

Advice on Managing <u>Clostridium difficile</u> infection (CDI) in community healthcare settings

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Introduction

This advice document is a revised version of the 'Guidance on Management of *Clostridium difficile*' document (PHA, 2010).

The document provides a standardised evidence-based approach to the diagnosis, management, treatment and Infection Prevention & Control (IPC) precautions required when caring for a patient/resident with *Clostridium difficile* Infection (CDI).

What is new in this advice document?

In addition to information about *Clostridium difficile*, this document provides you with a number of tools and resources as appendices to assist and support Care Home staff in managing a patient/resident with CDI.

What is Clostridium difficile?

Clostridium difficile is a bacterium that can be present in the gut of healthy adults and infants. The presence of the bacterium without causing symptoms of infection is known as colonisation. Clostridium difficile rarely causes infections in children or in healthy adults. It is more likely to cause infection in elderly/adult patients/residents who have recently been treated with certain antibiotics.

Clinical picture

The symptoms of *Clostridium difficile* infection (CDI) range from mild diarrhoea, to bloody diarrhoea and abdominal pain which can lead to dilation and perforation of the colon requiring major abdominal surgery. The four requirements for CDI are:

- 1. Exposure to *Clostridium difficile* bacterium
- 2. Treatment with certain antibiotics (e.g. cephalosporin's, broad spectrum penicillin's, fluoroquinolones and clindamycin)
- 3. Toxins produced by the bacterium
- 4. Susceptible people (e.g. current or recent use of antimicrobials, increased age, prolonged hospital stay, serious underlying disease, surgical procedures in particular bowel procedures, immunosuppression and/or use of proton pump inhibitors i.e. drugs which reduce the production of stomach acid)

Symptoms may start as early as a few days after starting a course of antibiotics but may be delayed until after the course has been completed. Most antibiotics have been implicated in the development of CDI but those most commonly associated are:

- Cephalosporins e.g. cefotaxime
- Quinolones e.g. ciprofloxacin
- Broad-spectrum penicillin e.g. co-amoxiclav

Repeated doses of antibiotics are also associated with the development of CDI.

Susceptible patients/residents

Certain patients/residents have an increased risk of acquiring CDI.

The Bristol stool chart is a medical aid designed to classify the form of human faeces into seven categories Types 1–2 indicate constipation, with 3 and 4 being the ideal stools as they are easy to defecate while not containing any excess liquid, and 5, 6 and 7 tending towards diarrhoea.

The possibility of CDI should be considered when patients with type 6-7 stool (see Bristol Stool Chart in Appendix 1) have had:

- Antibiotics (current / recent)
- Multiple healthcare interventions that include admission to a hospital setting
- Serious underlying illness
- Recent surgical procedures (in particular bowel procedures)
- Immunocompromising conditions especially patients on cancer chemotherapy

Proton pump inhibitors (PPI's) are a group of drugs whose main action is a pronounced and long-lasting reduction of gastric acid production. The use of these has also been associated with the development of CDI and should be used prudently. Elderly patients/residents with multiple illnesses are more susceptible to developing CDI. CDI does not occur in babies and is extremely rare in young children. It has been known however to cause death in people as young as thirty and should be considered as a possible diagnosis if a young immunocompromised adult is symptomatic.

Transmission of Clostridium difficile

The risk of acquiring/transmitting CDI is a greater risk in healthcare facilities where frail elderly patients/residents are nursed in close proximity to each other. Patients/residents who have CDI excrete large numbers of bacterial spores when they have diarrhoea (type 6-7 stools on the Bristol Stool Chart). The bacteria/spores must be ingested before someone becomes colonised or develops CDI. Spores are produced by *Clostridium difficile* bacteria when they encounter unfavorable conditions, such as being outside the body. The spores are hardy and can survive on clothes and environmental surfaces for long periods of time. Bacterial spores are resistant to normal cleaning products but are killed by chlorine-based products. The spores can contaminate the immediate environment of the patient/resident (toilet, bed area, commode, bed-rails, call-bell etc.).

If enhanced cleaning is not introduced, the spores can be transferred to other surfaces and patients/residents via the hands of healthcare workers/contaminated equipment. Details of enhanced and terminal cleaning of an area, where a symptomatic patient/resident has had type 6-7 stools, is provided as an additional paper at the end of this advice document. Some hand-rubs are not effective at removing bacterial spores and it is recommended that liquid soap and water is used to decontaminate hands of healthcare workers and patients/residents when dealing with CDI.

Five main factors have been identified as contributing to the transmission of CDI:

- 1. Antibiotic treatment (appropriate/inappropriate)
- 2. Ineffective hand hygiene
- 3. Ineffective environmental cleaning and decontamination
- 4. Patient/resident in care setting not placed in isolation or cohort nursing not initiated
- 5. Personal Protective Equipment (i.e. protective clothing such as disposable gloves and aprons) not used and disposed of appropriately

How does Clostridium difficile infection develop?

The first requirement for CDI to occur is exposure to the bacterium. In some patients/residents *Clostridium difficile* may already be present without producing symptoms of infection i.e. colonisation. However in the majority of cases it is thought

that exposure prior to infection occurs when a patient ingests the spores from contaminated hands/equipment. The spores are not destroyed by the acid produced by the stomach and travel to the large bowel, where the bacterium assumes its active state. If the bowel flora (term given to the multitude of organisms that normally live in the bowel) is altered because the patient/resident is taking/has had recent antibiotics, *Clostridium difficile* is able to proliferate and produce toxins A and B. In susceptible patients, the toxins produce inflammation and tissue damage of the large bowel (colon). This leads to the development of CDI.

Diagnosis of Clostridium difficile infection (CDI)

Confirmation of a diagnosis of CDI should be based on a combination of the laboratory result and the clinical presentation of the patient/resident.

When should a sample be sent for testing?

If a patient/resident has diarrhoea (Bristol stool chart type 6-7) that is not clearly attributable to an underlying condition (e.g. inflammatory colitis, overflow) or therapy (e.g. laxatives) then it is necessary to determine if this is due to CDI. Collection and testing of the stool should be completed as early as possible so that the test results can be used to minimise *Clostridium difficile* transmission risk. When a patient/resident presents with diarrhoea consideration should be given to other possible causes for the diarrhoea (e.g. medication, underlying disease) prior to the submission of a stool specimen. A faeces sample following administration of laxatives, suppositories or an enema, should not be sent for testing.

