GASTROENTERITIS TRANSMISSION PREVENTION - SCH

PRACTICE GUIDELINE ©

DOCUMENT SUMMARY/KEY POINTS

This document should be read in conjunction with:

- SCH Policy: **Outbreaks Management within the Hospital - SCH**.
- SCH Policy: **Isolation and Deisolation Guidelines - SCH**.
- NSW Ministry of Health Guideline Gastroenteritis in an Institution

- The symptoms of acute infectious gastroenteritis – abdominal pain / cramping, vomiting and diarrhoea - are common among paediatric inpatients. While these symptoms are not always due to an infectious cause, prompt action is necessary to control the spread of these agents, even if an infectious cause has not been proven. These strategies involve for all cases of gastroenteritis:
  - reinforcement of hand hygiene and other Standard Precautions,
  - implementation of Additional Precautions (Contact +/- Droplet Precautions if vomiting),
  - collection of stools for testing,
  - isolation or cohorting of affected children, and
  - environmental cleaning.
- Gastroenteritis Guideline Summary Table at end of document

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 July 2013	**Review Period:** 3 years
Team Leader:	Clinical Nurse Consultant	**Area/Dept:** Infection Control

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CHANGE SUMMARY

- Due for mandatory review – no significant changes.
- References updated.

READ ACKNOWLEDGEMENT

- All clinical nurses, nurse managers and medical officers need to read and acknowledge that they have understood the contents of this document.
- Line managers are responsible for maintaining records of staff read acknowledgements for quality review and compliance audit processes.

TABLE OF CONTENTS

1 Scope

This document outlines the infection control approach to be followed whenever a child is identified as having possible or probable gastroenteritis, including outbreaks. It covers both inpatient and ambulatory (Emergency Department and Outpatient) children and is designed to be compliant with recent NHMRC infection control guidelines [1] and DoHA guidelines for the management of outbreaks of viral gastroenteritis[2], and NSW Ministry of Health Guidelines.

In addition to detailing the core measures to prevent transmission of gastroenteritis, this document also details the graded institution of "additional" and "extraordinary" measures to control outbreaks of gastroenteritis. Further details regarding the generic management of outbreaks and infectious disease clusters are covered in "Outbreak Management – SCH".

Norovirus is the most transmissible cause of gastroenteritis in institutional settings and this document -although generic - is largely aimed at preventing transmission of this pathogen. If norovirus is excluded, these recommendations may be modified on a case-by-case basis under the direction of the infection control team.

2 Introduction

The symptoms of acute infectious gastroenteritis – abdominal pain/cramping, vomiting and diarrhoea - are common among paediatric inpatients. While these symptoms are not always due to an infectious cause, prompt action is necessary to control the spread of these agents, even if an infectious cause has not been proven. These strategies involve for **all cases of gastroenteritis:**

- **reinforcement of hand hygiene and other Standard Precautions,**
- **implementation of Additional Precautions (Contact +/- Droplet Precautions if vomiting),**
- **collection of stools for testing,**
- **isolation or cohorting of affected children, and**
- **environmental cleaning**.

If these strategies prove insufficient to prevent further cases, further graded measures may be implemented under the direction of the Outbreak Management Team (see below).

Defining a Case

Not every child who vomits or who has a loose stool has an infectious cause. However, an infectious cause must be suspected in any child unless there is a more likely explanation. Because control measures are most effective when implemented early, there must be a low threshold for immediately implementing the infection control measures outlined in this document. Therefore, staff should not wait for a child to have 3 or more loose stools (confirmed diarrhoea) before implementing these measures. For example, a single vomit or loose stool in an exposed child or in an outbreak situation should usually be sufficient to consider that a child has gastroenteritis.

