Whittington Health NHS

Clostridium Difficile Infection
Guideline for Treatment and Management

Subject:	Clostridium difficile
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Policy Executive Owner:	Dr Richard Jennings
Designation of Author:	Infection Prevention & Control, Microbiology and Pharmacy Department
Name of Assurance Committee:	Infection Prevention & Control Committee
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Review Date:	3 years hence
Target Audience:	All clinical staff involved in prescribing, dispensing and administering antibiotics. Doctors, nurses and pharmacists.
Key Words:	Clostridium difficile, C. diff, diarrhoea, antibiotic, isolation, infection control, vancomycin, metronidazole, rifampicin, immunoglobulin, intracolonic.

Version Control Sheet

Version	Date	Author	Status	Comment
3.0	01/06/2011	Ai-Nee Lim (Lead Pharmacist, Antimicrobials) Dr Michael Kelsey (Consultant Microbiologist) Dr Julie Andrews (Consultant Microbiologist) Patricia Folan (Infection Control Matron)	Updated	Amendments: ▪ Liquid soap must be used before entering and on leaving the room/cohort isolation bay. ▪ Vancomycin dose increased from 125mg to 500mg. ▪ In severe disease, metronidazole added to vancomycin therapy. ▪ In life threatening disease, human immunoglobulin stat dose added to the treatment regimen.
3.1	01/07/2011		Updated	Change in intravenous human immunoglobulin preparation used within the trust. Administration instruction amended accordingly. See section 2.3.4
3.2	01/07/2012		Updated	Included guidance on interpreting laboratory *C. difficile* detection test results. See section 1.3
3.2.1	November 2014	Infection Prevention & Control Team	Updated	Updated as follows: • to highlight out of hours procedure for samples requiring urgent testing • Communication of positive results • Insertion of Appendix 5 - C.diff care plan • Clarification of PPE

➢ Criteria for use

Any patient with diarrhoea that is not attributable to any other cause AND occurring at the same time as a positive Glutamate Dehydrogenase (GDH) test and toxin assay (with or without a positive *C. difficile* culture) and/or endoscopic evidence of pseudomembranous colitis.

Patients may occasionally present with tender or distended abdomens with little or no diarrhoea. The diagnosis of 'toxic megacolon' must be considered and urgent surgical opinion must be sought, as there is a risk of large bowel perforation.

➢ Background

C. difficile is a gram-positive, anaerobic spore-forming bacillus that is spread by the faecal-oral route, through the ingestion of spores acquired from contaminated environment or contact with healthcare staff and patients.

The organism colonises the bowel in patients whose normal bowel flora has been disrupted by broad-spectrum antibacterials. Exotoxins (toxin A and toxin B) produced damages the cell lining in the intestine, resulting in diarrhoea.

Table 1: Antibacterials implicated in *C. difficile* infection

Common	Less common	Rare
Cephalosporins	Tetracyclines	Metronidazole
Clindamycin	Macrolides	Vancomycin
Co-amoxiclav	Co-trimoxazole	Aminoglycosides
Amoxicillin		Rifampicin
Quinolones		Trimethoprim
		Piperacillin/Tazobactam

Some individuals may become asymptomatic carriers, while others develop symptomatic *C. difficile* infection. Clinical feature of *C. difficile* infection ranges from mild diarrhoea to very severe illness with ulceration and bleeding from the colon (colitis) and, at worst, perforation of the intestine leading to peritonitis, which can be fatal.

The major host factors that predispose patients to develop *C. difficile* infection:

- Elderly (over 65 years)
- Exposure to broad spectrum antibacterials e.g. cephalosporins, clindamycin, co-amoxiclav, ciprofloxacin (up to 2 months after discontinuation)
- Long length of stay in healthcare settings
- Multiple and severe underlying disease
- Immunocompromised
- Gastrointestinal surgery / manipulation
- Receiving proton pump inhibitors e.g. omeprazole, lansoprazole

Some strains of *C. difficile* such as ribotype 027 may cause more severe disease and have higher mortality rates than previous circulating strains e.g. ribotypes 001 and 106.

Large outbreaks of *C. difficile* with significant mortality have been documented in healthcare facilities. Since January 2004, *C. difficile* has been part of the mandatory surveillance programme for healthcare associated infections (HCAIs).

Stringent antimicrobial stewardship and aggressive infection control measures are essential in preventing secondary spread.

Hand washing with soap and water is the recommended method of hand hygiene; as it is shown to be more effective than alcohol handrub at removing *C. difficile* spores.

➢ Key Principle

Clinicians (doctors and nurses) should apply the SIGHT mnemonic protocol when managing potentially infective diarrhoea:

S Suspect that a case may be infective where there is no clear alternative cause for diarrhoea

I Isolate the patient within 2 hours of the start of diarrhoea

G Gloves and aprons must be used for all contact with the patient and their environment

H Hand decontamination with soap and water or alcohol gel must be carried out **before** each contact with the patient or the patient's environment. **After** each contact with the patient or the patient's environment hands must be washed with soap and water

T Test the stool for toxin by sending a specimen immediately

1. Assessment

1.1 INVESTIGATIONS

1.1.1 Send fresh stool specimen for *C. difficile* detection and for culture as soon as infective diarrhoea is suspected. If the diarrhoea occurs at the weekend or over bank holidays and an urgent result is required, a member of the Consultant's team will need to contact the laboratory to ask for the specimen to be processed. If no call is received the specimen will not be processed until the next working day.