- Only liquid stools from adult patients (Bristol stool chart types 6 or 7) that takes the shape of the container will be examined for Clostridium difficile toxins
- It is not advisable to test children under the age of 2 years
- Relevant history and details of antibiotics the patient/resident has taken must be provided on the request form
- Clostridium difficile toxins biodegrade (break down) at room temperature, increasing the possibility of false negative result (a negative result on a person who might actually have CDI but the toxins have broken down in the sample if it is stored at room temperature), and hence samples will be need to be stored in a clinical refrigerator a 4°C if there is a delay in sending to the laboratory
- In suspected cases of CDI, if the first stool sample is negative for CDI, and symptoms persist, a second sample should be tested 24 hours later (if type 6-7 stools persist)
- Do not retest for CDI if patients/residents are still symptomatic within a period of 28 days from the first result
- If symptoms resolve and then reoccur after 28 days from the initial infection there is a need to confirm recurrent CDI. A repeat specimen is required at this stage
- In suspected cases of 'silent' CDI, such as ileus (a painful obstruction of the ileum or other part of the intestine), toxic megacolon (the clinical term for an acute toxic colitis with dilatation of the colon which can be lift threatening) or pseudomembranous colitis (Severe inflammation of the inner lining of the colon) without diarrhoea, other tests may be required, such as sigmoidoscopy, abdominal x-ray or CT scan; medical advice should be sought from the patients/residents GP.

A two stage testing process is now used by laboratories and there are three possible results for a CDI test:

- 1. **GDH positive**, toxin positive i.e. CDI infection is likely to be present
- 2. GDH positive, toxin negative i.e. Clostridium difficile could be present so may have transmission potential.
- 3. **GDH negative**, **toxin negative** i.e. *Clostridium difficile* is very unlikely to be present.

Further information on possible laboratory results, interpretation and action is available in Appendix 2.

Management of a patient/resident with Clostridium difficile infection (CDI)

- The patient/resident with suspected or confirmed CDI in a care home setting, should be nursed in a single room with ensuite facilities/own commode. If it is safe to do so, the room door should remain closed. Toilet facilities should be cleaned as per enhanced cleaning guidelines (Additional paper at the end of this advice document), after every use
- All healthcare staff involved in caring for an infected patient/resident should be aware of their diagnosis and the necessary IPC precautions. If the individual is a resident in a care home setting, their G.P. should be updated regularly on their clinical condition. This communication should be documented in the patient/resident care-plan. Explanations re: isolation, enhanced cleaning and hand hygiene should be provided by nursing staff in the care home to the affected patient/resident and anyone providing care to them i.e. healthcare staff and visitors/relatives. Visitors/relatives and patient/resident should have access to Clostridium difficile information leaflet (Appendix 3). They should also be provided with a Hand Hygiene information leaflet (Appendix 4)
- Antibiotic prescribing should be reviewed by the patients/residents GP and should be stopped if possible, as should other drugs that might cause diarrhoea (if the resident is under the care of a clinical consultant in a hospital, their treatment should also be discussed with these healthcare professionals). The use of antibiotics should be monitored closely both by prescribers and the staff administering medication. A record should be kept of all residents in care home settings who are prescribed and receiving antibiotics and the details of the type of information that should be recorded can be found in a sample form in Appendix 5
- If it is not possible to stop antibiotics, use antibiotics with a lower risk of exacerbating CDI (in consultation with GP); the reason for antibiotic prescriptions should be clearly documented in the patient/resident Care Plan.
- Review other medications (e.g. opioids, anti-diarrhoeal agents etc.) in consultation with the GP
- Consider discontinuing other medications (e.g. laxatives, stool bulking agents etc.) in consultation with the GP
- Review use of proton pump inhibitors and discontinue if possible

The patient/resident should receive treatment for CDI in accordance with the relevant treatment guidelines (Northern Ireland Management of Infection Guidelines for Primary Care 2013) and, if necessary, the GP can discuss the treatment options with a Consultant Microbiologist. The GP can also discuss treatment failures with a Consultant Microbiologist if necessary.

Stool Chart

- A Bristol stool chart must be commenced and updated for frequency and severity after each bowel movement (Appendix 1)
- Fluid balance charts should be recorded and treatment of dehydration considered

Daily Assessment Chart

- A daily assessment sheet should be commenced for all patients/residents with confirmed CDI and reviewed by Nurse in charge/G.P until the symptoms have resolved. (Appendix 6)
- CDI should be managed as a diagnosis in its own right (reflected in residents care-plan in a care home setting), with each patient/resident reviewed daily regarding:
 - Severity of infection change in stool type
 - fluid balance and action to be taken to prevent dehydration
 - nutrition review
 - communication with resident/patient/relatives re: progress/deterioration
- The patient/resident should be monitored closely for signs of increasing severity of disease, with early referral to the GP
- Appropriate fluid and electrolyte replacement is a vital component of general treatment

Infection Prevention & Control measures

- If the CDI case is a resident in a care home setting they should be isolated immediately in a single room and the door should be kept closed if possible (a risk assessment re: ability to safely isolate will need to be undertaken) to control contamination of the environment with bacterial spores
- Enhanced and terminal cleaning of the resident's room is also essential in preventing cross-infection from contaminated environmental surfaces (Additional paper at the end of this advice document)
- If the patient/resident is using a commode in their room it should be dedicated to their use. It is essential that disposal of the contents of the commode, cleaning and disinfection of the commode is safe and effective and that staff involved in caring for the patient/resident are aware of the potential of contaminating the environment due to incorrect empting and decontamination of commodes. Toilets should be cleaned and disinfected after every use in accordance with the cleaning guidelines (Additional paper at the end of this advice document). Commode cleaning audits and environmental cleaning

audits should be carried out on a regular basis in accordance with good infection prevention and control practice

- Staff should wear disposable aprons and gloves for any direct contact with the
 patient/resident/their immediate environment. Disposable aprons and gloves
 must be removed prior to leaving the patients/residents room and hands
 decontaminated with liquid soap and water following removal. All waste should
 be disposed of as clinical waste in a foot-operated pedal bin located in the
 patients/residents room
- Hand decontamination should be completed using liquid soap and water and then dried thoroughly with disposable paper towels. The disposable paper towels should be disposed of in a foot-operated bin. Hand sanitizers (rubs/gels) should not be used when caring for a patient/resident with CDI. Hand hygiene compliance audits should be carried out (Appendix 7), and should be completed using the SOP to determine frequency of audits and feedback should be provided to staff
- 7 step hand hygiene technique posters should be displayed at all hand hygiene sinks and posters of 5 moments for hand hygiene should be displayed appropriately throughout the care home (Appendix 8 &9)
- If a patient/resident has vacated a bed space/room, this area should be terminally clean, prior to being used for another patient/resident. (Additional paper at the end of this advice document)
- Patients/residents should be provided with a Clostridium difficile information leaflet (Appendix 3) and advised of the control measures in place. This includes the need for them and their visitors to carry out effective hand hygiene. Staff should ensure that patients/residents hands are cleaned with soap and water after using the lavatory and before meals. Soap and water in a bowl or disposable wipes should be used at the bedside of immobile patients/residents
- Where possible patients/residents should be allocated equipment that is single
 patient use/disposable/ or equipment that can remain with the patient/resident
 during their period in isolation. It is, however, important to ensure that the
 patients/residents room does not become cluttered as this prevents effective
 enhanced cleaning
- Note enhanced cleaning is the responsibility of all healthcare staff and all staff should be aware of the cleaning/disinfection products that should be used and how these products should be diluted
- All linen used by the patient/resident should be managed as infected linen. If linen is sent home with relatives they should be provided with an information leaflet (Appendix 10)
- Visitors should be advised to wash their hands with liquid soap and water and dry with disposable paper towels on entering and prior to leaving the patients/residents room. Visitors who have only social contact with the patient do not need to wear protective clothing. Visitors who assist with direct Reviewed November 2014

personal care should wear disposable gloves and aprons and wash their hands following removal of same

• Infection control precautions for handling deceased patients/residents are the same as those used when the patient/resident is alive.