Definitions

- **Case:** Clinical one, based on presence of vomiting and/or diarrhoea, with no other evident cause
- **Probable nosocomial** (hospital-acquired infection) if the onset is ≥ 48 hours after hospitalisation
- **Possible nosocomial** (hospital-acquired infection) if the onset is < 48 hours after hospitalisation
- **Linked:** A case is considered linked to an index case if the onset is ≤ 48 hours after exposure to the index case.
- **Exposure:** An exposure is considered to have occurred when:
  - sharing a room or bay while the index case has vomiting or diarrhoea or <48hr after last vomit/diarrhoea
  - sharing a common healthcare staff (nurse or medical team) while the index case has vomiting or diarrhoea or <48hr after last vomit/diarrhoea.
  - known or suspected direct contact (e.g.at school or play room or social contact).
- **Cluster:** A cluster of nosocomial gastroenteritis cases is suspected to exist when:
  - 3 or more linked cases (see above for definition of linked cases)
  - A cluster is confirmed if the same pathogen is detected in >50% of symptomatic cases
  - A cluster of cases should prompt a response (see below)
- An **outbreak** is suspected to exist if:
  - 5 or more possible or probable nosocomial cases are linked to each other (see above for definition of link).
  - 6 or more possible or probable nosocomial cases occur on the same ward with onset within 72hr of each other.
  - An outbreak is confirmed if the same pathogen is detected in >50% of symptomatic cases.

3 Transmission Routes and the Rationale for Measures

1. **Person-to-person:** most viral and some bacterial causes of acute gastroenteritis – rotavirus, norovirus, adenoviruses, Shigella - are primarily transmitted by the faecal-oral route. This may occur directly from infected to susceptible individual, or indirectly via the contaminated hands of healthcare staff or parents. Children may shed organisms for many days, although shedding for most pathogens is generally thought to decline with resolution of diarrhoea[2]. Faecal-oral transmission can be effectively blocked by:
    i. **hand hygiene** using **alcohol hand-rub** or **hand washing**

       NB: Hand washing is required if there is visible soiling of the hands or where there has been in a *C difficile* outbreak situation, *and*
    ii. using ordinary (individual patient-use) **gloves** if touching the patient or their bodily fluids.
2. **Environmental:** the patient care environment can become contaminated by potentially infectious viruses, bacteria, or their spores. Although some children could become directly infected by contact with a contaminated environment, most infection is likely to be mediated via the contaminated hands of health workers or via contaminated equipment. Environmental transmission can be blocked by hand hygiene, and by implementing additional contact precautions by:
    i. **isolating or cohorting** children with acute gastroenteritis,
    ii. leaving case notes and other extraneous items outside of the patient's room,
    iii. using i**mpervious (plastic) aprons** if touching the patient or their bodily fluids;
    iv. wearing a **long-sleeve impervious gown** if extensive body contact or contamination of arms is possible (e.g. when moving or holding symptomatic patient or uncontrolled vomiting),
    v. using **patient-designated equipment** (or thorough cleaning between patients), and
    vi. regular and thorough **environmental cleaning and disinfection** including **terminal cleaning** on discharge of symptomatic patients.
3. **Droplets:** Norovirus may be carried via droplets expelled by vomiting children, or by aerosols generated by cleaning or by changing soiled sheets or clothes. These droplets are a potential source of infection if they are directly ingested by individuals in close proximity, or more likely if the droplets contaminate the environment. The measures listed above will prevent most droplet transmission. If norovirus is suspected or proven, as an additional *droplet* precaution, those cleaning up faeces or vomit, or any healthcare worker who is likely to come within 1m of a vomiting child must wear a standard **surgical mask**.
4. **Foodborne:** Although foodborne gastroenteritis is common in the community, this is not a common cause of transmission within the hospital. For this reason, organisms which are characteristically transmitted by contaminated food or water (e.g. *Salmonella* and

Campylobacter spp) do not pose the same infection control risk as viral gastroenteritis or Shigella infection. However, foodborne transmission should be suspected if the onset of symptoms amongst multiple children, parents, or staff is abrupt and near simultaneous, especially if multiple wards are affected simultaneously. Suspected foodborne outbreaks must be notified ASAP to the PHU for appropriate investigation (see Notification of Infectious Diseases). To prevent foodborne transmission:

i. ward kitchen facilities should be **cleaned** with detergent at least daily,

ii. parents and visitors must not use hospital facilities including toilets and kitchen facilities if they have symptoms of vomiting or diarrhoea until 48hr after the end of symptoms, and

iii. parents and visitors must have access to alcohol hand rub and use meticulous **hand hygiene** before using ward kitchen facilities.

