

<b><i>Clostridium difficile</i> Infection</b>			
<b>Statement of Intent</b>	To give clear infection prevention and control guidance for the management of confirmed or suspected <i>Clostridium difficile</i> infection.		
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<b>Author</b>	Infection Prevention and Control Team (with thanks to Great Western Hospitals NHS Trust)		
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<b>Care Quality Commission</b>	Regulation 12: Cleanliness and Infection Control		
<b>Equality &amp; Diversity</b>	SBC is committed to promoting equality in all its responsibilities - as a provider of services, as a partner in the local economy and as an employer. This policy will contribute to ensuring that all clients, potential clients and employees are treated fairly and respectfully with regard to the protected characteristics of age, disability, gender reassignment, marriage or civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation.		

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## 1. Document definitions

## 1.1 Introduction

*Clostridium difficile* infection is a known healthcare associated infection, most symptomatic Service users affected present with green, **offensive** smelling diarrhoea. The causative bacterium is able to form a spore outside of the body which can remain dormant in the environment for months or even years. This document details the procedures to follow for managing and preventing cases including clinical treatment regimens and decontamination requirements.

## 1.2 Glossary/definitions

For a minority of Service users a positive *Clostridium difficile* result does not necessarily indicate active *C. difficile* infection as between 7% and 26% of elderly adult patients in hospitals may be asymptomatic carriers of *C. difficile*<sup>5</sup> and for those under 2 years of age *Clostridium difficile* is part of their normal gut flora.

*Clostridium difficile* is a spore-producing bacterium that may be found in the environment and as part of the normal faecal flora without causing symptoms. The bacterium produces toxins, which damage the gut and is the major infectious cause of diarrhoea that is acquired in hospitals in the UK.

***Clostridium difficile* Infection (CDI) is defined as:** One episode of diarrhoea, defined either as stool loose enough to take the shape of a container or Bristol stool chart types 5-7, and that occurs at the same time as a positive toxin assay and/ or endoscopic evidence of pseudomembranous colitis (PMC). CDI is associated with the use of antibiotics and causes a spectrum of disease from mild diarrhoea to severe and life threatening conditions.

**Cohort nursing:** the practice of nursing together more than one Service user with the same infection together.

**Diarrhoea:** An abnormally frequent discharge of semisolid or fluid faecal matter from the bowel. Bristol Stool Chart type 5-7 stools are classified as diarrhoea.

**Director of Infection Prevention and Control: DIPC**

**Great Western Hospital: GWH**

**Great Western Hospital Foundation Trust: GWHFT**

**Hand hygiene:** a general term referring to any action of hand cleansing.

**Immunosuppression:** Impaired immune response that renders the host particularly susceptible to infection: May be due to age; impaired anatomical barriers (wounds, indwelling medical devices); impaired cellular or host defence: genetic or acquired, underlying malignancy, chronic infection, immunosuppressive drugs.

**Infection Prevention and Control Team: IP&C**

***Clostridium difficile* Multi-disciplinary team:** consists of a Consultant microbiologist, consultant gastroenterologist, IP&C specialist nurse, dietitian and a pharmacy technician.

**Pseudomembranous colitis:** a potentially fatal condition where tissue damage results in pseudo membrane formation within the bowel.

**Toxic megacolon (*megacolon toxicum*)** is a life-threatening complication of other intestinal conditions. It is characterized by a very, dilated colon, accompanied by abdominal distension, bloating and sometimes fever, abdominal pain or shock.

**White cell count:** WCC

**Proton Pump Inhibitors:** PPI

**Period of Increased Incidence:** PII

**SBC Clinical incident reporting system:** Sentinel

**Serious incident:** SI

**Department of Health's High Impact Intervention Care Bundles:** HII

## 2. Main content details

### 2.1 Background Information

*Clostridium difficile* is a spore-producing bacterium that may be found in the environment and as part of the normal faecal flora. The bacterium produces toxins, which damage the gut and is a major infectious cause of diarrhoea that is acquired in hospitals in the UK. *Clostridium difficile* infection (CDI) is associated with the use of antibiotics and causes a spectrum of disease from mild diarrhoea to severe and life threatening conditions.

Incubation can be up to several weeks (4-8) after antibiotic exposure but normally either during the antibiotic course or within 1-2 weeks of its end.

Clinical signs and symptoms may include abdominal pain, profuse, foul smelling soft stools, and fever. Explosive diarrhoea, mucous and blood may be present. Other symptoms include high white blood cell counts, lower abdominal pain and systemic symptoms such as fever, nausea and malaise. In severe cases of infection; diarrhoea may not be prominent. In some cases there is severe inflammation of the colon (known as pseudomembranous colitis) and occasionally toxic megacolon which in extreme cases can result in death.

CDI is transmitted by clostridial spores, which are shed in large numbers by infected Service users and are resistant to drying, heat and many disinfectants. Therefore, they may survive in the environment for long periods and may be transmitted to other Service users via hands of colleagues or inanimate objects.

Those particularly at risk of *Clostridium difficile* infection include:

- Those over 65 years of age.
- People who have recently undergone bowel surgery.
- People with serious underlying diseases.
- Those that have had a recent course (within the previous four weeks) or repeated courses of antibiotics.
- Immunosuppressed Service users.

## 2.2 Prevention of *Clostridium difficile* infection

Prevention of CDI relies on preventing, as far as possible, Service users' exposure to the organism, and ensuring they do not become susceptible through disruption of the normal gut flora which in turn allows germination of *Clostridium difficile* spores.

Thus, intervention for control of CDI can be divided into:

- A) Infection Prevention and Control Precautions
- B) Prudent Antibiotic Prescribing

The Great Western Hospital has developed restrictive antibiotic guidelines that use narrow spectrum agents alone or in combination for empirical and definitive treatment where appropriate. Please seek advice from the Antimicrobial management team/microbiologist/pharmacist on choice of antibiotics if needed. Please see the GWH antibiotic website and the antibiotic policy for more details. Within SBC settings the NHS Wiltshire, BANES and Swindon Guidelines for Antibiotic Prescribing in the Community must be followed. These guidelines avoid the use of Clindamycin and second- and third-generation cephalosporins (especially in the elderly) and minimise the use of fluoroquinolones, carbapenems and prolonged courses of antibiotics.

