

Specimen collection 3: faecal specimen from a patient with diarrhoea

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Box 1. Principles of specimen collection

The specimen must be:

- Appropriate to the patient's clinical presentation
- Collected at the right time
- Collected in a way that minimises contamination
- Collected in a manner that reduces health and safety risk to all staff handling the specimen (including laboratory staff)
- Collected using the correct equipment
- Documented clearly using appropriate forms
- Stored/transported appropriately

Source: Higgins, 2008

Box 2. Infectious agents requiring a faecal specimen

Bacterial:

- Salmonella
- Campylobacter
- Helicobacter
- Shigella
- *Escherichia coli*
- *Clostridium difficile*

Viral:

- Norovirus
- Rotovirus

Parasites:

- Protozoa
- Tapeworm
- Entamoeba

Source: Dougherty and Lister, 2015

Obtaining a specimen involves collecting tissue or fluids for laboratory analysis or near-patient testing, and may be a first step in determining a diagnosis and treatment (Dougherty and Lister, 2015).

Specimens must be collected at the right time using the correct technique and equipment, and be delivered to the laboratory in a timely manner (Dougherty and Lister, 2015).

Box 1 provides a reminder of the general principles of specimen collection; these are discussed in more detail in part one of this series (Shepherd, 2017).

Diarrhoea

Diarrhoea is defined as an unusual frequency of bowel action (at least three times in a 24-hour period) with loose, watery and unformed faeces (Public Health England, 2014). Frequent formed stools are not considered to be diarrhoea – the consistency of the stools is more important than the frequency; patients with diarrhoea may also complain of symptoms such as abdominal cramps, nausea, vomiting and fever (PHE, 2014). Excessive fluid loss may result in dehydration, particularly in babies, children and older people. The volume of diarrhoea should be recorded as part of fluid balance and patients with diarrhoea should be assessed regularly for any signs of dehydration.

The cause of infective diarrhoea needs to be identified so that appropriate management and treatment can be implemented. This helps prevent the spread of the infection through appropriate infection prevention precautions, such as isolation and environmental decontamination (Dougherty and Lister, 2015).

In episodes of acute diarrhoea, infection prevention and control measures should be put in place without waiting for the results of the sample (Department of Health (DH), 2012). These include:

- Effective handwashing using soap and water (alcohol handrubs are ineffective against *Clostridium difficile* (*C difficile*) and should not be used when handling potentially infected stools) (DH, 2012);
- Isolation or cohort nursing;



A faecal specimen can be used to identify parasites such as tapeworms (above)

- Using non-sterile gloves and aprons when handling faeces.

It is important to explain any precautions to patients and their relatives, and to keep them up to date with laboratory results. Written information can be useful to keep them informed about the rationale for their care and their role in preventing the spread of infection (Dougherty and Lister, 2015).

Faecal specimens

Faecal specimens are usually obtained for microbiological examination to identify pathogenic organisms that cause gastrointestinal infections, such as bacteria, viruses and parasites (Dougherty and Lister, 2015) (Box 2). Indications for collecting a faecal specimen are shown in Box 3.

Collection of a faecal specimen should be considered as part of a holistic nursing assessment, and patients with diarrhoea should be assessed for associated symptoms of fever, vomiting and abdominal pain. It is important to record any recent antibiotic treatment, foreign travel or concerns about food poisoning that may explain the diarrhoea and influence the laboratory tests required.

The colour and consistency of faeces should be recorded along with the presence of blood. The consistency of the stool can be classified using a standardised system such as the Bristol Stool Chart (Fig 1) (Lewis and Heaton, 1997), on which diarrhoea is usually classified as stool type

Nursing Practice

Practical procedures

6 or 7. When there is a suspicion of *C difficile* (all patients in hospital, community patients over 65 years), stool types 5, 6 and 7 should be considered as diarrhoea and sent for testing, unless the diarrhoea is clearly attributable to an underlying condition such as colitis or overflow or to therapy such as laxatives or enteral feeding (DH, 2012).

The colour of faeces can be influenced by diet but can also indicate an underlying health problem. For example, a black stool can occur as a side-effect of oral iron therapy but may also indicate bleeding from the upper gastrointestinal tract.

It is suggested that the odour of faeces should be recorded as this helps to build a clinical picture of the condition (Dougherty and Lister, 2015); for example, infections such as *C difficile* produce faeces with a distinctively foul smell. However, nurses' ability to identify this infection based on smell alone has been questioned (Krishna et al, 2013). Healthcare workers should not be encouraged to intentionally smell faeces as this could increase the risk of inhalation of faecal organisms.

A specimen should be collected within 48 hours of the onset of symptoms, as the chance of identifying the pathogen decreases once the acute phase of the illness has passed (Dougherty and Lister, 2014). When *C difficile* is suspected – particularly in patients in hospital – a specimen should be obtained at the first sign of diarrhoea rather than waiting for subsequent episodes of diarrhoea to occur (DH, 2012). Specimens should be collected before antimicrobial therapy is prescribed (PHE, 2014).

Collecting a faecal specimen

A clean technique should be used to collect the stool sample to avoid contamination, which may result in inappropriate treatment (Dougherty and Lister, 2015). Some patients may be able to collect their own specimen, but it is important to explain the steps clearly, emphasise the need for good hand hygiene and explain how to avoid contaminating the specimen. Although contamination with urine should be avoided where possible, faecal specimens can still be processed by the laboratory if urine is present.