Important: In order for the specimen to be processed for *C. difficile*, the sample must take on the shape of the container and be at least ¼ filled (to indicate the patient has diarrhoea).

Do NOT send repeat stool sample within 28 days of a previous toxin POSITIVE result as it will not be tested.

If the first test is negative but there is a strong clinical suspicion, a second stool sample may be re-sent 24 hours later.

All positive results are verbally communicated to the ward staff and highlighted in the patient's medical notes with a '*Clostridium difficile* Alert Sticker' by the Infection Prevention & Control Team as well as an alert on the Medway Electronic Patient Record (EPR) system.

1.1.2 Monitor frequency and severity of diarrhoea using the Stool Record Chart (see Appendix 3).

1.1.3 Monitor urea, electrolytes and albumin

1.1.4 Monitor full blood count.

1.1.5 Consider abdominal X-ray and/or CT (computerised tomography) scan in patients with tender or distended abdomens.

1.1.6 Flexible sigmoidoscopy and biopsy can be useful where the *Clostridium difficile* result is negative but clinical suspicion remains high.

***C. difficile* infection should be managed as a diagnosis in its own right and patients should be reviewed daily.**

1.2 SEVERITY PREDICTORS

Assess severity of disease each day defining:

1.2.1 **Mild Disease**
< 3 stools of type 5, 6 or 7 on the Bristol Stool Chart per day.
NO raised WCC (white cell count).

1.2.2 **Moderate Disease**
3 to 5 stools of type 5, 6 or 7 on the Bristol Stool Chart per day
AND a raised WCC that is < 15 x 10^9/L

1.2.3 **Severe Disease**
WCC > 15 x 10^9/L ***or*** temperature of > 38 °C or albumin < 25g/L
or acute rising serum creatinine (> 50% increase above baseline)
or evidence of severe colitis (abdominal or radiological signs)

The number of stools may be a less reliable indicator of severity

1.2.4 **Life-threatening Disease**
Hypotension (systolic BP < 95mmHg) ***or*** partial / complete ileus ***or*** toxic megacolon ***or*** CT evidence of severe disease

1.3 INTERPRETING LABORATORY TEST RESULTS

The presence of toxin (Toxin EIA positive) is significantly associated with a poor clinical outcome and requires mandatory reporting to the Health Protection Agency.

The presence of *C. difficile* in the absence of toxin (GDH EIA positive but Toxin EIA negative) is associated with clinical outcomes similar to that of *C. difficile* negative samples. However, it indicates potential *C. difficile* excretors with infection prevention and control implications.

The following actions should be taken in relation to the *C. difficile* test result:

Test		Interpretation	Action
GDH EIA	**Toxin EIA**		
Positive	Positive	CDI likely to be present.	Mandatory reporting to HPA. Inform patient of test result. IPCT to send letter to GP informing them of result and requesting antibiotic/PPI history. IPCT to ensure specimen sent for ribotyping If more than 48 hrs after admission, IPCT to investigate and complete Datix. Ward area to complete HII7 form
Positive	Negative	*C. diff* could be present i.e. potential *C. diff* excretor.	NOT for mandatory reporting. Local reporting. Continue transmission precautions as may have transmission potential.
Negative	Negative	*C. diff* or CDI is very unlikely to be present.	NOT for mandatory or local reporting. Consider other causes of diarrhoea; if not infective consider ending isolation.

Abbreviations:
GDH = glutamate dehydrogenase (antigen that is produced in high amounts by *C. difficle*, both toxin and non-toxin producing), EIA = enzyme immunoassay, CDI = *C. difficile* infection, HPA = Health Protection Agency, IPCT = Infection Prevention & Control Team, HII7 = High Impact Intervention No. 7 investigation form.

2. Treatment

2.1 INITIAL MANAGEMENT

2.1.1 Commence 'Diarrhoea and *Clostridium difficile* Transmission Precautions Core Care Plan' for all symptomatic patients (see Appendix 5).

2.1.2 Review ALL antibiotic use with Microbiology. Discontinue precipitating antibiotic, if possible, or substitute with antibiotic(s) that have a lower propensity to induce *C. difficile* infection (see table 1, page 3).

2.1.3 Stop all drugs that might cause diarrhoea, e.g. laxatives, as well as PPIs (proton pump inhibitors) unless required acutely.

2.1.4 Administer fluid and electrolytes (orally or intravenously) to maintain hydration.

2.1.5 Consider nutritional supplementation especially in elderly patients.

2.1.6 Avoid antimotility agents such as loperamide and opioids in acute infection as they may delay the clearance of the toxin and exacerbate toxin-mediated colonic injury, or may precipitate ileus leading to toxic dilation of the colon.

In 15 – 23% of patients, symptoms resolve within 48 – 72 hours of stopping the offending antibiotic and without specific antimicrobial therapy.

2.2 MEDICAL TREATMENT IF SYMPTOM IS SEVERE OR PERSISTENT

(also see Additional Prescribing Information and Appendix 1 & 2 below).