### Potential for antibiotics to cause CDI

High Risk	Medium Risk	Low risk
Cephalosporins	Amoxicillin	Aminoglycoside
Clindamycin	Co-trimoxazole	Metronidazole
Meropenem	Macrolides	Tazocin
Fluoroquinolones	Tetracyclines	Penicillin / Flucloxacillin
	Trimethoprim	Rifampicin
	Co-amoxiclav	Glycopeptides

## 2.3 Management of potentially infectious diarrhoea

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

S	Suspect that a case may be infective where there is no clear alternative cause for diarrhoea
I	Isolate the Service user and consult with the infection prevention and control team (IP&CT) while determining the cause of the diarrhoea
G	Gloves and aprons must be used for all contacts with the Service user and their environment
H	Hand washing with soap and water should be carried out before and after each contact with the Service user and the Service user's environment
T	Test the stool for toxin, by sending a specimen immediately

## 2.4 Specimen collection for *Clostridium difficile* toxin testing

<b>Diagnostic Testing Procedures</b>	
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1	How the diagnostic test is requested and recorded	<p>Send stool specimen in a blue-topped universal container to microbiology for <i>Clostridium difficile</i> toxin (CDT) stating clinical details and any antibiotic treatment given. (N.B. Samples will be rejected by the laboratory if they have leaked in transit, there is evidence of external contamination of the container, or if an inappropriate container has been used.</p> <p>Samples from children under the age of two will not be tested for <i>Clostridium difficile</i>.</p> <p>Check computer for previous results/check if service user has had a recent sample sent to another laboratory</p> <p>Formed stools will not be tested; only send liquid/loose stools that take the shape of the container used to sample it. (Bristol Stool Chart type 5-7)</p> <p>More than one test per service user may be required if the first test is negative, but where there is a strong clinical suspicion of <i>Clostridium difficile</i> infection. Retest a second sample 24 hours later. Further tests might be necessary in light of clinical evidence.</p> <p>Service user with positive results in the last month (28 days) will not be re-tested unless discussed with Microbiologist.</p> <p>Do not send specimens for clearance of <i>Clostridium difficile</i>.</p> <p>Service users with positive results in the last 28 days will not be re-tested.</p>
2	How the clinician treating the service user is informed of the result, including timescales	<p>Testing is carried out daily, specimens received and booked into the laboratory before 11:00 will be tested the same day.</p>
3	How the Service user is informed of the result, including timescales	<p>The service user must be informed of the result by clinical staff responsible for their care. An information leaflet must be given and explained to the service user.</p>
4	Actions to be taken by the clinician including timescales and this is recorded	<p>Clinician must <b>Start treatment for <i>Clostridium difficile</i> diarrhoea see treatment section.</b></p> <p>Start enteric precautions including single room isolation (This should be completed upon taking stool sample).</p> <p>The door to the isolation facility should remain closed. When this is considered detrimental to other aspects of the service users care, decisions must be informed by risk assessments and documented within the patient record.</p> <p>Stop implicated antibiotics if possible - <b>Contact Microbiology for advice if service user still needs antibiotics.</b></p> <p>Investigate for other causes of diarrhoea e.g. tube feeds, antacids, laxatives</p> <p>Stop anti-motility drugs e.g. Loperamide, codeine (<b>they should not be given to counteract diarrhoea resulting from <i>Clostridium difficile</i> infection or infectious diarrhoea</b>) and laxatives.</p> <p>Supportive measures if indicated i.e. adequate fluid and electrolyte replacement.</p> <p><b>If original sample tested <i>Clostridium difficile</i> toxin negative. Consider repeating after 24 hours if diarrhoea persists and is</b></p>

		suggestive of <i>Clostridium difficile</i> infection (green and smell). Consideration should be given to continuing Metronidazole, please discuss with microbiologist.
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**2.5 Management for Service users with diarrhoea suggestive of *Clostridium difficile* within managed care facilities e.g. in SBC Complex health care team managed service users (Stool smell/green appearance) (see appendix B)**

If an infectious cause for diarrhoea has not been excluded the Service user must be isolated immediately and a stool specimen sent for culture and *Clostridium difficile* toxin testing. *Clostridium difficile* diarrhoea can present alongside other attributable causes for diarrhoea e.g. melaena, laxatives and antibiotics.

- Start enteric precautions including single room isolation, this could be own bedroom in a home setting. The door to the isolation room should remain closed. When this is considered detrimental to other aspects of the Service user's care, decisions must be informed by risk assessments and documented within the Service user record.
- Stop implicated antibiotics if possible - **Contact Microbiology for advice if Service user still needs antibiotics.**
- **Start treatment for *Clostridium difficile* diarrhoea - see treatment section.** If resident in care home inform GP
- Investigate for other causes of diarrhoea e.g. tube feeds, antacids, laxatives
- Stop anti-motility drugs e.g. Loperamide, codeine (they should not be given to counteract diarrhoea resulting from *Clostridium difficile* infection or infectious diarrhoea) and laxatives. In case of care home residents GP should be asked to advise before stopping medications
- Supportive measures if indicated i.e. adequate fluid and electrolyte replacement.
- **If original sample tested *Clostridium difficile* toxin negative. Consider repeating after 24 hours if diarrhoea persists and is suggestive of *Clostridium difficile* infection (green and smell). Consideration should be given to continuing Metronidazole, please discuss with microbiologist. In case of home residents GP will advise**

**2.6 Definition of *Clostridium difficile* infection (CDI)**

One episode of diarrhoea, defined either as stool loose enough to take the shape of a container or Bristol stool chart types 5-7, and that occurs at the same time as a positive toxin assay and / or endoscopic evidence of pseudomembranous colitis (PMC).

**N.B. For a minority of Service users a positive *Clostridium difficile* result does not necessarily indicate active *Clostridium difficile* infection as 3% of adults and for those under 2 years of age *Clostridium difficile* is part of their normal gut flora.**

Service users with positive results in the last 28 days will not be tested.

