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	<i>Clostridium difficile</i> Infection (CDI) in Children (3 -16 years) STANDARD OPERATING PROCEDURE	Review Date	Mar 2020
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SOP Objective

To provide Healthcare Workers (HCW) with details of the care required to prevent cross-infection in children with *Clostridium difficile* Infection (CDI).

This SOP applies to all staff employed by NHS Greater Glasgow & Clyde and locum staff on fixed term contracts and volunteer staff.

KEY CHANGES FROM THE PREVIOUS VERSION OF THIS POLICY

- Updated wording in section 2: general information on CDI: Communicable Disease/Alert Organism
- Updated wording in Section 3: Transmission Based Precautions : Accommodation, Hand Hygiene, Patient Clothing, HPS Trigger Tool, severity assessment, specimens required, Patient Carers/visitors
- Addition of sections on Linen, Moving between wards/hospitals, Precautions Required Until, Daily Checks by IPCT, Surveillance and Terminal Clean
- Addition of Aide Memoire

Document Control Summary

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Related Documents	National Infection Prevention and Control Manual NHSGGC SOP CDI (Adults) NHSGGC SOP Hand Hygiene NHSGGC SOP Outbreak NHSGGC SOP Cleaning of Near Patient Equipment NHSGGC SOP Terminal Clean of Isolation Rooms NHSGGC SOP Twice daily Clean of Isolation Rooms Antimicrobial Prescribing Policies
Distribution/ Availability	NHSGGC Infection Prevention and Control Policy Manual and the Internet http://www.nhsggc.org.uk/your-health/public-health/infection-prevention-and-control
Lead Manager	Board Infection Control Manager
Responsible Director	Board Medical Director

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1. Responsibilities

Healthcare Workers (HCWs) must:

- Follow this SOP.
- Inform their line manager if this SOP cannot be followed.
- Must ensure leaflets and infection control care checklists are available at all times.

Senior Charge Nurse (SCN) must:

- Ensure that the care Checklist is in place.
- Ensure that written information is available for patients and relatives.

Managers must:

- Support HCWs and Infection Control Teams (IPCTs) in following this SOP.
- Cascade new policies to clinical staff after approval by the Board Infection Control Committee (BICC).

IPCTs must:

- Keep this SOP up-to-date.
- Provide education opportunities on this SOP.
- Monitor epidemiology of *Clostridium difficile* Infection (CDI) within facility (ies) and advise on infection control precautions as necessary.

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2. General Information on *Clostridium difficile* Infection (CDI)

Communicable Disease/ Alert Organism	<p><i>C. difficile</i> is a Gram positive, anaerobic, spore forming, toxin producing gastrointestinal bacillus. However, recent studies have shown that <i>C difficile</i> is an emerging pathogen in the paediatric setting, causing a range of illness; from mild diarrhoea to life changing conditions such as pseudo-membranous colitis, toxic megacolon, intestinal perforation and septic shock. It is imperative that clinical judgement is exercised in order that aetiologies are appropriately investigated.</p>
Case Definition	<p>A child (3-16 years of age) has a diagnosis of CDI if they have a stool specimen positive for CD toxin, diarrhoea (Bristol stool chart <u>5-7</u>) and one or more of the following:</p> <ul style="list-style-type: none"> • Significant co-morbidities i.e. haematology/oncology ; gastrointestinal • Severe GI disease with bloody diarrhoea and an unlikely alternative diagnosis • Strong clinical suspicion • Antibiotic therapy in the last 1 month (especially ciprofloxacin)
Case Definition : Determination of source	<p>Hospital acquired CDI is defined as when a patient has had onset of symptoms at least 48 hours following admission to a hospital</p> <p>Healthcare associated CDI is defined as when a patient has had onset of symptoms up to four weeks after discharge from a hospital</p> <p>Indeterminate cases of CDI is defined as a patient who was discharged from a hospital 4–12 weeks before the onset of symptoms.</p> <p>Community associated CDI Is defined as a patient with onset of symptoms while outside a hospital and without discharge</p>

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	from a hospital within the previous 12 weeks – or with onset of symptoms within 48 hours following admission to a hospital without stay in a hospital within the previous 12 weeks
<i>Mode of Spread</i>	There is evidence of both direct and indirect spread through the hands of HCWs and patients; and environmental contamination via equipment and instruments, e.g. commodes, bedpans and washbowls. <i>C. difficile</i> produces spores which can survive for long periods in the environment. Environmental cleaning is paramount.
<i>Incubation Period</i>	Potentially up to 12 weeks.