Treat according to the severity of the infection:

2.2.1 **Mild Disease**

Metronidazole 400mg PO 8-hourly for 10 to 14 days

2.2.2 **Moderate Disease**

Metronidazole 400mg PO 8-hourly for 10 to 14 days

2.2.3 **Severe Disease**

Metronidazole 500mg IV 8-hourly
plus
Vancomycin 500mg PO 6hrly for 10 – 14 days

Consider adding any of the following only if approved by Microbiology:
(also consult gastroenterology and/or surgical team)

- Human immunoglobulin 400mg/kg IV as a single dose. Repeat at 21 days if necessary.
- Intracolonic vancomycin 500mg given as a retention enema 4 to 12-hourly

2.2.4 **Life Threatening Disease**

Vancomycin 500mg PO 6-hourly for 10 to 14 days
plus
Metronidazole 500mg IV 8-hourly for 10 to 14 days
plus
Human immunoglobulin 400mg/kg IV as a single dose. Repeat at 21 days if necessary.
(Consult Microbiology before prescribing. Register patient on IVIg database with Haematology team)

OR

Vancomycin 500mg PO 6-hourly for 10 to 14 days
plus
Rifampicin 300mg PO 12-hourly for 10 to 14 days
plus
Human immunoglobulin 400mg/kg IV as a single dose. Repeat at 21 days if necessary.
(Consult Microbiology before prescribing. Register patient on IVIg database with Haematology team)

Consider adding only if approved by Microbiology:
(also consult gastroenterology and/or surgical team)

- Intracolonic vancomycin 500mg given as a retention enema 4 to 12-hourly

IMPORTANT: Consult surgical team immediately if patient develops signs of peritonism or if caecal dilatation is > 10cm.

2.2.5 **First recurrence**

Repeat the same antimicrobial used to treat the initial episode UNLESS the recurrence is more severe, in which case treat according to the severity as above.

2.2.6 **Subsequent (3rd episode)**

Vancomycin 500mg PO 6-hourly
FOLLOWED if necessary by vancomycin taper/pulse therapy.

2.2.7 **If diarrhoea persists despite 20 days' treatment but patient is stable, number of Bristol Stool Chart type 5, 6 or 7 stools per day has decreased, WCC is normal and there are no abdominal pains or distension**

Persistent diarrhoea may be due to post-infective irritable bowel syndrome.

Consider using anti-motility agent (instead of metronidazole or vancomycin):
Loperamide 2mg after each loose stool PRN up to a maximum of 16mg daily
or
Donor stool transplant

IMPORTANT: Observe patient closely for evidence of a therapeutic response and to ensure there is no evidence of colonic dilatation.

Diarrhoea should resolve within 1 to 2 weeks. THERAPEUTIC FAILURE should not be determined until treatment has been given for at least 1 week.

SYMPTOM FREE STATUS is achieved when the patient has no diarrhoea type 5, 6 or 7 on the Bristol Stool Chart for at least 48 hours and has had at least one formed stool, type 1, 2, 3 or 4. Patient may be discharged to complete the treatment at home.

2.3 ADDITIONAL PRESCRIBING & ADMINISTRATION INFORMATION

2.3.1 Vancomycin administration

a) Use vancomycin vials for oral (PO) and nasogastric (NG) administrations.

b) Reconstitute 500mg vial with 10ml of Water for Injection to give a concentration of 50mg/1ml. Draw up the required volume (e.g. 125mg = 2.5ml) and mix in 30ml of drinking water (orange juice or cordial may be used to improve palatability).

c) Reconstituted vials should be stored in a refrigerator and used within 24 hours.

d) Vancomycin capsules are reserved for patients' discharges. A 14-day course of vancomycin capsules cost £340 compared to £90 for vancomycin vials.

Important: Do NOT give vancomycin INTRAVENOUSLY as effective intraluminal concentrations cannot be achieved by that route.

2.3.3 Vancomycin taper/pulse therapy (6-week course):

125mg QDS for one week *THEN*
125mg TDS for one week *THEN*
125mg BD for one week *THEN*
125mg OD for one week *THEN*
125mg on ALTERNATE DAYS for one week *THEN*
125mg EVERY THIRD DAY for one week *THEN STOP*

2.3.2 Intracolonic vancomycin

a) Reconstitute ONE 500mg vial with 10ml of Water for Injection. Dilute the contents of into 100 – 500ml of Sodium Chloride 0.9%. Insert an 18 gauge Foley catheter with a 30ml balloon into the rectum and inflate the balloon. Instil the vancomycin solution and clamp the catheter for 60 minutes. Deflate and remove catheter when complete.

b) Intracolonic vancomycin solution can also be instilled through the colostomy, ileostomy or rectocolonic stoma.

