down any equipment they use within the Starlight Room with a disposable cloth impregnated with disinfectant wipe. Patients in the Purple Cohort Group (*B. cepacia*, *Non-tuberculous Mycobacterium, Pandorea, Vancomycin-resistant Enterococcus (VRE), Carbapenem-resistant Enterobacteriaceae (*CRE) and *Multi-resistant Acinetobacter Baumanii (MRAB*) and the Blue Cohort Group (M*ulti-resistant P. aeruginosa, Methicillin-resistant staphylococcus aureus* (MRSA) and *Extended Spectrum Beta Lactamase* (ESBL) are not to attend the Starlight Room.

Inpatients

1. Children with CF requiring admission ideally must be placed in a single room, or on a separate ward or if no beds available in separate bays to other children with CF. Where possible a nurse should only care for one patient with CF.
2. Where possible each patient with CF should have a designated toilet and shower that is not shared by other patients with CF. If there are too many patients with CF on the one ward to allow for this, then patients should be encouraged to follow good personal hygiene standards, especially the washing of hands upon entering and leaving the bathroom. (See the Infection Prevention and Control Summary Table, Page 7)
3. Attendance by CF patients at the Hospital School must be limited to a maximum of one child in primary and one child in high school at any given time. When there are multiple inpatients, other students are to do school work in the ward under the supervision of their parent(s), school teacher or work independently. Children will be nominated to attend the Hospital School at the discretion of the school in consultation with the appropriate medical staff. Patients in the Purple and Blue Cohort groups are not to attend the Hospital School.
4. Equipment such as computer keyboards should be cleaned with a disinfectant wipe after use. Other equipment may be washed with neutral detergent.
5. CF patients admitted to C1SW for their routine annual bronchoscopy should be placed in separate bays.

Outpatients

1. **Cohorting:**

   The outpatient Cystic Fibrosis clinics are organised by cohorting children with similar organisms into the following groups:

   Red (*Pseudomonas* negative)

   Green (*Pseudomonas* positive)

   Yellow (*Stenotrophomonas*)

   Blue (*multi-resistant Pseudomonas, ESBL and MRSA*)

   Purple (*B. cepacia*, *All mycobacterium, Pandorea, VRE, MRAB, and CRE).*

2. Patient confidentiality must be maintained.
3. Sputum will be collected every 3 months where possible, or if a change in clinical state occurs. The CF CNC, the CF coordinator and/or the treating Physician will be responsible for checking results. All request forms must advise the laboratory that the patient has CF.
4. Children who are too young to produce sputum undergo annual Flexible Bronchoscopy (FB) with Bronchoalveolar lavage (BAL) for microscopy, culture and sensitivity. FB/BAL should also be considered in children who are deteriorating clinically.
5. The “CF Cohort Groups” will be updated as sputum cultures become available. Parents will be notified of any changes for their child.
6. Children who attend the CF clinic are placed in a consultation room and remain in that room for the duration of their appointment. Staff needing to see that child enter and leave that room. When a child’s clinic visit is completed and prior to another child with CF entering that room, the room is cleaned by changing bed linen and wiping hard surfaces with a disinfectant wipe.
7. Appointments at CF clinic are made in two timeslots (0915 and 1030) in order for children to be moved straight into an empty room to avoid waiting in common areas.
8. Children in the Purple and Blue Groups ideally attend at 1100 in an attempt to avoid contact with other patients. Rooms used by children in these groups are seen in a separate area within the Outpatient Department and are terminally cleaned following their appointment. This room is not used again during that clinic time by another CF patient.
9. The CF Clinic Coordinator organises all CF Outpatient clinic appointments. The CF Clinic Coordinator can be contacted on ext. 21476. The CF CNC can be contacted on pager 44903.
10. Appointment dates and times are to be adhered to strictly. This means each patient in each designated cohort must observe their appointed day and time slot to minimise chances of contact with patients outside of their own cohort.

This Guideline may be varied, withdrawn or replaced at any time.