Isolation can be discontinued when the patient/resident is 72 hours free of diarrhoea (No type 6 or 7 stool) and have reverted to their normal stool type. Please note that some patients/residents may have type 6 or 7 as their normal bowel habit.

Note: If more than one patient/resident has symptoms of *Clostridium difficile* infection, isolation should not be discontinued unless discussed with the duty-room officer/on-call doctor for public health. Contact details are available in Appendix 11.

Transfer or Discharge of a patient/resident with *Clostridium difficile* infection Patients/residents must meet the criteria for discharge to the hospital/community setting (outlined below). It is also important to provide details of the patient/resident to the receiving healthcare facility/G.P. prior to transfer and to provide written details of the patients/residents disease and treatment.

Recommended criteria for discharging a patient/resident from hospital to their own home

Patients/residents may be discharged to their own home when:

- The individual is considered to have mild or moderate disease
 AND
- The individual is clinically improving and medically fit for discharge
 AND
- The individual is able to complete their course of treatment for CDI at home

Recommended criteria for transferring a patient/resident to a Care Home

Patients may be discharged to a single room in a Care Home when:

Assessed as medically fit for discharge

AND

 The individual is 72 hours asymptomatic of diarrhoea (No type 6-7 in the preceding 72 hours) after completing treatment

AND

The individual has a type1 to 5 stool (as per Bristol Stool Chart)

There may be occasions when this criteria does not apply i.e. it has been assessed that the patient's normal stool is unlikely to be a type 1-5. If this is the case, hospital staff should discuss their decision to discharge the individual with the Care Home manager and/or the patients/residents G.P. PHA Duty Room can also be contacted for advice.

If a patient has been discharged to a care home setting and they develop symptoms of CDI, they should be isolated immediately and their G.P. should be informed. Any patient who has had a history of CDI is likely to have a relapse, especially if exposed to antibiotic treatment. If they develop symptoms, they should be isolated immediately. If it has been longer than 28 days since the patient/resident was confirmed CDI then a repeat specimen should be sent. If it is less than 28 days since they were confirmed CDI, it is not necessary to repeat the specimen as this is likely to be a relapse of infection.

Bristol Stool Chart

Separate hard lumps, like nuts Type I (hard to pass) Type 2 Sausage-shaped but lumpy Like a sausage but with cracks on Type 3 its surface Like a sausage or snake, smooth Type 4 and soft Soft blobs with clear-cut edges Type 5 (passed easily) Fluffy pieces with ragged edges, a Type 6 mushy stool Watery, no solid pieces. Type 7 **Entirely Liquid**

BRISTOL STOOL CHART

Patient Name:	Date of Birth:
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Hospital Number: Ward: Date sample sent:

DATE	TIME	AMOUNT	CONSISTENCY	COLOUR	BLOOD	SIGNATURE
		(mls)	(see over for Bristol Stool			
			Scale)			

To be completed after each bowel movement Note on a daily basis if a patient does not have a bowel movement.

Appendix 2

Possible laboratory results, interpretation and action

The table below summarises the possible laboratory results and interpretation of these results. Samples should not be repeated within a 28day period unless requested by the Trust's/PHA's Infection Control/HCAI team. If a patient/resident develops symptoms again within 28 days, they should be treated as a relapse. If a resident in a care home has a relapse the G.P. should be informed and they should be treated as a case of *CDI*. The clinical condition of the patient should always be taken into consideration when managing/treating a patient with CDI. If necessary the hospital consultant microbiologist can be contacted for advice re: treatment of a relapse.

If symptoms resolve and then reoccur after 28 days from the initial infection there is a need to confirm recurrent CDI. A repeat specimen is required. Please state on the laboratory request form that the patient has a history of *Clostridium difficile* infection.

Note: It is not necessary to send a clearance sample when the patient/resident has recovered.

Laboratory result	Interpretation	Action
GDH EIA (or NAAT)	Clostridium difficile infection	Follow the Clostridium
positive, toxin EIA or	is likely to be present	difficile treatment guideline.
cytotoxin positive		Report to PHA duty-room if
		resident in care-home /
		admitted to hospital.
		Patients/residents should be
		isolated due to care setting
		and infection control
		precautions should be taken
		to prevent cross-infection
		between susceptible
		patients/residents.
		T 00000550004 (BLIA
		Tel: 02890553994 (PHA
COLUMN (NAAT)	01 11 11	Duty-Room)
GDH EIA (or NAAT)	Clostridium difficile could be	If likely to be a false –ve
positive, toxin EIA or	present so may have	toxin test start treatment and
negative	transmission potential.	take action as above.
	Consider the possibility of a	If unsure of whether/not to
	false negative toxin detection	treat discuss with Trust's
	Clastridium difficile or CDL is	consultant microbiologist.
GDH EIA (or NAAT)	Clostridium difficile or CDI is	Treatment for <i>Clostridium</i>
negative, toxin EIA or	very unlikely to be present.	difficile not necessary unless
negative		concerned that sample was
		not stored appropriately-
		repeat sample stating reason
		on laboratory request form.

GDH=glutamate dehydrogenase (antigen produced by Clostridium difficile) NAAT=Nucleic Acid Amplification Test that detects the presence of toxin gene(s) EIA=Enzyme immunoassay that detects the presence of toxins

Further Tests carried out on toxin positive cases

All toxin producing strains of *Clostridium difficile* are sent for further tests to determine what ribotype they are. Ribotyping helps to identify possible cases of cross-infection in healthcare settings. Ribotype 027 has been identified following outbreaks of *Clostridium difficile* infection in Northern Ireland. This strain produces higher levels of toxins and is considered to be more virulent than other strains. *Clostridium difficile* infection caused by ribotype 027, is usually more severe and results in more complications. It is also associated with a higher risk of relapse and mortality. However all cases of *Clostridium difficile* infection should be taken seriously (especially in a healthcare/care home setting) as ribotyping results take longer to receive and all infection control precautions should already be in place prior to reporting of ribotypes.

Appendix 3

Guidelines for visitors

If you are visiting a patient or client with *C. diff* you should:

- wash your hands with soap and water thoroughly before and after visiting;
- refrain from visiting if you have any illness or are yourself taking antibiotics;
- only visit your own relative;
- · do not bring food into the premises;
- do not sit on beds or visit other patients/ clients/relatives at the same time;
- · avoid using patients'/client's toilets.