2.3.4 **Human Immunoglobulin 100mg/ml intravenous infusion (Privigen®)**

a) Obtain approval from Microbiology before prescribing.

b) Contact Haematology team to register patient on the Human Immunoglobulin (IVIg) database.

c) Ensure that all patients are well hydrated prior to initiation, and avoid concomitant use of loop diuretic if possible. In patients with acute renal failure, use a minimum dose and slower rate of infusion.

d) For obese patients (>20% above Ideal Body Weight), the 400mg/kg dose should calculated using the Corrected Body Weight:

Ideal body weight (IBW) / kg:
IBW for males = 50 + (2.3 x every inch over 60)
IBW for female = 45.5 + (2.3 x every inch over 60))

Corrected Body Weight (CBW) / kg:
CBW = IBW + 0.4 (actual body weight - IBW)

e) Test dose: Initially infuse at a rate of 0.3ml/kg/hour for 30 minutes.
If well tolerated: Increase the rate of administration incrementally within 30 minutes intervals from 0.6ml/kg/hour to 1.2ml/kg/hour and so on, up to a maximum rate of 4.8ml/kg/hour for the remainder of the infusion.

f) Monitor closely for symptoms of adverse reactions throughout the infusion period.

g) Commonly reported adverse effects include hypotension, allergic and hypersensitivity type reactions, headache, chills, back pain, chest pain, fever, hot flushes, cutaneous reactions, fatigue and nausea. Severe adverse effects (usually related to rate of infusion) include anaphylaxis, circulatory shock, acute renal failure, arterial venous thromboembolism and transfusion transmitted infection.

h) If adverse reaction occurs, either reduce the rate of infusion or stop the infusion depending on the nature and severity of the side effect. Adrenaline should be available for treatment of any acute anaphylactoid reaction.

i) Monitor urine output and serum creatinine.

	Please see Whittington Hospital NHS Trust Guidelines: ***'Intravenous Immunoglobulin Use'***

3. Infection Control

3.1 TRANSMISSION PRECAUTIONS

Isolation requirement

3.1.1 Isolate symptomatic patient in a side room as soon as possible (within 2 hours) after diagnosis. Infection Control Team and/or Bed Manager should be notified.

3.1.2 Endeavour to provide an en-suite toilet facility, or at the very least allocate a designated commode for the patient.

3.1.3 Inform all staff including housekeeper / domestic staff of patient's *C. difficile* status.

3.1.4 Inform patient and / or relatives of *C. difficile* status and provide information leaflet on *C. difficile*.

3.1.5 The isolation sign must be attached on the door of the side room.

3.1.6 Yellow aprons and non-sterile gloves must always be available on the outside of the room.

3.1.7 Ensure that there is a yellow bin within the room.

3.1.8 Ensure that all sinks and liquid soap dispensers are in working condition.

3.1.9 Remind all staff and visitors of the Hand-Hygiene Policy.

3.1.10 Patient may be removed from isolation when a 'symptom free status' is attained i.e. no diarrhoea type 5, 6 or 7 on the Bristol Stool Chart for at least 48 hours and one formed stool has been achieved.

Transferring or moving a symptomatic patient

3.1.11 Avoid transferring or moving symptomatic patient, if possible.

3.1.12 Ensure that the Infection Control Team and/or Bed Manager are aware of any transfer.

3.1.13 Notify receiving ward, department or hospital of patient's diarrhoea/ *C. difficile* status in advance.

3.1.14 Obtain confirmation that infection control measures are in place before transferring patient.

3.1.15 For visits to clinics, imaging, endoscopy or theatre, patient should be seen at the end of the working session. Time spent in the department should be kept to a minimum and patient should not be left in a waiting area with other patients.

3.1.16 Staff in close contact with the patient or the contaminated environment should wear yellow aprons and non-sterile gloves, and undertake hand decontamination with soap and water after dealing with the patient.

3.1.17 Equipment and the number of staff attending the patient should be kept to a minimum.

3.1.18 After use, clean all surfaces including trolleys or chairs, which sustain patient contact, with Actichlor Plus 1,000 ppm (1 tablet in 1 litre of water). Equipment must be appropriately cleaned and disinfected according to protocol. Linen should be treated as infected and double bagged in a red bag in accordance with the Linen Policy.

Patient discharge

3.1.19 Patient may be discharged to complete *C. difficile* treatment at home or nursing home if patient is medically fit and a 'symptom free status' is attained i.e. no diarrhoea type 5, 6 or 7 on the Bristol Stool Chart for at least 48 hours and one formed stool has been achieved.

3.1.20 Inter-hospital transfer should be accompanied with a transfer form citing patient's diarrhoea/ *C. difficile* status.

Vacated bed space

3.1.21 Staff nurses must inform the housekeeper or domestic staff that a FULL TERMINAL CLEANING is required for the bed space (see section 3.3).

3.2 HAND HYGIENE

Staff members

3.2.1 Use liquid soap and water or alcohol gel before entering the room

3.2.2 Wear yellow apron and non-sterile gloves before having any contact with the patient and/or their environment. If there is no contact with the patient or environment, e.g. leaving a food tray, then apron and gloves will not be required.

3.2.3 Discard apron and gloves in the yellow bin and wash hands with liquid soap and water on LEAVING the room or between DIRTY and CLEAN procedures on the same patient.

Visitors

3.2.4 Use liquid soap and water or alcohol gel before entering the room.

3.2.5 On leaving the room, wash hands with liquid soap and water.

NB: Gloves and apron NOT required UNLESS involved with patient care or visiting other hospital patients.