4 Core Measures to Prevent Transmission of Gastroenteritis

1. Any child admitted from the community with vomiting or diarrhoea should ordinarily be isolated on C3W unless a non-infectious cause is more likely (e.g. intestinal obstruction). If it is clinically important for a child to be managed on another ward (e.g. ICU), this should be done but the same precautions should be applied. Refer to SCH.1.1.i.2, Isolation.
2. If an admitted child develops vomiting or diarrhoea on the ward, this should be presumed to be infectious unless another explanation is much more likely (e.g. post-operative nausea and vomiting). All inpatients with suspected or proven norovirus should be transferred to an isolation room on C3W, if available. Inpatients with suspected or proven gastroenteritis from other infectious causes, including *C difficile*, should be placed in an isolation room on the ward they are currently located in, as guided by clinical requirements and bed status.
3. If a single room is not available, 2 or more children with gastroenteritis may be cohorted provided that there is no other indication for isolation and all of the following conditions are met:

   i. They are cohorted with other patients with a similar spectrum of gastroenteritis illness;

      - In the case of norovirus, patients must only be cohorted with other norovirus cases;
      - As a general rule, co-horting of *C difficile* should be avoided. If bed availability is an issue, co-horting with other *C difficile* positive cases can be considered.

   ii. The children are not younger than 3 months.

   iii. The children do not have significant comorbidities (eg malignancy, heart disease etc)

4. Standard and additional precautions must be observed as detailed above. Doors of rooms should not be left open and visitors should be directed to speak to nursing staff before entering. Friends and non-immediate family members should be advised to defer visiting. There should be adequate signage indicating that additional (contact +/- droplet) precautions need to be adhered to.
5. A single stool specimen should be sent for testing for:
   - culture (MC&S)
   - adenovirus EIA
   - norovirus EIA
   - astrovirus EIA
   - rotavirus EIA (if <7 years old).

   If the gastroenteritis is suspected to be community-acquired, also include:

   - ova, cysts & parasites (OCP)
   - Giardia / Cryptosporidium antigen.

   This should be done as soon as practicable. If norovirus is suspected because of a known or suspected exposure but the initial stool test is negative, up to 2 additional specimens should be referred for norovirus antigen testing because false negative results are common[2].
6. Testing for toxigenic *C difficile* should not be routinely tested for. There is a high rate of asymptomatic carriage of toxigenic *C difficile* in children < 2 years for which treatment is not routinely required. *C difficile* testing should only be requested for symptomatic children who are:

   i. immunocompromised (e.g. oncology), critically unwell (e.g. CICU) or have underlying gastrointestinal disease (eg inflammatory bowel disease), of any age **OR**

   ii. ≥ 2 years old **AND**

   - recently or heavily exposed to antibiotics, or
   - symptomatic contacts of *C difficile* cases, or in the setting of an outbreak or cluster of *C difficile* cases (refer to **Outbreaks Management within the Hospital - SCH**).

   iii. *A Repeat stool test <7 days after an initial C difficile positive result **is not needed**.*
7. Those cleaning up vomit or diarrhoea should wear gloves, full length impervious gown and mask. Paper towels should be disposed of into a leak-proof plastic bag, followed by cleaning with detergent and bleach disinfection.
8. Rooms or bays accommodating symptomatic children should be blocked to further admissions until a terminal clean can be performed.
9. A terminal clean can be performed once all symptomatic or previously symptomatic children have been discharged from the room/ bay. A terminal clean should consist of:

i. Disposal of all disposable items (e.g. toilet paper)

ii. Detergent cleaning

iii. This should be followed by bleach disinfection of all hard, non-porous surfaces including en suite bathroom facilities.

iv. For advice on cleaning non-porous or soft furnishings, contact Infection Control.