Guidelines for laundering

- Used clothing should be transported from hospital to home in an appropriate sealed bag eg an alginate (dissolvable) bag suitable for domestic washing machines.
- Clothing should be washed separately whilst diarrhoea persists.
- The contents of the bag should be emptied directly into the washing machine (unless using an alginate bag, which can be placed directly into the washing machine). If you have to sort the clothes, wear household gloves and dispose of the bag into the household bin; wash hands with soap and water and dry.
- Clothing should be washed at as high a temperature as is recommended on the care label.

See Laundry guidance leaflet for more information.

If you require further advice or information, please contact the hospital's Infection Prevention and Control Team or a member of the ward/care home staff.

Infection prevention and control is everyone's responsibility.

Healthcare workers, patients and visitors all have an important role to play in preventing the spread of healthcare associated infections.

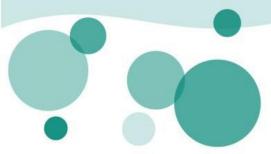




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Clostridium difficile (C. diff)

Information leaflet for patients and visitors





Reviewed November 2014

What is Clostridium difficile?

Clostridium difficile (C. diff) is a bacterium (germ/bug) that some people carry harmlessly in their bowel.

This bug is normally kept under control by good bacteria in the bowel. However, when these good bacteria are killed by certain antibiotics, this changes the natural bacteria balance in the bowel. This enables *C. diff* to multiply and produce toxins that may cause diarrhoea, which has a particularly unpleasant smell. Other symptoms include stomach cramps, fever, nausea and loss of appetite.

How does C. diff spread?

- C. diff is passed out in the faeces (diarrhoea) of people who are infected.
 So if you have C. diff infective diarrhoea, the bug can spread to the surrounding area, toilet, clothing, hands, equipment or furniture.
- C. diff can survive for a long time in the surroundings. People can accidentally pick it up by touching surfaces with their hands and then touching their mouth or eating.
- People can spread the bacteria to themselves and others by not washing and drying their hands thoroughly.

How serious is the infection?

- In many cases the infection is mild and will only last a few days.
- In some cases the effects are more serious, lasting for several weeks, and it may be necessary to treat the infection.
- Symptoms of severe infection include diarrhoea, which may have blood present.

What will happen to me if I get *C. diff* in hospital or in the care home?

- Patients/clients with C. diff are usually moved to a single room to prevent the spread of infection to others.
- Sometimes patients are nursed in a bay together with others who have the same infection.
- Each patient/client must have their own toilet or commode to prevent the spread of infection.

Thorough hand washing with soap and water and proper drying is very important (particularly after using the toilet) as this helps to prevent the germ from spreading. Hand sanitisers are not effective against C. diff.

- Healthcare staff will wear gloves and aprons whilst caring for you and will wash their hands carefully before leaving your room.
- Your nightwear and bed linen should be changed daily when you have C. diff infection or when soiled.
- Your room must be cleaned at least daily, with a chlorine-based cleaning product.

What treatment will I need?

- You will only need treatment if you have symptoms ie diarrhoea. No treatment is needed if the C. diff germs are living harmlessly in your gut and you do not have diarrhoea. If certain antibiotics have caused the diarrhoea, they may be either stopped or changed to an alternative antibiotic. Sometimes stopping the antibiotics is enough.
- If diarrhoea continues then a specific antibiotic may be prescribed to help clear up the C. diff infection.

Can I have visitors?

Yes. They will be asked to wash their hands with soap and water before and after visiting you.

Appendix 4

When can I not use hand sanitisers?

It is not appropriate to use a hand sanitiser when the hands are visibly dirty or soiled. You should use running water and liquid soap in this instance.

Many hand sanitisers are not effective against viral infections eg vomiting and diarrhoea caused by norovirus, or when someone has *clostridium difficile* infection (infectious diarrhoea). You should use running water and liquid soap in this instance.

Hospital or care home staff will be happy to advise you when it is appropriate to use hand sanitisers or soap and water.

Remember it's OK to ask!

As a patient in a hospital or a resident in a care home, you should expect to see staff clean their hands before and after they provide care to you, but if you think staff have forgotten it's OK to ask! If you require further advice or information, please contact the hospital's Infection Prevention and Control Team or a member of the ward/care home staff.

Infection prevention and control is everyone's responsibility.

Patients and visitors all have an important role to play in preventing the spread of healthcare associated infections.

HSC Public Health

Public Health Agency 4th Floor, 12-22 Linenhall Street Belfast BT2 8BS. Tel: 028 9032 1313. www.publichealth.hscni.net

Hand hygiene

Information leaflet for patients and visitors





Kevieweu Novellibel 2014

The importance of hand hygiene

Hand hygiene is the most important method of preventing and controlling the spread of infections.

It is extremely important that all patients and visitors have clean hands.

There are two main ways to decontaminate your hands: either washing them with soap and fresh running water or using a hand sanitiser.

How patients and visitors can help prevent the spread of infections

Patients – always wash your hands after using bathroom or toilet facilities, before eating food, after coughing or sneezing into the hands, or when your hands are visibly dirty. Hand wipes may also be useful to clean your hands.

Visitors – protect yourself and patients in hospitals and care homes by washing your hands when entering and leaving the ward or by using the liquid or foam hand sanitisers.

Hand hygiene technique



Washing your hands with liquid soap and water

- Wet hands under running water and apply liquid soap.
- Rub hands together, ensuring all areas are covered – this can be achieved by following the 7-step diagram as illustrated.
- Dry hands thoroughly using a disposable paper towel.
- Dispose of used paper towel in appropriate waste bin – waste bins in hospitals and care homes will be foot operated pedal bins – this will prevent recontamination of your hands by lifting the lid of the bin.

Using a liquid or foam hand sanitiser

- · Apply hand sanitiser to dry hands.
- Rub hands together, ensuring all areas are covered – follow the 7-step diagram as illustrated.
- Allow hand sanitiser to dry on your hands.