Please see Whittington Hospital NHS Trust Guidelines:
'Hand Hygiene Policy'

3.3 ENVIRONMENTAL CLEANING

Daily

3.3.1 The side room should be treated as an infected area and requires daily cleaning with Actichlor Plus 1,000 ppm (1 tablet in 1 litre of water).

3.3.2 Commodes, en-suite / ward toilets and bathroom areas along with the ward sluice should be thoroughly cleaned with Actichlor Plus 10,000 ppm (10 tablets in 1 litre of water) after every use. Surfaces should be wiped or mopped twice with the solution, using a fresh cloth or mop for both occasions

3.3.3 Used linen should be treated as infected and double bagged in a red bag in accordance with the Linen Policy.

Terminal cleaning

3.3.4 All surface areas including locker, chair, table, lamp, doors, walls, floor, en-suite toilet and/or shower facility must be thoroughly cleaned with Actichlor Plus 1,000 ppm.

3.3.5 All re-usable clinical equipment must be cleaned and decontaminated with Actichlor Plus 1,000 ppm before returning to general use.

3.3.6 Mattress should be cleaned with Actichlor Plus 1,000 ppm or sent away for cleaning if heavily contaminated. Arrangement will need to be made for pressure mattress.

3.3.7 Curtains must be changed.

4. Outbreaks Policy

Definition:

A period of increased incidence (PII):
Two or more cases of *C.difficile* infection (occurring > 48 hours post admission) in a 28-day period on a ward.

An outbreak:
Two or more cases cause by the same strain related in time and place over a defined period that is based on the date of onset of the first case.

Actions to be undertaken following identification of a PII or outbreak:

a) Clinical director, Head of Nursing, matron, ward manager and directorate manager must be urgently informed.

b) The DIPC and/or the duty microbiologist with the clinical director and consultants will determine the need for an incident meeting, depending on the size and rate of growth of the PII.

c) All isolates from patients in the ward will be sent for PCR (polymerase chain reaction) ribotyping.

d) In an outbreak, the ward manager / charge nurse will complete a Clinical Incident Form and the senior manager will need to fill a Trust SUI (serious untoward incidents) form.

e) Restriction of admissions to and transfer from affected area(s) will be implemented.

f) The ward will be subjected to a root cause analysis.

g) An audit of outbreak management will be undertaken by the Infection control team utilising the DH Saving Lives *Clostridium difficile* High Impact Intervention (HII) tool.

➢ Contacts

During working hours (Monday to Friday, 09:00 – 17:00)

Infection Control team	ext. 3261 or bleep 2669
Bed Manager	air call via Whittington switchboard
Housekeeping / Domestics	ext. 5585 / 5558 / 5508
ST doctor in Microbiology	bleep 3069 or ext. 5085
Consultant Microbiologist	ext. 5082 / 3894
Lead Pharmacist, Antimicrobials	bleep 3138 or ext. 3732

Out of hours

Bed manager	air call via Whittington switchboard
On-call ST doctor in Microbiology	air call via Whittington switchboard
On-call pharmacist	air call via Whittington switchboard

➢ References

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- **Compliance with this guideline (how and when the guideline will be monitored e.g. audit and which committee the results will be reported to) Please use the tool provided at the end of this template**

Key aspects of the guidelines will be monitored as part of the annual antimicrobial audit programme.

➢ Appendix 1: Treatment Algorithm – 1st or 2nd Episode

ALGORITHM FOR THE TREATMENT OF 1ST OR 2ND EPISODE OF *CLOSTRIDIUM DIFFICILE* INFECTION

Diarrhoea not attributable to any other cause
AND clinically consistent with C. diff infection (CDI) **and/or** endoscopic evidence of pseudomembranous colitis

Initial management

- Discontinue precipitating antibiotic or substitute with antibiotic(s) with lower risk.
- Avoid drugs that may cause diarrhoea and PPIs, unless required acutely.
- Avoid antimotility agents e.g. loperamide and opioids
- Consider fluid resuscitation, electrolyte replacement and nutritional review.

Daily Assessment

Disease severity

Mild Disease	Moderate Disease	Severe Disease	Life Threatening
▪ < 3 episodes of diarrhoea per day ▪ No raised WCC	▪ 3 – 5 episodes of diarrhoea per day AND ▪ Raised WCC but < 15 x 10^9 / L	▪ WCC > 15 x 10^9 / L **or** ▪ Temperature > 38.5°C **or** ▪ Albumin < 25 g/L **or** ▪ Acute rising creatinine (>50% above baseline) **or** ▪ Evidence of severe colitis	▪ Hypotension (systolic BP < 95mgHg) **or** ▪ Partial / complete ileus **or** ▪ Toxic megacolon **or** ▪ CT evidence of severe disease

Mild / Moderate Disease
Metronidazole 400mg PO 8 hrly
for 10–14 days

Severe Disease
Vancomycin 500mg PO 6 hrly +
Metronidazole 500mg IV 8 hrly
for 10–14 days
DO NOT GIVE VANCOMYCIN INTRAVENOUSLY

Life Threatening
DISCUSS WITH MICROBIOLOGY
(also consult surgical and/or gastroenterology team)
Vancomycin 500mg PO 6 hrly +
Metronidazole 500mg IV 8 hrly
for 10–14 days
OR
Vancomycin 500mg PO 6 hrly +
Rifampicin 300mg PO 12 hrly
for 10–14 days
plus Human Immunoglobulin 400mg/kg IV stat.
Repeat at 21 days if necessary.