10. Symptomatic healthcare workers should be recommended to attend their GP to be tested for norovirus. They should be excluded from work until they have been symptom-free for 24 hours unless norovirus is the confirmed or suspected cause, in which case exclusion should be for 48 hours (see also below for exclusion of healthcare workers during gastroenteritis clusters or outbreaks)They should remain in daily contact with their NUM to advise on ongoing symptoms and suitability for return to work

5 Additional and extraordinary measures

Response to a "cluster":

Refer to 'Cluster' in the Definitions section

1. Notify the Chief RMO and Infection Control CNC (business hours) and After Hours Nurse Manager and CRMO (after hours)
2. Ascertain whether additional cases exist amongst carers and healthcare staff and consider whether a cluster exists.
3. Reinforce hand hygiene and ensure that the core measures (standard and additional precautions) listed above are being adhered to.

Response to a suspected or confirmed cluster:

1. Ensure that the measures listed above have been undertaken
2. CRMO to convene an Outbreak Management Team (see **Outbreaks Management within the Hospital - SCH**)
3. The SESIAHS Public Health Unit should be notified.
4. Generate a line list of cases (see Appendix 1 of **Outbreaks Management within the Hospital - SCH**) detailing for each case (patient, parent or healthcare staff):
   - Date of admission +/- discharge or expected discharge
   - Dates and times of ward and hospital movements
   - Date and approximate times of vomiting and diarrhoea
   - Stool results
   - Known exposures to symptomatic individuals
   - Relevant exposures of susceptible individuals
   - Age and details on relevant co-morbidities

5. **Extra measures:**
   - Ensure alcohol hand rub available and at ward entrance. Additional signage may be necessary.
   - Encourage hand washing with soap and water before and after patient encounters.
   - Minimise transfer of children (symptomatic and asymptomatic) and nursing staff from the affected ward to other wards unless clinically necessary. If transfer is necessary, symptomatic children must be isolated or cohorted on the receiving ward. While isolation is not necessary for asymptomatic children, they should be monitored closely for symptoms and should not be located in proximity to high risk children (i.e. children < 3 months old or children with significant co-morbidities).
   - Additional (at least twice per day) disinfection of commonly touched items (e.g. door handles, telephones, computer keyboards, desk spaces) using a bleach solution. Computer keyboards should be placed in a removable plastic sleave to facilitate cleaning.
   - Food trolleys should not be brought into the ward.
   - Non-sterile single patient use equipment should be replaced by sterile equipment, where possible. E.g. use of unsealed single-use non-sterile oral medication syringes should be replaced by sterile sealed syringes.
   - Additional detergent cleaning and bleach disinfection of patient care areas (at least once per day) and toilets and communal kitchen facilities (at least twice per day).
   - Symptomatic healthcare workers should be excluded from work until 48hours after last symptom [2].
   - Terminal cleaning of patient care areas should occur 72hr after the last case.
6. Designated members of the OMT to perform a ward site visit to identify possible break downs in standard measures and to reinforce standard and additional measures. This group should comprise:
   - CRMO and/or his or her delegate
   - Infection Control Nurse
   - NUM for ward
   - Infectious Diseases fellow

Response to a suspected or confirmed “outbreak”:

Refer to ‘Outbreak’ in the Definitions section

1. In addition to all the measures listed above for management of a gastroenteritis cluster, the OMT will consider invoking extraordinary measures. Prior to invoking extraordinary measures, the following factors will be considered:
   - Is the outbreak confirmed? i.e. are >50% cases confirmed to be caused by the same pathogen?
   - Is the pathogen highly transmissible? E.g. norovirus.

- Is a common source of exposure (e.g contaminated food) a more likely explanation for the outbreak rather than on-going person-to-person transmission?
- Have core and extra measures failed to prevent further cases occurring 48hours after implementation?

2. Extraordinary measures:

- One member of the OMT should be designated to perform periodic inspections to ensure compliance with standard, additional and extraordinary measures.
- Block the ward to further admissions.
- One or 2 medical officers will be designated to the ward. They will have responsibility to the day-to-day management of all children on the ward and will liaise with the treating teams as necessary.
- Other junior medical staff and students will not enter the ward except at the permission of the NUM.
- Visits by non-immediate family and friends will be discouraged and will be regulated by the NUM.

