

**Clostridium difficile infection (CDI) is associated with antimicrobial use.
Prescribing antimicrobials wisely can reduce the incidence.**

Clostridium difficile infection (CDI)

- *C. difficile* is a bacterium present in the gut flora in some people.
- Antimicrobials disturb the balance of the gut flora, allowing *C. difficile* to multiply and cause infection.
- Symptoms of CDI can vary from mild diarrhoea to fatal bowel inflammation.
- *C. difficile* spores are shed in the faeces. The spores can survive for long periods in the environment. If ingested, they can transmit infection to others.

Antimicrobials to avoid where possible

The antimicrobials most strongly associated with CDI are:

- Second and third generation cephalosporins: cefaclor, cefuroxime, cefixime and cefpodoxime are examples for oral use
- Clindamycin
- Quinolones (associated with the virulent 027 strain of *C. difficile*): ciprofloxacin, levofloxacin, moxifloxacin, ofloxacin, norfloxacin.
- Long courses of amoxicillin, ampicillin, co-amoxiclav or co-fluampicil.

Prudent antimicrobial prescribing

- Only prescribe antimicrobials when indicated by the clinical condition of the patient or the results of microbiological investigation.
- Do not prescribe antimicrobials for sore throat, coughs and colds in patients at low risk of complications.
- Consider delayed prescriptions in case symptoms worsen or become prolonged.
- If an antimicrobial is required, follow local guidelines.
- Choose a narrow-spectrum agent where possible and prescribe a short course.
- Generally, no more than 5-7 days' treatment is required.
- Three-day courses are appropriate in some cases.
- Broad-spectrum antimicrobials should be reserved for the treatment of serious infections when the pathogen is not known.

Antimicrobials to choose

- All antimicrobials are associated with CDI, but those with lower risk are trimethoprim, penicillin V, tetracyclines and aminoglycosides.
- If antimicrobials are required, prescribe a short course and follow the local formulary.
- Where therapy has failed or there are special circumstances, obtain advice from a local microbiologist.

CDI and primary care

- CDI has commonly been associated with hospital stay but it is being recognised that many cases originate in the community, due to indiscriminate use of antibiotics.
- Patients most at risk are the elderly, particularly if they have medical conditions and are in close contact with others, e.g. in a care home, residential treatment centre or hospital.

How we use antimicrobials affects the whole community.

Which patients are most at risk of CDI?

Patients are more at risk of CDI if they are:

- Elderly
- Suffering from severe underlying diseases
- Immunocompromised
- In an environment where they are in close contact with one another (e.g. in a care home), particularly if hygiene is lacking.

Other factors that increase the risk of CDI are:

- Use of antimicrobials
- Recent gastrointestinal procedures
- Presence of a nasogastric tube

The use of proton pump inhibitors (PPIs) might increase the risk of CDI. Only prescribe PPIs when indicated.

Reducing the risk of CDI

Prudent antimicrobial prescribing

- Broad-spectrum antimicrobials are strongly associated with CDI.

Isolating infected patients

- Isolating patients with CDI reduces the spread of infection in care homes and other places where people are in close contact with one another.

Good hygiene

- Everyone should wash their hands with soap and water before and after each contact with a CDI-infected patient, including at home.
- Alcohol gel is effective against MRSA but not against *C. difficile* spores.
- The National Patient Safety Agency's Clean Your Hands campaign has been rolled out to primary care - see www.npsa.nhs.uk/cleanyourhands.
- Carers of CDI-infected patients should wear gloves and aprons.

Refer to the PCT's *Clostridium difficile* guidelines.

When can broad-spectrum antibiotics be recommended?

There are few indications for broad-spectrum co-amoxiclav, cephalosporins or quinolones in primary care. The following situations are the only indications for their first-line use. Refer to the PCT antimicrobial formulary.

TABLE FROM ELMMB antimicrobial guidelines

Acute pyelonephritis	Co-amoxiclav (or ciprofloxacin in penicillin allergy)
Simple gonorrhoea (refer to GUM)	Cefixime or Ciprofloxacin single dose
Animal bite or human bite	Co-amoxiclav
Suspected meningitis in penicillin-allergic patient	Cefotaxime
Pelvic Inflammatory Disease	Ofloxacin (with metronidazole)

When using broad spectrum antimicrobials, counsel patients at risk to be alert for signs of CDI and to stop their antimicrobial and seek medical help if diarrhoea develops.

If prescribing antimicrobials to patients with a history of CDI, refer to the PCT's *Clostridium difficile* guidelines.

Bottom line

Clindamycin and broad spectrum antimicrobials are associated with CDI.

Don't prescribe antimicrobials when they're not needed.

If an antimicrobial is indicated, prescribe a short course of a narrow-spectrum agent at the appropriate dose, as outlined in the antimicrobial formulary.

BROAD SPECTRUM ANTIBIOTICS & *C.difficile* INFECTION

Rational

Considerable progress has been made locally around the prescribing of antibiotics as a result of various initiatives. This work is intended to build on previous achievement and focuses on the use of broad spectrum antibiotics.

Inappropriate prescribing of antibiotics leads to development and spread of resistance and therefore efforts should be made to encourage rational antibiotic prescribing. The use of broad spectrum antibiotics should be minimised wherever possible. In particular the “4Cs” cephalosporins, ciprofloxacin (and related quinolones), clindamycin and co-amoxiclav have been associated with the increase in *Clostridium difficile* infection rates that have recently been seen.

C.difficile infection is a serious health problem in both primary and secondary care. It is caused by the use of antimicrobials, particularly broad-spectrum antibiotics, which disrupt the balance of the normal gut flora, leading to rapid multiplication of *C.difficile* and resulting in infection and illness. It therefore makes sense to restrict the use of broad spectrum antibiotics to use in certain circumstances only.

Recommendations

- Only prescribe antibiotics if clearly indicated by condition or pathology results. Where pathology report a number of sensitivities, use local guidelines to make choice
- Avoid prescribing antibiotics for common respiratory infections, coughs, colds and sore throats in patients at low risk of complications
- If indicated, use a narrow-spectrum antibiotic (e.g. trimethoprim, pen V, tetracyclines, metronidazole) and reduce the duration of treatment to 5-7 days. Will a three day prescription suffice?
- Consider delayed prescriptions, a delayed prescription is one that remains within the practice until the patient needs it. (exceptions over the weekend)
- Telephone consultations are not appropriate
- Seek guidance from microbiologist if treatment fails or for special circumstances

Actions

1. Discussion between practice pharmacist, GPs and non-medical prescribers on prescribing issues around broad spectrum antibiotics.
2. Demonstrate a reduction in volume of prescribing for cephalosporins, ciprofloxacin (and related quinolones), clindamycin and co-amoxiclav for a chosen period year on year.

Monitoring and evaluation

Reduction in volume may be demonstrated by ePACT data. If reduction in volume can not be demonstrated, an audit to confirm adherence to formulary indications must be completed.

References

www.nice.org.uk/CG069

RD&TC No 09.20

Primary Care Talk No. 82 Oct 08

UKMI Academic Detailing Tool. Best practice in antimicrobial drug prescribing.