IF SYMPTOMS NOT IMPROVING OR WORSENING
Diarrhoea should resolve within 1– 2 weeks.
Therapeutic failure is not determined until treatment has been given for at least 1 week.

Refractory or Worsening Cases
Switch to: Vancomycin 500mg PO 6 hrly +
Metronidazole 500mg IV 8 hrly
for 10–14 days
DO NOT GIVE VANCOMYCIN INTRAVENOUSLY

Consult Microbiology, Surgical & Gastroenterology team

Consider adding the following only if approved by Microbiology (also consult surgical and/or gastroenterology team)

- ❑ Human immunoglobulin (Privigen®) 400mg/kg IV as a single dose. Repeat at 21 days if necessary.
- ❑ Intracolonic vancomycin 500mg given as a retention enema over 60 minutes every 4 – 12 hours.

➢ Appendix 2: Treatment Algorithm – 3rd or Subsequent Episode

ALGORITHM FOR THE TREATMENT OF RECURRENT (3RD OR SUBSEQUENT) EPISODE OF *CLOSTRIDIUM DIFFICILE* INFECTION

Diarrhoea not attributable to any other cause
AND clinically consistent with C. diff infection (CDI) **and/or** endoscopic evidence of pseudomembranous colitis

Initial management

- Discontinue precipitating antibiotic or substitute with antibiotic(s) with lower risk.
- Avoid drugs that may cause diarrhoea and PPIs, unless required acutely.
- Avoid antimotility agents e.g. loperamide and opioids
- Consider fluid resuscitation, electrolyte replacement and nutritional review.

Daily Assessment

Mild / Moderate Disease

Vancomycin 500mg PO 6 hourly for 14 days

DO NOT GIVE VANCOMYCIN INTRAVENOUSLY

Severe or Life Threatening Disease

See Appendix 1: Treatment Algorithm for 1st or 2nd Episode of *Clostridium Difficile*

Diarrhoea should resolve within 1– 2 weeks.
Recurrence occurs in around 20% after the 1st episode and 40 – 50% after the 2nd or 3rd episode.

Multiple Recurrences (especially if evidence of malnutrition, wasting, etc.)

Consider the following

Consult Microbiology/Surgical/Gastroenterology team regarding:

- ❑ Review ALL antimicrobial and other drug therapy e.g. consider stopping PPIs and/or other gastrointestinal active drugs.
- ❑ Trial of anti-motility agents alone if NO abdominal symptoms or signs of severe *Clostridium difficile* infection.

Obtain approval from Microbiology (also consult Surgical / Gastroenterology team) for:

- ❑ Vancomycin taper / pulse therapy.
- ❑ Human immunoglobulin (Privigen®) 400mg/kg IV as a single dose, especially if worsening albumin.
- ❑ Donor stool transplant.

➢ Appendix 3: Stool Record Chart

Whittington Health NHS

Patient Name: ……

Hospital Number: ……

STOOL CHART

Ward:…… DoB:……

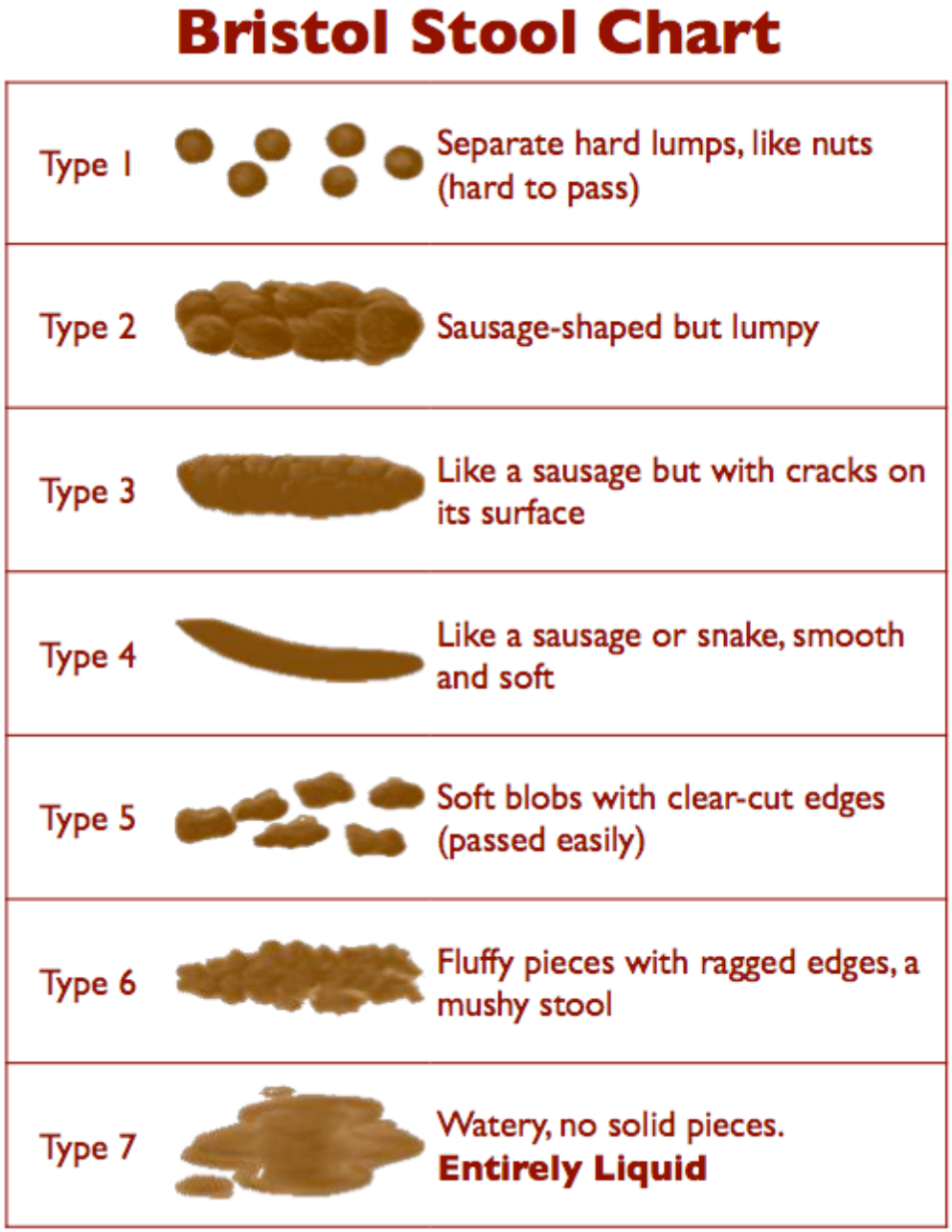
* Refer to Bristol Stool Scale chart in the dirty utility area for definitions of types 1 to 7