Equipment

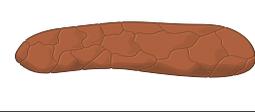
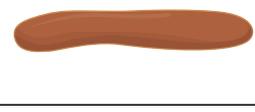
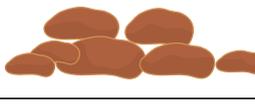
- Clean bed pan or disposable receiver – ensure the bedpan is not contaminated with detergent or disinfectant as this may affect the results (PHE, 2014);

Box 3. Indications for collecting a faecal specimen

- Investigate suspected infective diarrhoea in patients who are systematically unwell with symptoms of diarrhoea, vomiting, pain, weight loss and fever
- Identify the cause of diarrhoea caused after foreign travel
- Identify suspected parasites such as tapeworms
- Investigate diarrhoea associated with use of antibiotics
- Screen symptomatic contacts of patients with infection associated with organisms such as *Escherichia coli* 0157 where infection has serious consequences (PHE, 2014)
- Identify occult blood in stools (this requires a different procedure)

Source: adapted from Dougherty and Lister, 2015

Fig 1. Bristol Stool Chart

Type 1		Separate hard lumps, like nuts (hard to pass)
Type 2		Sausage-shaped but lumpy
Type 3		Like a sausage but with cracks on its surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear cut edges (passed easily)
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces. Entirely liquid

- Pulp tray to carry equipment;
- Sterile specimen pot with an integral spoon;
- Non-sterile gloves;
- Apron;
- Specimen form and specimen bag.

The procedure

1. Discuss the procedure with the patient, explaining why the sample is being taken and when the results are expected. Gain valid informed consent and document this in the patient's notes (Nursing and Midwifery Council, 2015).

2. Ensure privacy and dignity as patients may find the procedure embarrassing.

3. Wash hands with soap and water (no risk of cross infection yet) and assemble the equipment.

4. Put on non-sterile gloves and apron to reduce the risk of cross infection.

5. Ask the patient to pass urine before taking the stool sample – this avoids urine mixing with faeces and contaminating the sample (PHE, 2014).

Nursing Practice Practical procedures

Fig 2. The procedure



Fig 2a. Wearing gloved hands, use the integral spoon to fill the specimen pot to about a quarter full

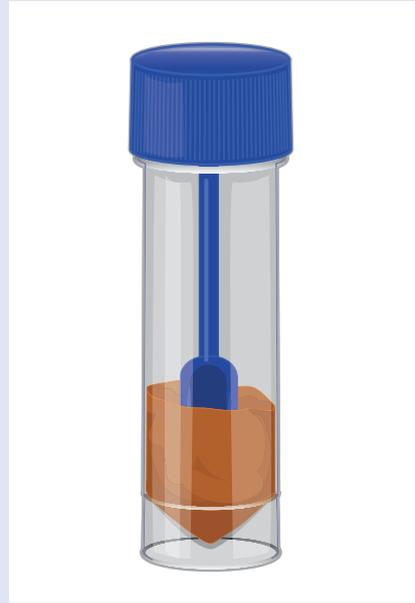


Fig 2b. The faeces should be liquid or semi-formed and take on the shape of the container

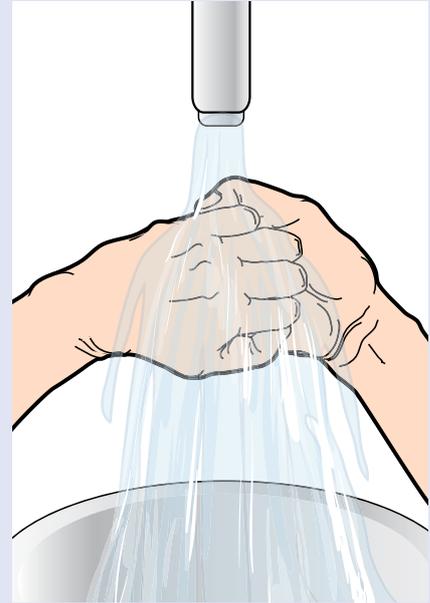


Fig 2c. Decontaminate hands with soap and water as alcohol handrubs are ineffective against *Clostridium difficile*

6. Ask the patient to defaecate into the bedpan or receiver.

7. If the patient is incontinent, a sample can be taken from the bed linen but contamination with urine should be avoided (Dougherty and Lister, 2015).

8. Use the integral spoon in the sample pot to collect enough faeces to fill around a quarter of the specimen pot (DH 2012) (Fig 2a). The faeces should be liquid or semi-formed and take on the shape of the container (PHE, 2014) (Fig 2b).

9. If segments of tapeworm are seen, send these to the laboratory. Tapeworm segments can vary from the size of rice grains to a ribbon (Brekke, 2014).

10. Secure the top of the container – this will prevent leakage.

11. Remove gloves and apron and dispose of them.

12. Wash hands with soap and water to reduce the risk of cross infection. Alcohol handrubs are ineffective against *C difficile* and should not be used when handling potentially infected stools (DH, 2012) (Fig 2c).

13. Examine the specimen and record the

colour, consistency and odour of the stool as part of the nursing assessment.

14. Label the sample and complete the microbiology form including any factors such as recent antibiotic treatment, foreign travel and suspected food poisoning – this will assist with accurate laboratory testing.

15. Put the sample in a specimen bag.

16. Send the sample to the laboratory as soon as possible. Infectious pathogens such as shigella and entamoeba species only survive for a short time outside the body (Brekke, 2014; PHE, 2014). It is important to check local policy for further information about transport and storage if these infections are suspected. If there is a delay in transportation, specimens can be refrigerated but they should be processed within 12 hours (PHE, 2014).

17. Document the procedure in the patient's notes. **NT**

References

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Professional responsibilities

This procedure should be undertaken only after approved training, supervised practice and competency assessment, and carried out in accordance with local policies and protocols.

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Specimen collection series	Date
Part 1: Midstream specimen of urine	Jul
Part 2: Catheter specimen of urine	Aug
Part 3: Stool specimen	Sep
Part 4: Sputum specimen	Oct