Lifting of extra and extraordinary measures:

1. Extraordinary measures will be lifted under the advice of the OMT. Ordinarily this would occur once no new cases have occurred for 48 hours.
2. Extra measures should be continued for at least 72hours after the last symptom in the last affected child.
3. Core measures must never be lifted.

Situation	Measures	Response	Lifting of measures
Any case: *Any patient with vomiting or diarrhoea*	**CORE**	• Isolation or cohorting on C3W • Hand hygiene • Gloves • Plastic apron or long-sleeved gown • +/- standard surgical mask (**if patient vomiting**) • Patient designated equipment • Collect stool for testing (see test and table) • Environmental cleaning & disinfection	Never
Cluster of cases: *3 directly linked cases **or** 4 cases occurring on the same ward within 72hr of each other*	**EXTRA**	• Reinforce the above **PLUS** • Notify CRMO & Infection Control and Prevention CNC • Convene OMT meeting • Include notify PHU • Generate Line List of cases • Encourage soap and water in addition to alcohol rub • Minimise ward traffic • BD disinfection of commonly touched ward items • Increase cleaning of patient care areas • No food trolleys on ward • Exclude symptomatic HCW for 48hr after last symptom • Terminal clean 48 hrs after last symptom • Ward 'site visit'	48 hr after last symptom of last affected case
Outbreak of cases: *5 directly linked cases **or** 6 cases occurring on the same ward within 72hr of each other*	**EXTRAORDINARY**	• Reinforce the above, if more cases after 48hr **PLUS** • Periodic ward inspection by member of OMT • Close ward to further admissions • Ward designated medical staff • Limit visits to immediate family only	On discussion with OMT, 48hr after last symptom of last affected case

6 Gastroenteritis Guideline Summary Table

	Gastroenteritis (non-norovirus)	Norovirus (suspected or proven)	Clostridium difficile
DIAGNOSIS	**Clinical suspicion:** Vomiting ± diarrhoea ± abdominal pain / cramping, without a clear alternative explanation. **INVESTIGATIONS** Send a single stool specimen for: - Culture (MC&S) - Adenovirus EIA - Norovirus EIA - Astrovirus EIA - Rotavirus EIA (*if < 7 yo*) If the gastroenteritis is suspected to be community-acquired, include: - Ova, cysts, parasites (OCP) - Giardia /Cryptosporidium Antigen	**Clinical suspicion:** 1. Acute onset of vomiting +/- diarrhoea [more than 50% of people in an outbreak p/w vomiting] 2. +/- nausea, abdominal cramps, abdominal pain, low grade fever 3. Not associated with bloody diarrhoea 4. Short duration of illness [12 to 60 hours] 5. Short incubation period [mean of 24 to 48 hours] 6. No bacterial agent identified 7. Tends to be a history of similar occurring in community, generally in winter **INVESTIGATIONS:** • Stools for norovirus antigen • If norovirus suspected but initial antigen testing is negative, send up to 2 repeat stools, as false negatives are common **RE-TESTING:** *Not routinely required (See below for immuncompromised patients)*	**Clinical suspicion:** Diarrhoea in the following settings: 1. Immunocompromised (e.g. oncology), critically unwell (e.g. CICU) or underlying GI disease (e.g. IBD) *or* 2. ≥ 2 years old AND a. Recently or heavily exposed to antibiotics, or b. Contact of known *C. difficile* case, or *c.* Known outbreak of *C. difficile.* **INVESTIGATIONS** Send a **single** stool specimen for '*C. difficile* toxin'. **RE-TESTING:** • If initial test is negative, do not routinely re-test within 7 days. • Treatment of positive cases is guided by symptomatic response. • "Clearance of C Diff" is not needed for de-isolation • De-isolation is determined by resolution of symptoms ***Interpretation:*** Screening tests: • *C. difficile* antigen Confirmatory tests : at least one of these must be positive to diagnose *C. difficile* infection): • *C. difficile* PCR • *C. difficile* toxin • *C. difficile* toxigenic culture