**2.7 Infection Control Principles to be applied for the management of service users with CDI**

Four main Infection Control factors have been identified as being necessary to reduce the incidence of CDI, which if rigorously applied, would reduce the risk of Service user acquiring an infection and include:

- Isolation of infected Service users

- Use of Personal Protective Equipment (PPE)
- Hand hygiene (**always wash hands with soap and water as alcohol gel is not effective against *Clostridium difficile* spores**)
- Enhanced environmental cleaning

#### **Isolation of infected Service users**

- Service users with diarrhoea should be nursed in single rooms with en-suite facilities (refer to isolation policy). The door must remain shut, unless this compromises Service user safety.
- When a single room is not immediately available implement isolation precautions around the infected Service user's bed space.
- SBC staff to contact Infection Prevention and Control Team (IPCT) or Manager on-call for assistance and information sharing.
- **Service users with diarrhoea should not be transferred unless this is agreed by Infection Prevention and Control.**
- **In the case of home residents requiring admission to GWH an inter health transfer form should be completed**
- Where Service users need to attend departments for essential investigations, the receiving area should be notified of the Service user's CDI status. Arrangements should be put in place to minimise the Service user's waiting time and hence contact with other Service users.

#### **Personal Protective Equipment (PPE)**

- Appropriate PPE, for example, plastic aprons and gloves **must** be worn for all Service user contacts, and when cleaning Service user equipment or their environment. Used gloves and aprons should be disposed of in an 'orange' clinical waste bag or yellow bag in the case of homes

#### **Hand hygiene**

- Hands must be **washed with soap and water** following removal of gloves and before and after contact with the Service user and equipment (alcohol gel is not effective against *Clostridium difficile* spores).
- Service users must be offered hand washing facilities after toilet/commode use and before meals.

#### **Information for Service users and Visitors**

Service users and their visitors should be given verbal and written information in an appropriate manner. The importance of adherence to this and the isolation policy must be stressed to all relevant Service users and visitors and their support and engagement secured. Visitors who are considered to be more vulnerable to infection i.e. immunosuppressed and the very young should be discouraged from visiting where possible.

Service users should be advised to maintain good hand hygiene after using the toilet and before eating. Fingernails should be kept clean. These measures aim to prevent re-lapses of the infection. Nursing/care colleagues are required to assist Service user as appropriate.

#### **Environmental cleaning**

- A commode/toilet should be designated for the symptomatic Service user's own use.
- Commodes must be decontaminated following each use, using detergent followed by a chlorine based product (at least 1000 ppm available chlorine) or with a sporicidal

solution/wipe paying particular attention to all surfaces including under the seat and armrests.

- The Service user's room and bathroom including commodes/toilet must be thoroughly cleaned twice daily using detergent and chlorine 1000ppm solution or with a sporicidal solution or wipe. All cleaning equipment e.g. mop buckets should be single use or designated for sole use in the affected resident's room and any used articles; rubbish dust etc. must be disposed of appropriately and not transferred to a clean area. Bed linen should be changed at least daily while Service user remains in isolation. Bed linen should be classed as infected linen.
- Rooms of infected Service users must have a special/ or post infection clean with curtain change once vacated.. For further advice contact IP&CT.
- During outbreaks disinfection should be undertaken using chlorine based products (at least 1000 ppm available chlorine) and cleaning needs to be increased to twice daily.
- The Service user should remain isolated until there has been no diarrhoea (types 5-7 on the Bristol Stool Chart) for at least 72 hours, and a formed stool has been achieved (types 1-4). A clinical review must be undertaken in conjunction with medical, nursing or care staff, and IP&C staff prior to discontinuing isolation of the Service user.

**Monitoring of the service user in homes will be undertaken jointly by the care team and GP**

### **Deceased Service users**

Infection control precautions for handling deceased Service users are the same as those used when the Service user is alive. Faecal soiling around the deceased Service user should be cleaned first with detergent and then with a chlorine containing cleaning agent or sporicidal product. Plastic body bags are not necessary. Please refer to the Standard Infection Control Precautions.

### **2.8 Treatment for *Clostridium difficile* Infection**

Doctors should grade each case for severity, treating accordingly and reviewing each Service user daily, and monitoring bowel function using the Bristol Stool Chart.

CDI should be managed as a diagnosis in its own right, with each Service user reviewed daily regarding fluid resuscitation, electrolyte replacement and nutrition review.

Monitor for signs of increasing severity of disease and make an early referral if necessary to the Acute Trust as Service users may deteriorate rapidly.

### **Medication review**

- All antibiotics that are clearly not required should be stopped, as should other drugs that may cause diarrhoea e.g. laxatives. Does the Service user need an antibiotic? Review evidence for infection. State clearly in the medical notes the indication for the antibiotic - be precise e.g. 'moderate pneumonia community acquired CURB score 2' and not 'Chest infection'
- Avoid anti-motility drugs.
- Consider other causes for the diarrhoea e.g. drugs - see Appendix F, lactose intolerance, overflow diarrhoea.

- Review the need for proton pump inhibitors e.g. Omeprazole, Lansoprazole or H2 antagonists e.g. Ranitidine - they increase the risk of *Clostridium difficile* re-infection *and relapse*.
- Use a narrow spectrum antibiotic when possible. Where a broad spectrum antibiotic has to be used empirically, review choice as soon as cultures and sensitivities become available.
- Longer courses increase the risk of *Clostridium difficile*. Service users treated with less than 3 days of antibiotics have significantly lower incidence of CDI than those on longer courses.
- Review need for all antibiotics daily.
- Consider IV to oral switch as soon as possible and after 24-48 hours.
- Indicate a stop date on the drug chart for antibiotic treatment at the point of prescribing.
- All antibiotics have the potential to induce CDI. Some have been more implicated than others (see table).
- Overlong surgical antibiotic prophylaxis is associated with diarrhoea and increased length of stay.
- Restricted broad spectrum antibiotics should only be used when indicated by the Service user's clinical condition, and should be reviewed on results of microbiological testing or according to the local sensitivities of causative organisms.
- Use of any restricted antibiotics must be discussed with a consultant microbiologist.
- All consultants/clinicians should be responsible for reviewing antibiotic prescriptions on all their ward rounds, stopping unnecessary prescriptions and changing those that do not comply with the guidelines, as should their juniors on their own ward rounds.
- Antibiotics started inappropriately or without sufficient evidence should be stopped. Evidence of infection (i.e. the reason for administering antibiotics) should be clearly documented in the clinical record.
- **For community Service users:** GP's should follow the NHS Wiltshire BaNES and Swindon Guidelines for Antibiotic Prescribing in the Community