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3. Transmission Based Precautions for CDI

<i>Accommodation (Patient Placement)</i>	<p>The patient should be placed in a single room, preferably with ensuite or own commode. The door to the room should be closed when not in use and a yellow IPCT sign placed on the door. If a side room is unavailable the IPCT will help the clinical team to undertake a risk assessment and advise where to nurse the patient.</p> <p>Precautions should continue until the patient has been asymptomatic for 48 hours and bowel movements have returned to normal or, on the advice of a member of the IPCT.</p>
<i>Care Checklist available</i>	Yes.
<i>Clinical/ Healthcare Waste</i>	All non-sharps waste should be designated as Healthcare/Clinical Waste (HCW) and placed in an orange clinical waste bag within the room. Please refer to the NHSGCC Waste Management Policy .
<i>Contacts</i>	Specimens should not be sent from patients deemed to be contacts unless they develop loose stools, where there is no other cause for this.
<i>Domestic Services/ Facilities</i>	<p>Domestic staff must follow the NHSGCC SOP for Twice Daily Clean of Isolation Rooms.</p> <p>Cleans should be undertaken at least four hours apart</p> <p>If domestic staff share a DSR, consideration should be given to separating or moving cleaning equipment into the closed ward to avoid sharing equipment with other wards.</p>

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<i>Equipment & Patient Environment</i>	<p>Domestic staff should be informed by the nurse in charge of the ward if there is a patient in isolation/ bed space that requires twice daily cleaning.</p> <p>Domestic staff should clean the room and/or bed space equipment using chlorine based detergent and dedicated disposable cleaning materials.</p> <p>All reusable patient equipment which stays in the room should be cleaned twice per day by healthcare staff. Refer to</p> <ul style="list-style-type: none"> • NHSGGC SOP Cleaning of Near Patient Equipment • NHSGGC Decontamination SOP • NHSGGC SOP Twice Daily Clean of Isolation Rooms • NHS GGC SOP Terminal clean of isolation rooms
<i>Hand Hygiene</i>	<p>Alcohol gel hand rub and chlorhexidine are <u>not</u> effective against CDI: Soap and water must be used for all patients with loose stools.</p> <p>Hand hygiene is the single most important measure to prevent cross infection with CDI. Hands must be decontaminated before and after each direct patient contact, after contact with the environment, after exposure to body fluids and before any aseptic tasks. Patients should be encouraged to carry out thorough hand hygiene. If a child is unable to decontaminate their hands then hand hygiene should be carried out by a HCW or patient carer.</p> <p>Please refer to NHSGGC Hand Hygiene SOP</p> <p>Visitors should also be instructed to wash their hands with soap and water</p>
<i>Health Protection Scotland (HPS) Trigger Tool</i>	<p>The Health Protection Scotland (HPS) Trigger Tool must be completed by the IPCT and Clinical Staff if there are two HAI CDI cases in the same ward in a two week period. IPCNs and ward staff will complete the trigger daily until the trigger is</p>