Appendix 5

Checklist for Prudent Antibiotic Prescribing

Name of Resident	Reason for commencing Antibiotic	Type of specimen collected, date & result	Starting date of antibiotic	Stop date (if in prescription) & date antibiotic discontinued

DAILY ASSESSMENT SHEET FOR PATIENT WITH C DIFFICILE INFECTION

NAME: DOB: GP:		

Date:				
No. of bowel motions daily				
Bristol stool chart classification e.g. type 4				
Fluid balance for the last 24 hours				
Maximum temp in last 24 hours				
Is patient on appropriate treatment for <i>C. difficile</i>				
Laxatives discontinued				
Acid suppressing medications reviewed				
Initial of person completing assessment				

Comments:



Hand Hygiene Compliance Audit

"Opportunities to get it right"

Key to Compliance

- 1. Being able to correctly identify "opportunities" for hand hygiene
- 2. Performing hand hygiene using the "7-step technique"
- 3. Demonstrating hand hygiene when "bare-below-elbow"
- 4. Being able to correctly describe the WHO "5 moments of hand hygiene"

	Standard Operating Procedure
Background Statement	Hand hygiene is the most important method of preventing healthcare associated infections. Care Homes should be able to demonstrate that they know what the key components of effective hand hygiene are and that they are providing assurance that it is being carried out in the care setting.
Objective	 To provide evidence that staff are aware of opportunities for hand hygiene and that hand hygiene is performed Bare-below-elbow Using the 7-step technique To provide evidence that staff know the five moments of hand hygiene
Completion of Hand hygiene Audits	The person who is completing hand hygiene audits should have received training on how to identify opportunities for hand hygiene and how to complete and score the audit forms. They should have knowledge of the five moments and 7-steps hand hygiene technique. Posters should be visible at all hand hygiene facilities of both 5 moments and 7-steps. The auditor should be completely focused on completing the audit form and should not be providing care at the time of the audit. The auditor should record observations over a period of 20-30 minutes. Note: Two opportunities for hand hygiene can be identified during the one episode of hand hygiene. For example, if hand hygiene is performed after helping a resident to walk to their seat and a resident in the same room needs assistance then this can be documented as two opportunities for hand hygiene. If compliance is being audited during an outbreak of diarrhea and / vomiting or when caring for a resident with <u>Clostridium difficile</u> infection, liquid soap and water should be used for hand hygiene, instead of alcohol based handrubs. Liquid soap and water should also be used if hands are visibly soiled. Feedback should be provided to staff that have been audited as soon after the event as possible.
Follow-up after completing hand hygiene audits	The comments / planned action section of the audit tool should be completed and compliance scores should be calculated. Compliance scores should be used to determine frequency of future audits, using the table on compliance thresholds. The care home manager should be informed of compliance scores and comments/planned action and should ensure that planned action is implemented within an agreed time-frame. The results of the audits should be used to determine the content of hand hygiene training and the PHA practical hand hygiene training packs should be used to facilitate training. For example if the audit shows that staff knowledge of the five moments is a problem area, the package on five moments can be used. If observations highlight that the 7 –steps / bare-below-elbow is not being adhered to, then the training package for that should be used. If the auditor is experiencing difficulty in identifying opportunities for hand hygiene, they should contact their local Health Protection / Infection Prevention & Control Nurse for advice and support.

Compliance Thresholds for commencing daily hand hygiene audits

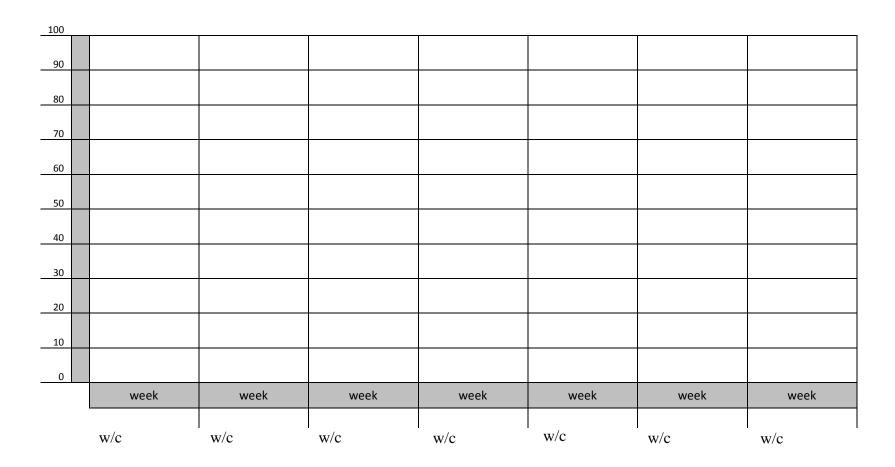
Number of Observations Completed	Threshold for commencements of daily audits
1	N/A
2	N/A
3	N/A
4	<75%
5	<80%
6	<80%
7	<85%
8	<85%
9	<85%
10	<90%
11	<90%
12	<90%
13	<90%
14	<90%
15	<90%
16	<90%
17	<90%
18	<90%
19	<90%
20	<95%

Trend Analysis Sheet to determine if Compliance with Hand Hygiene Opportunities is Optimal

	Date:	Date: D		Date: Date: Date: Date		Date: D		Date:		Date:		Total (average % compliance for week)				
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total number of key moments that occurred																
Total number of opportunities taken																

^{% =} total number of opportunities taken as a percentage of number of key moments that occurred

Hand Hygiene Compliance Feedback Run Chart



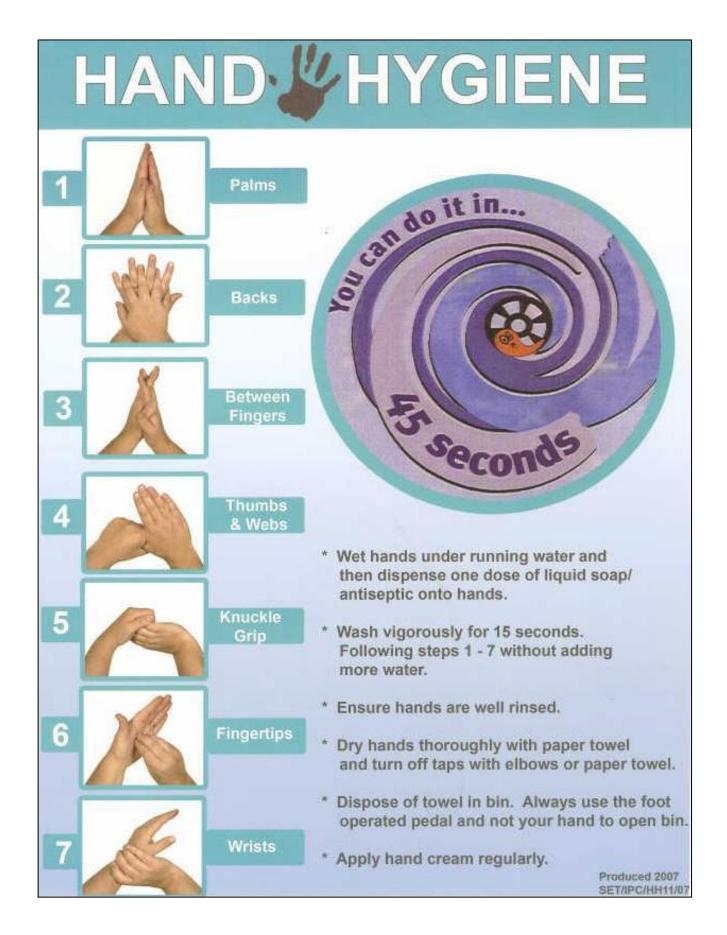
N.B. Please note that Week refers to the week of the monitoring period eg. Week 1