### Classification of severity of *Clostridium difficile* infection

- Assess the severity of CDI **each day** and treat according to severity.
- **Mild CDI** is not associated with a raised WCC; it is typically associated with <3 stools of types 5-7 on the Bristol Stool Chart per day. Treatment: oral Metronidazole 400 mgs tds for 10 days.
- **Moderate CDI** is associated with a raised WCC that is  $<15 \times 10^9/L$ ; it is typically associated with 3-5 stools per day. Treatment: oral Metronidazole 400 mgs tds for 10 days.
- **Severe CDI** is associated with a WCC  $>15 \times 10^9/L$ , or an acute rising serum creatinine (i.e. >50% increase above baseline), or a temperature of  $>38.5^\circ C$ , or evidence of severe colitis (abdominal or radiological signs). The number of stools may be a less reliable indicator of severity. Treatment: oral Vancomycin 125 mgs qds for 10 days. In severe CDI cases not responding to oral Vancomycin 125 mgs qds, high dosage oral Vancomycin (up to 500 mgs qds) and other treatment options should only be used after discussion with a Consultant Microbiologist.
- **Life threatening CDI** includes hypotension, partial or complete ileus or toxic megacolon, or CT evidence of severe disease. Treatment-oral Vancomycin up to 500 mgs qds for 10 days via nasogastric tube (if not swallowing) plus IV Metronidazole 500 mgs tds. These and other treatment options should only be used after discussion with a Consultant Microbiologist. Such Service users should be closely monitored, with specialist surgical input, and should have their blood lactate measured.

**N.B IV Metronidazole is an alternative to oral only if Service user is nil by mouth.**

**Vancomycin should NOT be given IV for CDI, it is possible to administer Vancomycin injection orally for those unable to swallow capsules (see pharmacy intranet for more information).**

Live yogurts and yeast preparations - at this point there is insufficient data to recommend their use. In addition, they can pose a risk to immuno-compromised Service users.

**Anti-diarrhoeal agents are contraindicated in this infection as they prolong excretion of the organism.**

## **2.9 Relapse/Re-infection**

- 20-30% of Service users will relapse, many due to re-infection.
- Repeat Metronidazole course unless Service user has received Metronidazole in the last 28 days, then treat with oral Vancomycin 125mg qds for 10 days. If second course of Vancomycin consider increasing dose as per treatment guidelines above.
- If Service user not responding to second course or repeatedly relapsing see appendix C and contact Consultant Microbiologist for further advice. Contact GP in case of care home residents
- Service users should be advised to maintain good hand hygiene after toileting and before meals. Nails should be kept clean. These measures may help to prevent self re-infection.
- Proton pump inhibitors (PPI's) increase relapse rates and possibly reinfection

## **2.10 Transfers**

**Service users with diarrhoea should not be transferred to other wards/areas, unless agreed by Infection Prevention and Control.**

Transfers to other services where necessary for Service user care must be discussed with the Infection Prevention and Control Team. When Service users with CDI are being transferred to another hospital, clinical colleagues must ensure that the receiving area is aware verbally and in writing (using the inter health transfer form or transfer letter) of the Service user's status and the Infection Prevention and Control team should be informed. The transport provider must also be informed; this needs to happen before the transfer takes place. In cases of care home residents requiring transfer to another health or social care setting an inter health transfer form should be completed

## **2.11 Recovered**

**Do not send specimens to assess whether a Service user has recovered from *Clostridium difficile*. Once a Service user has positive specimens for *Clostridium difficile* these will remain positive for at least a month so there is a policy of not retesting during this period.**

**Service users can come out of isolation once the diarrhoea has stopped for 72 hours and have a formed stool (type 4 or less), regardless of *Clostridium difficile* toxin result. Please consult with IP&C before discontinuing isolation where practicable.**

## 2.12 Reporting

An incident report and Root Cause Analysis (RCA) will be completed for all appropriate community acquired cases.

The completed RCA should be sent to the IPCT and Director for Infection Prevention & Control within 2 weeks of diagnosis.

Typing of isolates will be carried out on request if appropriate. This will usually be in more severe clinical cases or during a Period of Increased Incidence. Typing will be arranged by IPCT and Microbiology.

## 2.13 Surveillance and Typing

**Mandatory Surveillance is done by the Department of Health:**

### a) **Mandatory *Clostridium difficile* infection(CDI) Surveillance Scheme:**

The Great Western Hospital (GWH) Trust is required to report all cases of CDI in Service users aged 2 years and over. This applies to whether the *Clostridium difficile* is considered to have been acquired in GWH, in another hospital or in the community. A case is defined as a Service user with a diarrhoeal specimen that tests positive for *Clostridium difficile* toxin (where the Service user has not been diagnosed with CDI in the preceding four weeks). *Clostridium difficile* infections will be apportioned in accordance with HPA guidelines.

### b) **Random Sampling Scheme:**

The GWH Trust is required to submit isolates to the Anaerobic Reference Laboratory in accordance with a national sampling schedule when requested. The aim is to increase the identification of *Clostridium difficile* strains and assess their susceptibilities to antibiotics. This will be organised by Microbiology when required.

### c) **Outbreak Reporting:**

An outbreak is defined as infections which involve presumed transmission within hospital of 2 or more cases that have epidemiological evidence that they are linked.

Outbreaks of CDI should be reported to the Health Protection Agency. This will be done by IP&CT and/or Microbiology.

The *Clostridium difficile* figures relating to inpatients of all ages are monitored by the IP&CT who produce weekly and monthly surveillance reports.

### d) **Typing:**

Typing of isolates will be done if requested (see above) or if appropriate for other reasons. This will usually be in more severe clinical cases or in a particular outbreak situation or if there is an increase in frequency or severity of cases of CDI or if there is an increase in mortality or an increase in the recurrence rate. Typing will be arranged by IP&CT and Microbiology.