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	<p>no longer in place i.e. one or both patients are no longer symptomatic or have been discharged. The following actions will be taken by the IPCT when a trigger is met:</p> <ul style="list-style-type: none"> - Request a terminal clean of the ward at the start of the trigger - Advise on enhanced IPC precautions to be in place. - Undertake IPC audit (if not done in last 3 months) hand hygiene audit - Ask the antimicrobial pharmacist to review prescribing <p>Findings will be reported to the SCN and ward staff who should liaise with IPC and pharmacy colleagues on any actions required as a result.</p> <p>Following this, should another case of HAI CDI emerge, the IPCT will complete a PAG to determine the requirement for an IMT and ward closure.</p>
<i>Linen</i>	<p>Treat used linen as soiled/ infected, i.e. place in a water soluble alginate bag then a clear bag tied and then into a laundry bag. (Brown polythene bag used in Mental Health areas)</p> <p>Please refer to National Guidance on the safe management of linen.</p>
<i>Moving between wards, hospitals and departments (including theatres)</i>	<p>Except in clinical emergencies, transfer of patients who have not been symptom-free for 48-hours is not advisable.</p> <p>However, acute receiving units have a high patient turnover and transfer of patients is necessary for effective patient flow and to ensure that patients receive the appropriate care within their specialty. Therefore, Receiving areas MUST be informed of the patient's condition before the patient is transferred and the requirement for a single room.</p> <p>Please follow NHSGGC SOP Terminal Clean of Isolation Rooms.</p>

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<i>Notice for Door</i>	<p>The yellow IPC isolation sign must be placed on the door to the patient's room.</p> <p>In Mental Health Services (MHS), on advice of IPCT.</p>
<i>Patient Clothing</i>	<p>Whilst patients are very symptomatic they should be advised to wear hospital gowns.</p> <p>If relatives or carers wish to take personal clothing home, staff must place soiled clothing into a domestic alginate bag and staff must ensure that a Home Laundry Information Leaflet is issued.</p> <p>NB: It should be recorded in the nursing notes that both the advice and information leaflet has been issued.</p>
<i>Patient Information</i>	<p>Inform the patient or the patient's relative/ carer of their condition and the necessary precautions if required and answer any questions and concerns they may have. Patient Information Leaflets are available from the IPCT and can also be downloaded from the IPCT Website.</p> <p>NB: It should be recorded in the nursing notes that the information leaflet has been issued. ICTs are available to speak to patients or relatives/ carers if required.</p>
<i>Personal Protective Equipment (PPE)</i>	<p>Disposable yellow plastic aprons and gloves should be worn for direct patient contact; handling blood and body fluids; and contact with contaminated environment/ equipment. Ensure hand hygiene is performed using liquid soap and water before donning and after removing PPE.</p>
<i>Precautions required until</i>	<p>Precautions should continue until the patient has been asymptomatic for 48 hours and bowel movements have returned to normal or, on advice of a member of the IPCT.</p> <p>If symptoms recur, reinstate precautions immediately, send further specimens and inform a member of the IPCT.</p>
<i>Severity Assessment</i>	<p>If the patient is confirmed as CDI, and while the patient is symptomatic of loose stools, medical staff are required to undertake a daily severity assessment using the assessment tool below. Daily severity assessments should continue until patient has been asymptomatic for more than 48 hours.</p> <p>Severity assessment in paediatric population (3-16 years)</p>

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	Criteria	Yes	No	Score if Yes
	Diarrhoea >5 times per day			1
	Abdominal pain and discomfort			1
	Rising white cell count			1
	Raised C-reactive protein			1
	Pyrexia >38 °C			1
	Evidence of pseudo membranous colitis			2
	Intensive care unit requirement			2
	Total score			
	<p>≥ 5 = severe disease</p> <p>If a patient is assessed as severe the IPCT will:</p> <ul style="list-style-type: none"> • refer to the CDI treatment algorithm (paeds) • Communicate severe cases to the Senior Management Team/ Microbiology and Clinical Teams • IPCT will generate a datix 			
Reporting of Severe Cases of CDI	<p>Daily checks by IPCT Infection Prevention and Control Nurses (IPCNs) will check daily (Monday - Friday) on the condition of patients with CDI until they meet the criteria for stopping isolation precautions AND thereafter weekly via the patient administration system, until discharge.</p> <p>Deaths due to CDI (Underlying or Contributing) Patients who have died will have their cause of death reviewed via the ward death certificate records. Medical staff completing a death certificate in which CDI is noted (part 1 or 2) should discuss this with the consultant in charge of the patient's clinical care and refer case to the Procurator Fiscals Office. If CDI is placed on part 1, medical staff should inform the CSM and GM for the area. The IPCT will generate a Datix for the incident</p>			