Community Hand Hygiene Observational Tool

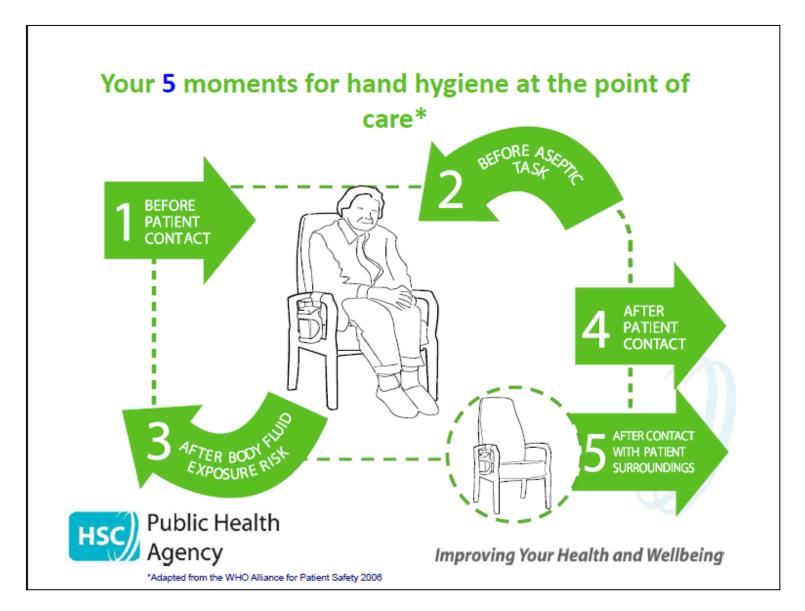
Care Home / Floor:	Public Health Agency
Date(s) of	
Audit:	
Auditor:	-

Staff Name	Designation of Staff Member/ Band	Describe opportunity for hand hygiene?	Staff member observed performing 7-step hand hygiene technique? i.e. was opportunity taken	If not, why?	Was the staff member "bare below the elbow" while cleaning their hands? (i.e. no clothing below the elbow, no wristwatch, no stoned rings, not wearing nail polish/artifical nails)	Did the staff member know the five moments for hand hygiene: (1) Before patient contact (2) Before aseptic task (3) After body fluid exposure risk (4) After patient contact (5) After contact with patient surroundings	Staff Signature	Team Manager Signature
Numerator	0							

Compliance Rate (%)



Appendix 9



Appendix 10

Remember

- Always wash your hands with soap and water after handling dirty clothing, and before handling clean clothing.
- Make sure that your washing machine and tumble drier are working well. For example, remove fluff from the tumble drier filter and use the correct amount of washing powder or detergent.
- Try not to rinse dirty clothes by hand but, if you need to, ensure that you wear household gloves and immerse the dirty clothing underwater to avoid the risk of splashing and spreading germs to work surfaces.

If you require further advice or information, please contact the hospital's Infection Prevention and Control Team or a member of the ward/care home staff.

Infection prevention and control is everyone's responsibility.

Healthcare workers, patients and visitors all have an important role to play in preventing the spread of healthcare associated infections.

patients and visitors

Laundry guidance

Information leaflet for





05/12

Produced by the Public Health Agency, Ormesu Avenue Unit, 18 Ormesu Avenue, Belfast BT2 8HS. Tel: 028 9031 1611. Testphone/Text Reley: 18001 028 9031 1611. www.publichealth.hscni.net



Reviewed November 2014

Who should read this leaflet?

This leaflet is for anyone who washes their friend's or relative's clothing at home.

Is there a risk of infection to me or my family if I take clothing home from a hospital or care home?

The risk of infection to you and your family is low, but the information in this leaflet will help you handle the clothes safely.

How will I carry the clothing home?

Laundry sent home from the hospital or care home should be transported in an appropriate sealed bag eg a patient property bag or an alginate (dissolvable) bag suitable for domestic washing machines.

What if my friend or relative has an infection and I have been given their clothing to take home?

In this situation staff may give you extra advice, for example they might tell you to use a higher washing temperature than you would normally use.

How should I handle clothing I take home?

Step 1: Take the bagged items home.

Step 2: Remove items from the bag and put them directly into the washing machine (unless using an alginate bag, which can be placed directly into the washing machine.) If you have to sort the clothes, wear household gloves and wash these and your hands with soap and water afterwards.

- Wash the clothing separately from your other home laundry.
- Always hold the clothing away from you to avoid spreading germs onto your clothes.
- Do not shake the clothing as this may cause germs to spread.
- If applicable, discard the bag you used to carry the clothing home into your household bin.
- Wash your hands thoroughly with soap and warm water.

Step 3: Wash the clothing using the highest temperature and following the washing instructions on the care label.

- Use your normal washing powder or detergent and follow the instructions on the correct amount to use.
- Do not overload your washing machine as this will not wash the clothes as well.

Step 4: Tumble dry the clothes (if possible) following the washing instructions on the care label.

If items are not suitable for tumble drying then dry as you would normally. For example, hang on a washing line or a clothes horse.

Step 5: Iron clothes according to their washing instructions label. If possible, use a hot steam iron.

Step 6: Store items in a clean and dry place until they are ready to be used again.

 This includes when you are taking the clothes back to a hospital or care home. Always carry clean clothes in a clean bag.



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Additional Paper

Cleaning Guidance for Care Environments

Introduction

Each care facility should have written protocols to guide routine general cleaning together with a written cleaning schedule that ensures all areas of the environment are regularly cleaned to a satisfactory standard. Staff undertaking cleaning should follow agreed protocols which are clearly set out. Staff should have access to adequate resources and equipment to achieve required standard of cleaning. COSHH regulations should always be adhered to and staff should use appropriate personal protective equipment (PPE) to protect themselves at all times.

Cleaning is a process that removes visual dirt and contamination and many microorganisms. Warm water and detergent should be used and most of the time cleaning is effective at decontaminating both equipment and the environment.

However in certain situations (e.g. during an outbreak or increased incidence of infection or in the case of *Clostridium difficile* infection), surfaces and equipment require both cleaning and disinfection.

Disinfection is a process that reduces the number of germs to a level at which they are not harmful. It is only effective if surfaces and equipment have been cleaned thoroughly with detergent and water beforehand (if a combined detergent/disinfectant product is not used). Warm water and detergent (diluted as per manufactures' instructions) should be used to clean hard surfaces followed by disinfection with 1000ppm (0.1%) chlorine releasing agent/hypochlorite solution or chlorine dioxide solution (diluted as per manufactures' instructions). The hypochlorite or chlorine dioxide solution will kill both bacteria and viruses provided it is used as per manufactures' instructions. Hypochlorite solutions are corrosive; it is recommended the solution is rinsed off commodes, mattresses and stainless steel surfaces with warm water at the end of the process. Some chlorine dioxide solutions do not need to be rinsed off.

What is routine general cleaning?