### **3. Duties and responsibilities of individuals and groups**

#### **3.1 Corporate Responsibility IN RARE EVENT OF AN OCCURENCE**

- SBC has a responsibility to promote a high level of compliance with best practice. SBC will support and encourage compliance by:
- Participating in DH mandatory reporting systems for CDI.
- Reporting any associated serious incidents to commissioners.
- Supporting mandatory education at induction and appropriate updates.
- Ensuring appropriate isolation facilities are provided for the isolation of Service users with suspected or confirmed CDI, e.g. suitable isolation facilities, hand wash basins.
- Involving the Infection Control Team in the planning process for new construction and refurbishment work so that advice can be given on appropriate isolation facilities.

#### **3.2 Operational Coordinators and team leaders responsibilities**

Operational Coordinators have a responsibility to actively encourage compliance with these procedures by all colleague groups.

- Ensure that all colleagues undertake and complete infection control training and updates.
- Provide facilities and equipment for the appropriate isolation and associated decontamination/ cleaning requirements as detailed in this procedure.
- Ensure the provision of infection control training and the release of colleague to undertake training.
- Complete root cause analysis investigations in collaboration with the IP&CT for feedback through Quality, Safety and Performance Unit.

#### **3.3 Infection Prevention and Control Team (IP&CT) responsibilities**

- Provide advice on appropriate placement and infection control precautions for Service users with suspected or confirmed CDI.
- Inform risk management of any incidents relating to CDI e.g. SEQOL attributable cases, serious incidents.
- Update Service user infection control alerts appropriately.
- Produce timely feedback on surveillance of CDI, serious incidents, period increased incidences root cause analysis investigations at the Quality, Safety and Performance Unit.
- Provide education to the Infection Control Link Networkers.
- Co-ordinate the implementation and review of this procedure.
- Liaise with Health Protection Agency During PII and outbreaks

#### **3.4 Microbiology staff (GWH)**

- Ensure that testing for CDI is available 7 days per week
- Ensure that *Clostridium difficile* laboratory results are communicated promptly to clinical teams
- Provide timely advice to clinicians regarding appropriate treatment.

### 3.5 Community nursing/care colleague responsibilities

- Ensure that Service users with suspected infective diarrhoea are identified promptly, reported to the infection control team and isolated in single room accommodation.
- Obtain faecal sample for *Clostridium difficile* testing promptly and send to microbiology laboratory.
- Record bowel movements using the Bristol Stool Chart
- Ensure that visitors are advised of any necessary infection control precautions required of them when visiting a Service user with suspected or confirmed CDI
- Administer prescribed treatment for CDI.
- Ensure that enhanced cleaning and decontamination procedures are followed.
- Risk assess any issues that may compete with the Service user being able to be isolated in a side room with the door shut e.g. risk of falls, depression, claustrophobia. Discuss with Infection control specialists and medical staff responsible for Service user and document any decisions made in the Service user's notes.
- Complete *Clostridium difficile* care bundle within 24hours of a Service user being identified (with support from IP&CT)

### 3.6 GP lead and other medical colleague responsibilities

- Use antimicrobial agents prudently.
- SBC community setting should use the NHS Wiltshire, BANES and Swindon Guidelines for Antibiotic Prescribing in the Community
- Commence treatment of Service users with confirmed CDI in accordance with this procedure or microbiology advice.
- Ensure that all Service users with CDI are kept under review by Consultant Microbiologist and other specialists with an interest in *Clostridium difficile* e.g. Gastroenterologist, *Clostridium difficile* Multi-disciplinary team.

### 3.10 Individual responsibility

- All colleagues have a personal and corporate obligation to comply with best practice in the prevention of infection and comply with this and all other infection control related policy and procedures.

## 4. Education and training requirements

It is important that there is a mechanism to ensure relevant colleagues are educated and trained in respect of the requirements of any documents, policies and associated procedures that affect them in their work.

### Education and training plan

Education and training specific to *C. difficile* management will be offered through the Infection Control Link Network and it is the responsibility of the link workers to ensure colleagues in their service are kept updated.

Mandatory Infection Prevention and Control training is provided via SBC self-learning booklet.

All clinical colleagues should receive an annual update in Infection Prevention & Control clinical practice;

**This can be achieved in any of the following ways;**

- Attending clinical skills training
- Updating clinical skills competency statement
- Self-directed learning and reflective practice
- Attending face to face IP&C training sessions
- Attending ICLN meetings
- Attending IP&C study day
- Undertaking Essential Steps to clean, safe care bundles

## 5. References, further reading and links to other policies

The following is a list of other policies, procedural documents or guidance documents (internal or external) which colleague should refer to for further details:

Ref. No.	Document Title	Document Location
1	Updated guidance in the diagnosis and reporting of <i>Clostridium difficile</i>	<a href="http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_132927">http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_132927</a>
1	Isolating patients with healthcare associated infection - a summary of best practice. Department of Health 2007	<a href="http://hcai.dh.gov.uk/files/2011/03/Document_Isolation_Best_Practice_FINAL_100917.pdf">http://hcai.dh.gov.uk/files/2011/03/Document_Isolation_Best_Practice_FINAL_100917.pdf</a>
2	<i>Clostridium difficile</i> infection prevention and management a draft report by a department of health/health protection agency joint working group. Version 12 Oct 2007	<a href="http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947359764">http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947359764</a>
3	<i>Clostridium difficile</i> infection: how to deal with the problem. Dept of Health Dec. 2008	<a href="http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1232006607827">http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1232006607827</a>
4	Clinical Practice Guidelines for <i>Clostridium difficile</i> Infection in Adults: 2010 Update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA)	<a href="http://www.cdc.gov/HAI/pdfs/cdiff/Cohen-IDSA-SHEA-CDI-guidelines-2010.pdf">http://www.cdc.gov/HAI/pdfs/cdiff/Cohen-IDSA-SHEA-CDI-guidelines-2010.pdf</a>
5	Characterisation of <i>Clostridium difficile</i> Hospital Ward-Based Transmission Using Extensive Epidemiological Data and Molecular Typing: 2012 - A. Sarah Walker, David W. Eyre, David H. Wyllie, Kate E. Dingle, Rosalind M. Harding, Lily O'Connor, David Griffiths, Ali Vaughan, John Finney, Mark H. Wilcox, Derrick W. Crook, Tim E. A. Peto, on behalf of the Infections in Oxfordshire Research Database	