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Treatment	<p><u>Mild disease:</u> No need to treat if symptoms settle within 24 hours but consider oral metronidazole for 10–14 days if symptoms persist beyond 24 hours.</p> <p><u>Moderate disease:</u> Oral metronidazole for 10–14 days and consider escalation by changing to oral vancomycin if non-resolution of symptoms or decline in severity score.</p> <p><u>Severe disease:</u> Oral vancomycin and IV metronidazole. Colectomy should be considered if there is evidence of caecal dilatation. Surgical review should be considered/discussed with microbiology</p>
Specimens required	<p>Send faecal specimens from any patient who has loose stools that score 5-7 on Bristol chart (appendix 1) and if no other cause of diarrhoea is known. If negative and loose stools persist, another two samples should be sent at 48-hour intervals. Relevant clinical information must be supplied with the specimen.</p> <p>There is no requirement to send clearance specimens from patients who become asymptomatic.</p> <p>Only when a relapse of CDI is suspected should you repeat the toxin testing and exclude other potential causes of diarrhoea, and only after 14 days of treatment. Relapse can also occur up to 14 days after therapy has stopped.</p>
Stool Charts	Document all stool activity on a Bristol stool chart (Appendix 1). Continue until discharge.
Surveillance	<p>Surveillance of CDI is mandatory in Scotland and is reported to HPS by the Diagnostic Laboratory.</p> <p>Local surveillance in NHSGGC is returned to wards with a prevalence of CDI monthly using Statistical Process Control Charts (SPCs). The trigger for action is when the numbers in a ward reach the upper control limit in the SPC. SPCs are not a substitute for local referral by clinical staff and ICTs but</p>

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	should be used to monitor trends and promote quality improvement.
<i>Terminal Cleaning of Room</i>	Follow SOP for Terminal Clean of Isolation Rooms. If isolation is discontinued and the patient remains in hospital, consider moving the patient to a new bed-space. This will allow the patient's bed, bed locker and bed table to be decontaminated thoroughly. These items can be expected, without cleaning, to remain contaminated. NB: relapse and re-infection from the environment can be as high as 20% in patients with CDI. See NHSGGC SOP Terminal Clean of Isolation Rooms .
<i>Visitors</i>	Visitors are not required to wear aprons and gloves unless participating in patient care. Visitors should be advised to decontaminate their hands with liquid soap and water on leaving the room/ patient. Visitors should also be advised not to use communal areas or to sit on beds. While patient is infectious.

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4. Evidence Base

Pai S et al. Five years experience of clostridium difficile infection in children at a UK tertiary hospital: proposed criteria for diagnosis and management. PLOS 2012; 71-6

Lees E A et al. The role of Clostridium difficile in the paediatric and neonatal gut — a narrative review. Eur J Clin Microbiol Infect Dis (2016) 35:1047–1057

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Appendix 1 – Bowel Movement (adapted from the Bristol Stool Scale)

BOWEL MOVEMENT RECORD

Month: _____ Year: _____

Name: _____

Date	Time	Size	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Staff Initials
		S M L	Separate hard lumps like nuts (hard to pass)	Sausage shaped but lumpy	Like a sausage but with cracks on surface	Like a sausage or snake, smooth and soft	Soft blobs with clear-cut edges (passed easily)	Fluffy pieces with ragged edges, a mushy stool	Watery, no solid pieces (entirely liquid)	
	am									
	pm									
	am									
	pm									
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Adapted from the Bristol Stool Scale developed by KW Heaton and SJ Lewis at the University of Bristol, 1997

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Appendix 2: CDI Paediatric Aide Memoire