Routine cleaning of the environment should be undertaken at least <u>daily</u> within the care facility. Thorough cleaning with neutral detergent and water is the most common means of removing micro-organisms and dirt. If soiling (with blood and/or bodily fluids) is evident then general cleaning should be followed with a disinfectant clean - using a chlorine releasing product/sodium hypochlorite or a chlorine dioxide solution at the appropriate concentration and for the correct contact time. If using a hypochlorite solution the area should then be rinsed and dried. Some chlorine dioxide solutions do not need to be rinsed off.

Always ensure that surfaces that are being disinfected are compatible with the product being used.

What is Enhanced Cleaning?

During an outbreak of infection or an unusual increase in incidence of a particular organism, enhanced routine cleaning (<u>minimum twice daily</u>) is recommended. This will entail cleaning/disinfection of the environment including frequently touched surfaces, and any area/piece of equipment that may potentially be contaminated. Depending on the type of outbreak in the care facility, certain areas will require more frequent cleaning and disinfection e.g. sanitary areas will require more frequent cleaning and disinfection during an outbreak of gastrointestinal infection. Note: Examples of frequently touched surfaces are-bed tables, bed rails, the arms of chairs, sinks, call bells, door handles and push plates.

What is Terminal Cleaning?

Terminal cleaning is the thorough cleaning/disinfection of <u>all</u> surfaces including floors and re-useable equipment either within the whole care facility or within a particular part of the facility (e.g. an individual ward/department/unit). This may be required in the following scenarios:

- Following an outbreak or increased incidence of infection
- Following discharge, transfer or death of individual patients who have had a known infection *individual patient room/bay/unit*
- Following isolation/contact precaution nursing of a patient individual patient room/bay/unit

A terminal clean will generally be commenced following discussion and agreement between the Infection Prevention & Control Team and the nurse or manager in charge of the ward/unit/facility. The terminal clean should not commence until the relevant room/area has been fully vacated.

Note: The cleaning schedule in use in the facility should clearly advise which member of staff is responsible for cleaning different areas of the room/areas included in the terminal clean.

Note: In addition to the above some facilities/organisations employ the use of other technologies when doing terminal cleans (e.g. Steam, vaporised hydrogen peroxide). This is an additional step in the cleaning process which is undertaken in some organisations but should not substitute the physical decontamination of the environment/equipment with detergent & water and disinfectant.

Terminal cleaning procedure:

- Gather all equipment required for the terminal clean to the point of use i.e. mop bucket, shaft and mop head/disposable colour coded cloths/disposable roll /yellow clinical waste bags and tags/alginate& red bags/wet floor sign/vacuum cleaner fitted with a HEPA filter.
- Don Personal Protective Equipment (PPE) disposable apron and gloves before entering the room, discard all disposables in the room/bed space/unit (e.g. hand towels, magazines, bottles, toilet rolls, etc.) All materials must be treated as clinical waste. Dispose of this waste, remove PPE and decontaminate hands.
- On commencing the terminal clean don PPE as before.
- Prepare cleaning solutions in a container (dilution as per manufacturer's instruction). Do not mix chemicals and only use a cleaning product provided by your employer. It is important to follow the manufacturer's guidelines for dilution of the product and contact time.
- Ventilation of the area/room being cleaned must be adequate; if there is no window, the door should be left open when applying the hypochlorite/chlorine dioxide solution. Please note that COSHH regulations must be adhered to when using chemical disinfectants.
- Prepare rinse water to rinse all items following cleaning and disinfecting (if rinsing is required) before drying. In particular it is important to rinse chlorine containing solutions from stainless steel surfaces to prevent corrosion.
- Use disposable cloths/paper roll for cleaning throughout the terminal clean.
 Where available and appropriate use disposable mop heads after use these should be disposed into clinical waste bag prior to exiting the area/room.
- Ensure that PPE is changed when moving from one room/area to another and disposed PPE into clinical waste.
- Always decontaminate your hands after removing and disposing of PPE.

Terminal cleaning regime:

Using neutral detergent and water followed by a sodium hypochlorite solution	Using a combined detergent and sodium hypochlorite solution	Using a chlorine dioxide solution
Remove soft furnishings (bedclothes, curtains if applicable) and place in a water soluble bag and into a red linen bag. Process all linen, laundry etc. as infected linen.	Remove soft furnishings (bedclothes, curtains if applicable) and place in a water soluble bag and into a red linen bag. Process all linen, laundry etc. as infected linen.	Remove soft furnishings (bedclothes, curtains if applicable) and place in a water soluble bag and into a red linen bag. Process all linen, laundry etc. as infected linen.
Some curtains may require specialist cleaning. The dry-cleaning specialist should be informed that the curtains have come from an outbreak situation.	Some curtains may require specialist cleaning. The dry-cleaning specialist should be informed that the curtains have come from an outbreak situation.	Some curtains may require specialist cleaning. The dry-cleaning specialist should be informed that the curtains have come from an outbreak situation.
Take down blinds (if appropriate) and clean using a prepared solution of neutral liquid detergent in warm water (dilution as per manufacturer's instruction). Continue by wiping with a solution of 1000ppm (0.1%) sodium hypochlorite solution (dilution as per manufacturer's instruction), rinse and dry if appropriate.	Take down blinds (if appropriate) and clean using a prepared solution of combined detergent and hypochlorite (dilution as per manufacturer's instruction), rinse and dry if appropriate.	Take down blinds (if appropriate) and clean using a prepared solution of chlorine dioxide (dilution as per manufacturer's instruction).
Commence cleaning of high level surfaces. Clean first with a solution of neutral detergent and warm water (dilution as per manufacturer's instruction). Continue by wiping with a solution of 1000ppm (0.1%) sodium hypochlorite solution (dilution as per manufacturer's instruction), rinse and dry if appropriate.	Commence cleaning of high level surfaces using a prepared solution of combined detergent and hypochlorite (dilution as per manufacturer's instruction), rinse and dry if appropriate.	Commence cleaning of high level surfaces using a prepared solution of chlorine dioxide (dilution as per manufacturer's instruction).

High level cleaning will include: Curtain rails/tracks /high level window ledges and frames/ screen rail if present /walls /television (stands and leads)/top of wardrobes units/light fittings/lampshades and any other high level equipment.

High level cleaning will include: Curtain rails/tracks /high level window ledges and frames/ screen rail if present /walls /television (stands and leads)/top of wardrobes units/light fittings/lampshades and any other high level equipment.

High level cleaning will include: Curtain rails/tracks /high level window ledges and frames/ screen rail if present /walls /television (stands and leads)/top of wardrobes units/light fittings/lampshades and any other high level equipment.

Place bed in horizontal/flat position. Clean first with a solution of neutral detergent and warm water (dilution as per manufacturer's instruction). Continue by wiping with a solution of 1000ppm (0.1%) sodium hypochlorite solution (dilution as per manufacturer's instruction), rinse and dry if appropriate.

Place bed in horizontal/flat position. Clean using a prepared solution of combined detergent and hypochlorite (dilution as per manufacturer's instruction), rinse and dry if appropriate.