## Appendix A

### Summary Guidance on management of service users with *Clostridium difficile* infection

- If patient has diarrhoea which suggests *C. difficile* infection (liquid stool/smell/green)
  - Isolate the patient in a side room.
  - Send a stool specimen to the Microbiology Department for culture and *C. difficile* toxin testing.
  - Stop any unnecessary antibiotics.
  - Commence on oral Metronidazole 400 mgs every 8 hours.  
IV Metronidazole is only an alternative if patients are NBM. Do not give IV Vancomycin.
  - Investigate for other causes of diarrhoea e.g. tube feeds, antacids, or laxatives.
  - Anti-Diarrhoeal agents should be stopped pending results since they should not usually be given to counteract diarrhoea resulting from *Clostridium difficile* infection.
- If stool result is *C. difficile* toxin +ve
  - Monitor diarrhoea using the Bristol stool chart.
  - Monitor fluid balance. Correct any dehydration due to diarrhoea.
  - Ensure kidney function is maintained to prevent renal failure.
  - Monitor for signs of deterioration (including a rising CRP, falling albumin level, rising WBC and temperature) and assess daily using severity scoring criteria (see below).
  - If evidence of acute abdomen and/or pseudomembranous colitis seek advice from surgical team/gastroenterologists and inform consultant microbiologists.
  - Risk of developing *C. difficile* associated diarrhoea (CDAD) increases with Proton pump inhibitor (PPI) use. Please review the indication for any PPI and discontinue where appropriate. Further advice is available from the Consultant Gastroenterologist.

All patients suffering from *C. difficile* associated diarrhoea patients are reviewed on a weekly basis by the Antimicrobial management team.

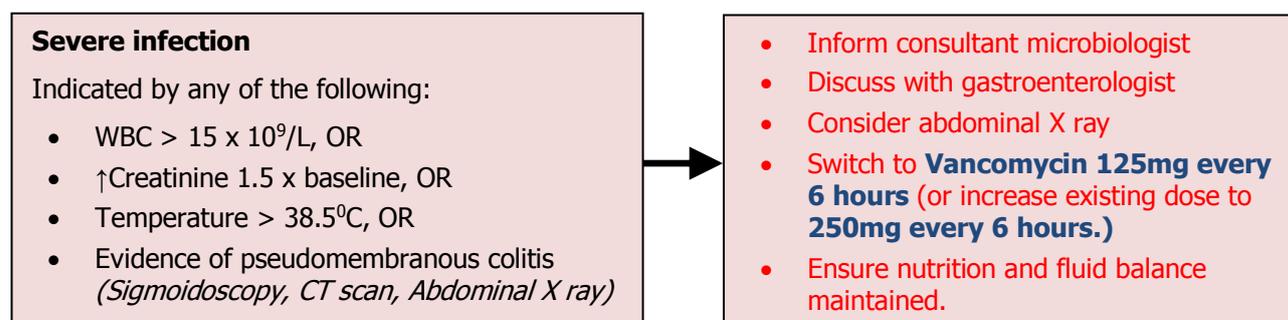
- If original sample tested *C. difficile* toxin negative.
  - Repeat sample after 24 hours if diarrhoea persists and is suggestive of *C. difficile* infection (green and smell). If no alternative cause of diarrhoea is apparent continue Metronidazole and discuss treatment with microbiologist.

#### Continuing antibiotic treatment

##### Non-severe infection

- Continue **oral Metronidazole 400 mgs every 8 hours for a total of 10 days** UNLESS this is a recurrence of *C. difficile* infection and patient has received a course of metronidazole within last 28 days, then commence **oral Vancomycin 125 mgs every 6 hours for 10 days** (and inform consultant microbiologist).

##### Severe Infection, or if symptoms persist or worsen after 2-3 days treatment



#### Retesting samples

- If original sample test is positive, retesting is not required if the symptoms abate.
- Samples will not be retested within 28 days of a positive result unless discussed with consultant microbiologist.

[Liquid oral or ng Vancomycin - see the pharmacy web pages under Prescribing and Administration - General Prescribing Information](#)