Scores 1-3: indicates constipation – encourage fluids and high fibre diet. Refer to doctors
Score 4: indicates a normal stool
Scores 5-7: indicates diarrhoea – commence source isolation procedures, send a specimen for MC&S and inform nurse in charge and doctor

Date	Time	Volume	* Bristol stool type 1 – 7	Colour	Blood	Mucus	Contains food particles	Occult blood	Signature & print name	Job title

➢ Appendix 4: Bristol Stool Scale Chart

The Bristol Stool Chart or Bristol Stool Scale is a medical aid designed to classify faeces into seven groups. It was developed by K. W. Heaton and S. J. Lewis at the University of Bristol and was first published in the Scandinavian Journal of Gastroenterology in 1997. The form of the stool depends on the time it spends in the colon.



Appendix 5: DIARROHEA / C DIFFICILE PRECAUTIONS - NURSING CORE CARE PLAN

NAME: HOSP. No: WARD

PROBLEM NUMBER: **(one per page)**

Date & Time	PATIENT PROBLEM/NEED	RN SIGNATURE	Review Date
	…… has diarrhoea		
	Diarrhoea symptoms commenced on ……(date)		
	(bristol score 5 – 7)		
Date & Time	**GOAL/AIM**	**RN SIGNATURE**	**Review Date**
	Minimise the risk of cross infection and contamination from		
	diarrhoea		
Date & Time	**PLANNED NURSING INTERVENTIONS**	**RN SIGNATURE**	**Review Date**
	a. Introduce yourself - initiate patient /nurse relationship		
	1. Specimens		
	a. Date stool specimen sent……..		
	2. Documentation and Communication		
	c. Inform doctor of diarrhoea ☐		
	d. Inform patient / relatives of reason for isolation ☐		
	e. Commence stool chart ☐		
	f. Commence fluid balance chart ☐		
	g. Record result in clinical notes ☐		
	h. Record result in nursing handover sheet ☐		
	i. Inform doctor of result ☐		
	j. Inform patient/relatives of result & give reassurance ☐		
	If confirmed GHD or C. Diff give appropriate leaflet		
	3. Isolation (transmission precautions)		
	k. Nurse patient in side room as soon as symptoms develop		
	(Do not wait for diagnosis) reassure your patient		
	l. If en-suite side room not available designate a commode		
	for patient (Keep in room)		
	m. Isolation sign on door ☐		
	n. Yellow aprons & gloves outside door/on trolley		
	o. Orange bags in room or cohort bay		
	p. Sink- soap and paper towels available in room		
	q. Alcohol gel available outside room		
	4. Hygiene (Remind all staff and visitors)		
	Use hand gel or hand wash before entering room or bay		
	s. Wear apron and gloves before any contact with patient or		
	environment		
	t. Discard apron & gloves in orange bin and wash hands		
	before leaving room or between procedures on same patient		
	u. Use alcohol hand rub after leaving the room		

*Location record to be completed for **ALL patients***

Date	Ward	*Location in ward	Bed / SR No	Reason patient was moved
				Original location when diarrhoea started:

*Location key: **a** = side room **b** = cohort bay **c** = open bay *GDH / C diff information overleaf*

confirm I have discussed this care plan with…….signed…….designation……

Information

Glutamate Dehydrogenase (GHD) Positive result
GHD positive result means that there is Clostridium Difficile (C Diff) present in the bowel, that is colonisation.
Being GHD positive does not mean that diarrhoea is caused by C. Diff (unless the stool also contains C. Diff toxins)
Patient will need to be isolated and precautions taken

Clostridium Difficile (C Diff) toxin positive result
If the specimen is GHD positive it will automatically be further tested for C Diff toxins.
A specimen that is C. Diff positive means that the diarrhoea is caused by C. Diff infection. This means the C. Diff colonisation has multiplied to cause infection.
Patient will need to be isolated and precautions taken.