Place bed in horizontal/flat position. Clean using a prepared solution of chlorine dioxide (dilution as per manufacturer's instruction).

Commence cleaning of furniture, fixtures and fittings in the area. Radiator covers must be removed to permit cleaning of the radiator. Cleaning will include, locker, table, chairs, stool, lamp, tops of oxygen tanks and suction equipment, wardrobe, sink, mirror, doors, door handles, bin (inside and out), hand towel holder (inside and out), clean using a solution of neutral detergent and warm water (dilution as per manufacturer's instruction). Continue by wiping with a solution of 1000ppm (0.1%) sodium hypochlorite solution (dilution as per manufacturer's instruction), rinse and dry

Commence cleaning of furniture, fixtures and fittings in the area. Radiator covers must be removed to permit cleaning of the radiator. Cleaning will include, locker, table, chairs, stool, lamp, tops of oxygen tanks and suction equipment, wardrobe, sink, mirror, doors, door handles, bin (inside and out), hand towel holder (inside and out), clean using a prepared solution of combined detergent and hypochlorite (dilution as per manufacturer's instruction), rinse and dry if appropriate.

Commence cleaning of furniture, fixtures and fittings in the area. Radiator covers must be removed to permit cleaning of the radiator. Cleaning will include, locker, table, chairs, stool, lamp, tops of oxygen tanks and suction equipment, wardrobe, sink, mirror, doors, door handles, bin (inside and out), hand towel holder (inside and out), clean using a prepared solution of chlorine dioxide (dilution as per manufacturer's instruction).

if appropriate.

Please note that oxygen & suction connections should be changed and single patient use equipment should be discarded and replaced with new.

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Hospital environments do not normally contain soft furnishings; however if applicable, soft furnishings must be steam cleaned if the fabric can withstand required temperature.

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Steam cleaning not only removes dust and debris but also uses a high temperature to achieve decontamination.

Consideration should be given to industrial steam clean and records should confirm that all soft furnishings/carpeted areas have been cleaned using this method.

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Commence cleaning of toilet if cleaning an ensuite. Clean all fixtures and fittings clean using a solution of neutral detergent and warm water (dilution as per manufacturer's instruction). Continue by wiping with a solution of 1000ppm (0.1%) sodium hypochlorite solution (dilution as per manufacturer's instruction), rinse and dry if appropriate. Cleaning will include sink, mirror, towel holder, toilet roll holder, bin (inside and out), door handle and toilet

Commence cleaning of toilet if cleaning an ensuite. Clean all fixtures and fittings using a prepared solution of combined detergent and hypochlorite (dilution as per manufacturer's instruction), rinse and dry if appropriate. Cleaning will include sink, mirror. towel holder, toilet roll holder, bin (inside and out), door handle and toilet bowl and cistern. Clean and reline bin. Replenish supplies of toilet rolls and soap.

Commence cleaning of toilet if cleaning an ensuite. Clean all fixtures and fittings using prepared solution of chlorine dioxide (dilution as per manufacturer's instruction). Cleaning will include sink, mirror, towel holder, toilet roll holder, bin (inside and out), door handle and toilet bowl and cistern. Clean and reline bin. Replenish supplies of toilet

rolls and soap.

bowl and cistern. Clean and reline bin.		
Replenish supplies of toilet rolls and soap.		
Damp mop floor using a solution of neutral detergent and warm water (dilution as per manufacturer's instruction). Continue by wiping with a solution of 1000ppm (0.1%) sodium hypochlorite solution (dilution as per manufacturer's instruction), rinse and dry if appropriate. Ensure that surfaces that are being disinfected using a chlorine based product are compatible with the product being used and rinsed. Skirting boards must be cleaned thoroughly.	Damp mop floor using a prepared solution of combined detergent and hypochlorite (dilution as per manufacturer's instruction), rinse and dry if appropriate. Ensure that surfaces that are being disinfected using a chlorine based product are compatible with the product being used and rinsed. Skirting boards must be cleaned thoroughly.	Damp mop floor using a prepared solution of chlorine dioxide (dilution as per manufacturer's instruction). Ensure that surfaces that are being disinfected using a chlorine dioxide product are compatible with the product being used. Skirting boards must be cleaned thoroughly.
Decontaminate domestic equipment following use Treat mops as infected linen / dispose of single-use mop-heads. Mop buckets must be emptied and cleaned using a solution of neutral detergent and warm water (dilution as per manufacturer's instruction). Continue by wiping with a solution of 1000ppm (0.1%) sodium hypochlorite solution (dilution as per manufacturer's instruction), rinse and dry if appropriate.	Decontaminate domestic equipment following use Treat mops as infected linen / dispose of single-use mop-heads. Mop buckets must be emptied and cleaned using a prepared solution of combined detergent and hypochlorite (dilution as per manufacturer's instruction), rinse and dry if appropriate.	Decontaminate domestic equipment following use Treat mops as infected linen / dispose of single-use mop-heads. Mop buckets must be emptied and cleaned using a prepared solution of chlorine dioxide (dilution as per manufacturer's instruction).
Waste bags should be sealed using twist swanneck method and secured with a tag (provided by the waste contractor) when 3/4	Waste bags should be sealed using twist swanneck method and secured with a tag (provided by the waste contractor) when 3/4	Waste bags should be sealed using twist swanneck method and secured with a tag (provided by the waste contractor) when 3/4

full. Free liquid clinical waste should be disposed of in appropriate container provided by the waste contractor, secure lid and attach traceable tag when 3/4 full.	full. Free liquid clinical waste should be disposed of in appropriate container provided by the waste contractor, secure lid and attach traceable tag when 3/4 full.	full. Free liquid clinical waste should be disposed of in appropriate container provided by the waste contractor, secure lid and attach traceable tag when 3/4 full.
Remove P.P.E. and decontaminate hands.	Remove P.P.E. and decontaminate hands.	Remove P.P.E. and decontaminate hands.
Notify nurse in charge on completion of work to facilitate review and assurance that the terminal clean has been completed to required specification and standard.	Notify nurse in charge on completion of work to facilitate review and assurance that the terminal clean has been completed to required specification and standard.	Notify nurse in charge on completion of work to facilitate review and assurance that the terminal clean has been completed to required specification and standard.
Inspection and /or audit of the terminal clean will provide assurance that deep clean has been completed to the required specification.	Inspection and /or audit of the terminal clean will provide assurance that deep clean has been completed to the required specification.	Inspection and /or audit of the terminal clean will provide assurance that deep clean has been completed to the required specification.

AVOID LEAVING AND RE-ENTERING THE AREA UNTIL THE TERMINAL CLEAN IS FULLY COMPLETED.

THOROUGH PREPARATION AND SYSTEMATIC APPROACH IS KEY TO ACHIEVEING SUCCESSFUL TERMINAL CLEAN!

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The PHA would like to acknowledge that these guidelines have been adapted and updated from SHSSB (2006) Guidance on Managing Clostridium difficile infection in community healthcare settings