	Gastroenteritis (non-norovirus)	Norovirus (suspected or proven)	*Clostridium difficile*
INFECTION CONTROL PRECAUTIONS	Contact	Contact + Droplet	Contact
PERSONAL PROTECTIVE EQUIPMENT (PPE)	If touching patient s or bodily fluids: • Gloves • And plastic aprons or gowns	If touching patient s or bodily fluids: • Gloves • And plastic aprons or gowns If patient is vomiting: • Wear a surgical mask in addition to above	If touching patient s or bodily fluids or patient surrounds: • Gloves • And plastic aprons or gowns
Hand Hygiene	• Hand wash* or alcoholic hand rub ** If visible soiling, **hand washing** is required.*	• Hand wash* or alcoholic hand rub ** If visible soiling, **hand washing** is required* *# During "Outbreaks" - as determined by the "Outbreak Management Team" - extra measures may be deemed appropriate . This will be communicated to staff*	• Hand wash* or alcoholic hand rub ** If visible soiling, **hand washing i**s required*
ROOM LOCATION	• **Single room** or cohorting with other "same" gastroenteritis type patient *(see guideline text).*	• **Single room** or **cohorting** with other norovirus cases *(see guideline text)*	• **Single room** or **cohorting** with other C. Diff **positive** cases if bed availability is an issue *(see guideline text)*
WARD LOCATION *New Admission from Community / ED*	C3W preferred	C3W preferred for all cases	Any ward (single room), as guided by clinical requirements and bed status.
Current Inpatient	Stay in ward where admitted - as guided by clinical requirements and bed status.	Decision is by risk stratification • C3W preferred unless clinical reason to stay on ward • If staying on ward - **single** room or **cohorting** with other norovirus cases	

<table>
<tr><th></th><th>Gastroenteritis (non-norovirus)</th><th>Norovirus (suspected or proven)</th><th>Clostridium difficile</th></tr>
<tr><td>ISOLATION OF PARENTS</td><td colspan="3">• All family and visitors should be instructed to undertake meticulous hand hygiene. Visitors should be restricted to immediate family members
• If parents / family have vomiting and diarrhoea, it is preferable that family member stays home till asymptomatic
• Parents/family member <u>with symptoms</u> must not use shared toilets or kitchen facilities until they are asymptomatic for ≥ 48 hours. Provision for dedicated toilet facilities must be made for these parents/family members.</td></tr>
<tr><td>Isolation of Symptomatic Healthcare Workers</td><td>Until asymptomatic for ≥ 24 hours.*

*May be modified during community norovirus outbreaks, as determined by the Outbreak Management Committee.</td><td>Until asymptomatic for ≥ 48 hours.</td><td>N/A</td></tr>
<tr><td>De-Isolation of Patients</td><td>Can de-isolate once asymptomatic for ≥ 24 hours.</td><td><u>BMT:</u>
No change as patients remain in isolation for length of admission.

<u>Oncology or Solid Organ Transplant or IBD patients on immunosuppressants:</u>
Can de-isolate once asymptomatic and 2 x negative stools, each at least 48 hours apart.

<u>Non-Immunosuppressed:</u>
Can de-isolate once asymptomatic for ≥ 48 hours. No repeat stool testing required.</td><td>Can de-isolate once asymptomatic for ≥ 48 hours.

No repeat stool testing required.</td></tr>
<tr><td>Room Cleaning</td><td>On patient discharge from room / bay:
• Clean with neutral detergent wipe over with bleach solution after last affected patient discharged from that room/bay</td><td>On patient discharge from room / bay:
• Clean, with neutral detergent wipe over with bleach solution after last affected patient discharged from that room/bay</td><td>On patient discharge from room / bay:
• Clean, with neutral detergent wipe over with bleach solution after last affected patient discharged from that room/bay</td></tr>
</table>

7 References

1. NHMRC, Australian Guidelines for the Prevention and Control of Infection in Healthcare. 2010, Commonwealth of Australia. http://www.nhmrc.gov.au/node/30290
2. Communicable Diseases Network of Australia (CDNA) Guidelines for the public health management of gastroenteritis outbreaks due to norovirus or suspected viral agents in Australia, D.o.H.a. Aging, Editor. 2010, Commonwealth of Australia. http://www.health.gov.au/internet/main/publishing.nsf/content/cda-cdna-norovirus.htm/$File/norovirus-guidelines.pdf