GDH	Toxin	Result	Nursing location
Negative	N/A	Diarrhoea is not caused by C difficile	Standard precautions
Positive	Negative	C difficile present but is not causing infection	Isolation/cohort
Positive	Positive	C difficile is causing the infective diarrhoea	Isolation/cohort

Repeat stool specimens
Repeated diarrhoea stool specimens sent within 28 days of a positive C. Diff stool result will not be processed again for clostridium difficile toxins.

De-Isolation
Your patient can come out of the side room if:
1. They have not had diarrhoea for **48 hours**
2. **PLUS** – very importantly – they have passed a normal formed stool (Bristol score 1-4)

Diarrhoea recommences in positive patient
It is possible for the patient to suffer from diarrhoea again. Should this occur then they must be returned to isolation again. (Commence new care plan.)

Transferring a GHD positive and / or C diff positive patient to another care facility
- Notify the receiving area in advance
- Notify the ambulance crew in advance

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval

		Yes/No	Comments
1.	**Does the procedural document affect one group less or more favourably than another on the basis of:**		
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Culture	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability - learning disabilities, physical disability, sensory impairment and mental health problems	No	
2.	**Is there any evidence that some groups are affected differently?**	No	
3.	**If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?**	No	
4.	**Is the impact of the procedural document likely to be negative?**	No	
5.	**If so can the impact be avoided?**	N/A	
6.	**What alternatives are there to achieving the procedural document without the impact?**	N/A	
7.	**Can we reduce the impact by taking different action?**	N/A	

If you have identified a potential discriminatory impact of this procedural document, please refer it to the Director of Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact the Director of Human Resources.

Checklist for the Review and Approval of Procedural Document

To be completed and attached to any procedural document when submitted to the relevant committee for consideration and approval.

	Title of document being reviewed:	Yes/No	Comments
1.	**Title**		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	**Rationale**		
	Are reasons for development of the document stated?	Yes	
3.	**Development Process**		
	Is it clear that the relevant people/groups have been involved in the development of the document?	Yes	
	Are people involved in the development?	Yes	
	Is there evidence of consultation with stakeholders and users?	Yes	
4.	**Content**		
	Is the objective of the document clear?	Yes	
	Is the target population clear and unambiguous?	Yes	
	Are the intended outcomes described?	Yes	
5.	**Evidence Base**		
	Are key references cited in full?	N/A	
	Are supporting documents referenced?	N/A	
6.	**Approval**		
	Does the document identify which committee/ group will approve it?	Yes	
7.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	Yes	
8.	**Document Control**		
	Does the document identify where it will be held?	Yes	
9.	**Process to Monitor Compliance and Effectiveness**		
	Are there measurable standards or KPIs to support the monitoring of compliance with	Yes	

	Title of document being reviewed:	Yes/No	Comments
	and effectiveness of the document?		
	Is there a plan to review or audit compliance with the document?	Yes	
10.	**Review Date**		
	Is the review date identified?	Yes	
	Is the frequency of review identified? If so is it acceptable?	Yes	
11.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for co-ordinating the dissemination, implementation and review of the document?	Yes	

Executive Sponsor Approval			
If you approve the document, please sign and date it and forward to the author. Procedural documents will not be forwarded for ratification without Executive Sponsor Approval			
Name		Date	
Signature			
Relevant Committee Approval			
The Director of Nursing and Patient Experience's signature below confirms that this procedural document was ratified by the appropriate Governance Committee.			
Name		Date	
Signature			
Responsible Committee Approval – only applies to reviewed procedural documents with minor changes			
The Committee Chair's signature below confirms that this procedural document was ratified by the responsible Committee			
Name		Date	
Name of Committee		Name & role of Committee Chair	
Signature			

Tool to Develop Monitoring Arrangements for Policies and Guidelines

What key element(s) need(s) monitoring as per local approved policy or guidance?	Who will lead on this aspect of monitoring? Name the lead and what is the role of the multidisciplinary team or others if any.	What tool will be used to monitor/check/observe/Assess /inspect/ authenticate that everything is working according to this key element from the approved policy?	How often is the need to monitor each element? How often is the need complete a report ? How often is the need to share the report?	What committee will the completed report go to?
Element to be monitored	**Lead**	**Tool**	**Frequency**	**Reporting arrangements**
• Compliance with infection control measures • Compliance with antibacterial treatment guideline	• Infection Control Team with support from the Visible Leadership Team (VLT). • DIPC & Lead Antimicrobials Pharmacist with support from Microbiology and Pharmacy.	• In house audit tools. • Infection control dashboard. • Targeted ward antibacterial prescribing score card.	Refer to infection control & antibacterial audit programme	• Infection Prevention & Control Committee (IPCC) • Antimicrobial Steering Group (ASG)