## Assessing severity of *Clostridium difficile* infection (CDI)

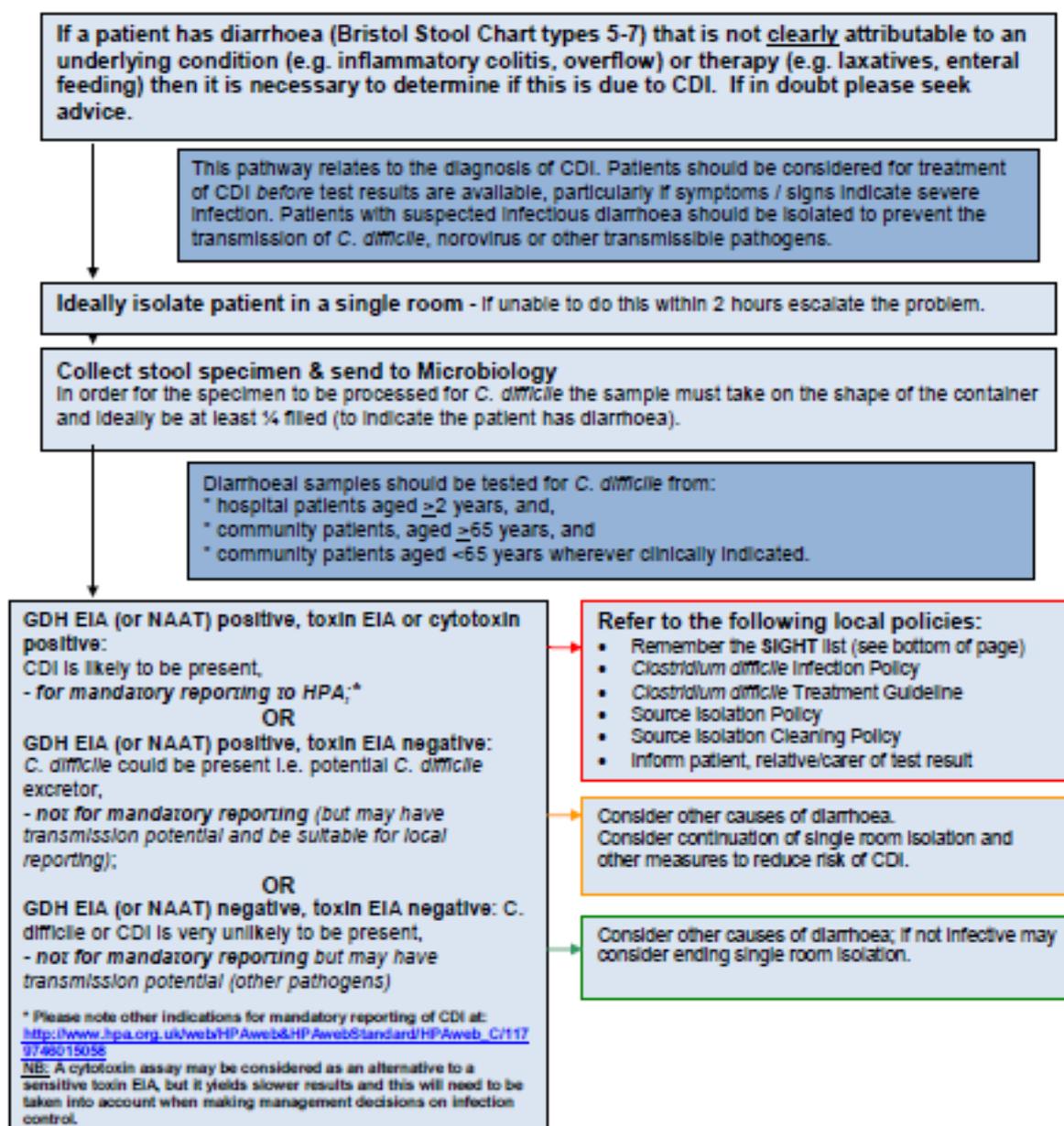
<b>Mild</b>	Normal WCC <3 stools type 5-7 on Bristol Stool Chart per day
<b>Moderate</b>	Raised WCC that is $<15 \times 10^9/L$ Typically associated with 3-5 stools per day.
<b>Severe</b>	WCC $>15 \times 10^9/L$ or acute rising serum creatinine (>50% increase above baseline) or temp $> 38.5^\circ C$ or evidence of severe colitis (abdominal or radiological signs) <i>(number of stools may be a less reliable indicator of severity)</i>
<b>Life-threatening</b>	Hypotension Partial or complete ileus or toxic megacolon CT evidence of severe disease

For full policy on treatment and infection control see the [Clostridium difficile Infection Policy](#) on the Intranet.

References Health Protection Agency - [Clostridium difficile infection: How to deal with the problem](#)