11. If children enter the clinic area on a day when another cohort of children with cystic fibrosis is being seen, they will be ushered immediately to a distant consultation room or to the Medical Day Unit (MDU).
12. All consultations should occur in consulting rooms not in the corridors, testing areas or waiting rooms.
13. Toys are removed from Outpatient rooms prior to seeing children with cystic fibrosis in the room. Children should be encouraged to bring their own toys to hospital.
14. Unscheduled appointments must be made through the Clinic Coordinator in order to be seen in the Outpatient Department.
15. Urgent reviews in MDU should be arranged by contacting the Respiratory Team by paging the Respiratory Fellow (pager 45415) or the CF CNC (pager 44903). Cystic fibrosis patients seen in the Emergency Department shall ideally be segregated from other cystic fibrosis patients.
16. Cystic fibrosis patients seen in the Emergency Department shall ideally be segregated from other cystic fibrosis patients.

De-isolation

1. *P. aeruginosa*

A child with newly acquired or recent *P. aeruginosa* can only be considered "negative" for the purpose of cohorting after 3 sputum samples, one month apart in a 6 month period, remain negative for *P. aeruginosa*, or after a BAL sample taken ≥ 6 months after the last *P. aeruginosa* positive isolate is negative for *P. aeruginosa*. Children chronically infected with *P. aeruginosa* will not be returned to the negative group.

2. MRSA

- CF patients with known MRSA can be de-colonised as per Multi Resistant Staphylococcus Aureus (MRSA): Management – SCH.

Deisolation

Deisolation can occur after consultation with the Infection Prevention and Control CNC (pager 47140).

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Infection Prevention and Control Summary Table

Any patient with a diagnosis of Cystic Fibrosis or non-CF Bronchiectasis is classified by their colour group			
Colour	Red/Green/Yellow	Blue	Purple
Precaution	Standard	Contact (plus Standard)	Additional contact (plus Standard)
PPE	5 Moments of Hand Hygiene apply at all times. Standard: gown, gloves, mask, goggles/eye protection should be used as appropriate for staff handling blood or body fluids or at times when a splash or contact with body fluids may be expected.	5 Moments of Hand Hygiene apply at all times. Standard PLUS Contact: gown and gloves when in contact with blood or bodily fluids	5 Moments of Hand Hygiene apply at all times. Standard PLUS Additional contact: Gown and gloves must be worn by all staff before entering the patient's room. Droplet precautions apply if organism is in sputum, if so a face mask and eye protection are to be worn.
Micro-organisms	Normal flora Staphylococcus Haemophilus influenzae Pseudomonas aeruginosa (antibiotic sensitive) Stenotrophomonas maltophillia Achromobacter xylosoxidans Aspergillus Scedosporium Streptococcus pneumoniae Candida	Multi-resistant Pseudomonas (unless otherwise instructed by ID) MRSA ESBL	Burkholderia cepacia species All mycobacterium Pandorea VRE MRAB CRE
Inpatients	If available single room with ensuite. When not possible, not to be cohorted with: - Other patients with CF - Patients with acute or chronic respiratory illness - Immunosuppressed patients Patients are not to go into the ward kitchen. Patients should facilitate any kitchen requests through parents/carers/nursing staff. Items that have been in contact with the patient should not enter the kitchen, e.g.: water bottles and wheat bags. May attend the Starlight Room. One CF patient at any one time. May attend the Hospital School. One CF patient at any one time.	Single patient room with ensuite bathroom. May not attend Hospital School, Starlight Room or common hospital areas such as Sunny's Café Patients are not to go into the ward kitchen. Patients should facilitate any kitchen requests through parents/carers/nursing staff. Items that have been in contact with the patient should not enter the kitchen, e.g.: water bottles and wheat bags. May NOT attend the Starlight Room. May NOT attend the Hospital School.	Single patient room with ensuite bathroom. May be nursed on a ward with another CF inpatient, after consulting with Respiratory Team. Preferred ward is C3W, then C2S, SSSU and C1S. Not to be admitted in C3S. Patients are not to go into the ward kitchen. Patients should facilitate any kitchen requests through parents/carers/nursing staff. Items that have been in contact with the patient should not enter the kitchen, e.g.: water bottles and wheat bags.