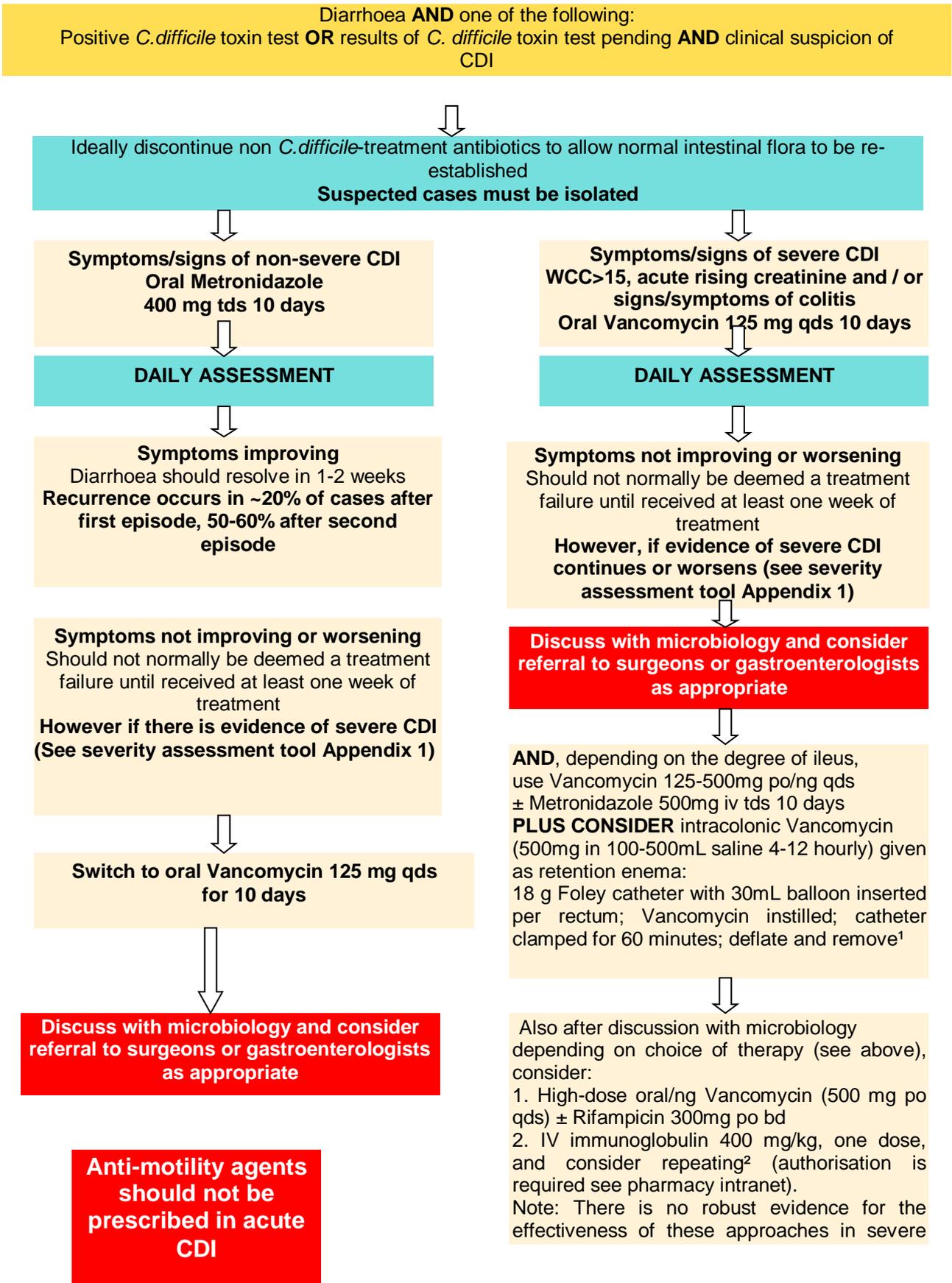
## Appendix B

### Algorithm for Management of a Patient with Unexplained Diarrhoea Suspected *Clostridium difficile* infection (CDI)

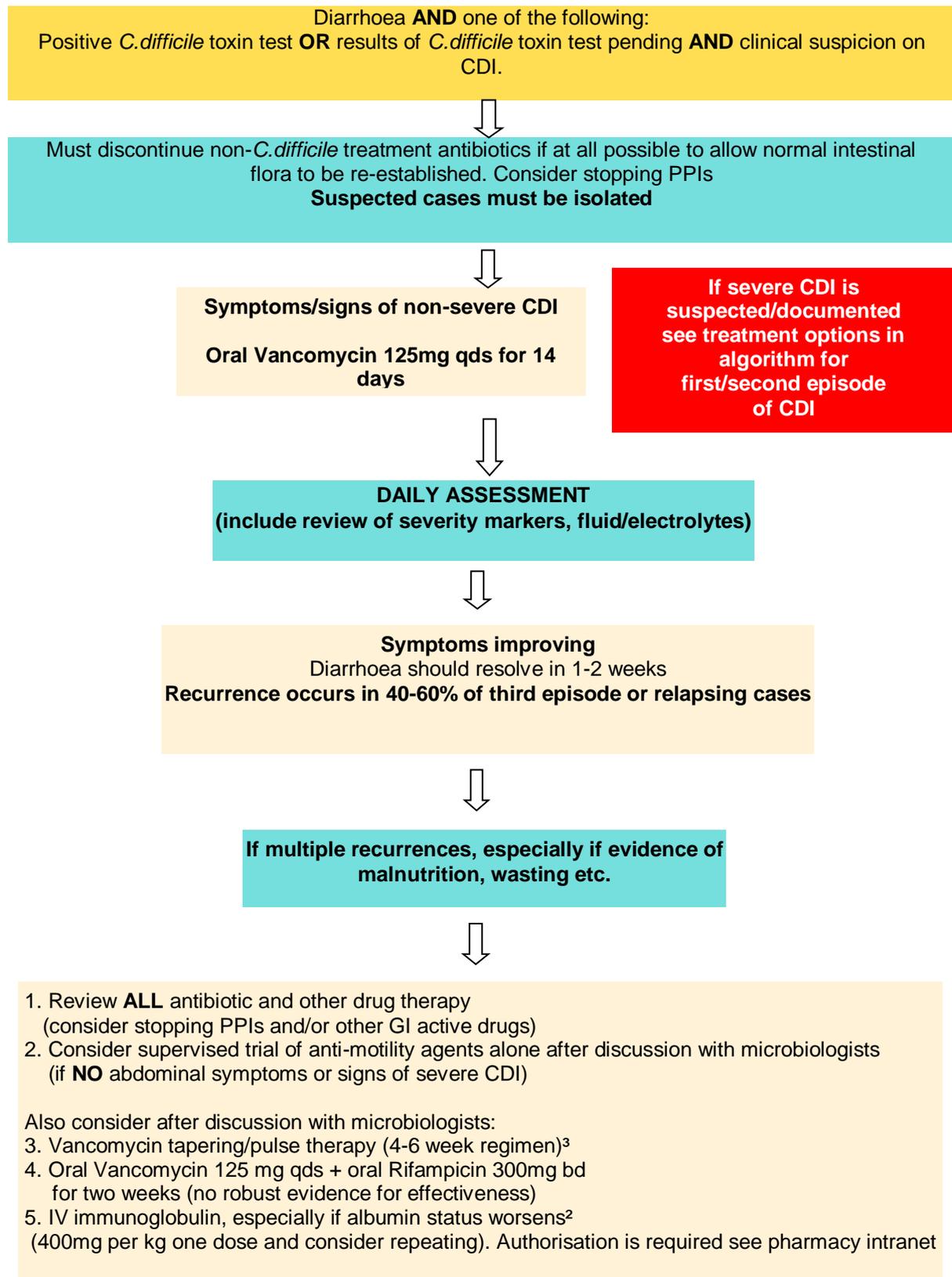


<b>S</b>	Suspect that a case may be infective when there is no clear alternative cause for diarrhoea
<b>I</b>	Isolate the patient within 2 hours
<b>G</b>	Gloves and aprons must be used for all contacts with the patient and their environment
<b>H</b>	Hand washing with soap and water should be carried out before and after each contact with the patient and the patient's environment
<b>T</b>	Test the stool for <i>C. difficile</i> by sending a specimen immediately

## Appendix C: *C. difficile* treatment Algorithm: First or second episode of *C. difficile* infection



## Appendix D: *C.difficile* treatment Algorithm: Recurrent *C.difficile* third or subsequent episode



## Appendix E

### Medicines that can produce diarrhoea

Diarrhoea is a common adverse drug reaction (ADR) with many medicines. Antimicrobials account for about 25% of drug-induced diarrhoea though most cases are benign (Lee, 2006). While diarrhoea has been seen with most medicines, the ones that are most commonly implicated are:

- acarbose;
- antimicrobials;
- biguanides;
- bile salts;
- colchicine;
- cytotoxics;
- dipyridamole;
- gold preparations;
- iron preparations;
- laxatives;
- leflunomide;
- magnesium preparations, eg antacids;
- metoclopramide;
- misoprostol;
- non-steroidal anti-inflammatory drugs (NSAIDs), e.g. aspirin, ibuprofen;
- olsalazine;
- orlistat;
- proton pump inhibitors; and
- ticlopidine.

Alternative diagnoses for the diarrhoea are important; therefore, careful attention should be paid to the temporal relationship between the time that the medicine is first taken and when the diarrhoea first appears.