			May NOT attend the Starlight Room. May NOT attend the Hospital School. May NOT congregate in common Hospital areas such as Sunny's Café and the Pharmacy.
Respiratory Medicine Unit (RMU)/ Labs	Patient to be taken into single lab room for testing and/or review. Not to sit in waiting area. Scientists to wipe over room with detergent wipes + disinfectant (e.g. Clinell) after use	Patient to be taken into single lab room for testing and/or review. Not to sit in waiting area Full PPE required when in contact with patient. Terminal clean to be performed after patient leaves RMU.	Not to attend the RMU. All lung function and medical reviews to be performed in clinic/ward/MDU. Scientist to wear full PPE
Gym	Never with other CF patients First cohort group to attend to Gym if possible Equipment to be wiped down with a detergent/disinfectant wipe (e.g. Clinell) and allowed to air dry	Never with other CF patients. Minimum of 30 minutes before next patient with CF enters Gym space. Ideally, last patient in morning or last patient in afternoon where possible. Clean as per recommendations from Infection Control CNC	Never with other CF patients. Minimum of 30 minutes before next patient with CF enters gym space. Ideally, last patient in morning or last patient in afternoon where possible. Please see Star Cleaning Chart, Appendix 1
Outpatients	Own room in CF outpatient clinic Spirometry in own room at the beginning of consult To bring an expectorated sputum to the appointment if possible Room to be cleaned by CF staff prior to next patient	Own room in CF outpatient clinic in designated area Spirometry in own room at the beginning of consult To bring an expectorated sputum to the appointment if possible Room to be terminally cleaned by cleaning services prior to next patient Use PPE when performing procedures that induce cough or sputum	Patients to be seen in a designated locations. Spirometry in own room at the beginning of consult Room to be terminally cleaned by cleaning services after use.
Cleaning	Outpatient: clinic staff to wipe over room with detergent wipes + disinfectant (e.g. Clinell) Inpatient: cleaning services to do normal discharge room clean (standard clean)	Outpatient: clinic staff to wipe over room with disinfectant wipes (e.g. Clinell) Inpatient: cleaning services to do Terminal room clean with curtains replaced.	Inpatient and outpatient: Terminal clean with curtains replaced.

Patients	Patients should perform hand hygiene when: - entering and leaving clinic - following any sputum inducing procedure (sputum collection, spirometry, coughing, chest physiotherapy) - when entering and leaving shared hospital areas (e.g. Starlight Room, Hospital School, Physiotherapy, Gym, Respiratory Medicine Unit) Well fitted disposable face masks must be worn at all times inside the hospital building with the exception of times patients are in their own inpatient or outpatient room or carrying out exercise in Physiotherapy or the Gym.
Parents	Parents should perform good hand hygiene practices, especially on entering the ward and kitchens.

Related SCHN Infection Control Documents

- Infection prevention and Control Summary – Adapted from Cystic Fibrosis: Infection Prevention and Control Guidelines – CHW
- Acute Respiratory Infections: Transmission and Prevention – SCH: http://chw.schn.health.nsw.gov.au/o/documents/policies/policies/2013-7050.pdf
- Multi Resistant Staphylococcus Aureus (MRSA): Management – SCH: http://chw.schn.health.nsw.gov.au/o/documents/policies/procedures/2015-7017.pdf
- Infection Control Policy – SCH:

  http://webapps.schn.health.nsw.gov.au/epolicy/policy/3730/download
- Appendix – Star Cleaning Chart

  http://webapps.schn.health.nsw.gov.au/epolicy/policy/3730/download

References

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2. Saiman L et al. Infection Control in Cystic Fibrosis. Clin Microbiol Rev. 2004;17:57-71.
3. Saiman L et al. Infection Prevention and Control Guideline for Cystic Fibrosis: 2013 update. Infect Control Hosp Epidemiol 2014;35 (Suppl 1): S1-S67.
4. The UK Cystic Fibrosis Trust Infection Control working Group. Methicillin-resistant staphylococcus aureus (MRSA). April 2008.
   https://www.cysticfibrosis.org.uk/the-work-we-do/resources-for-cf-professionals/consensus-documents
5. NSW Ministry of Health Policy Directive: Hand Hygiene Policy Directive, PD2010_058 (SCHN Policy Coversheet): Nov 1, 2019
   http://chw.schn.health.nsw.gov.au/o/documents/policies/policies/2013-9031.pdf
6. NSW Ministry of Health Policy Directive Infection Control, PD 2007_036 (SCHN Policy Coversheet): Jun 27, 2018
   http://chw.schn.health.nsw.gov.au/o/documents/policies/policies/2013-9042.pdf

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