About

Clostridium difficile infection (CDI)

What is CDI?

‘Super-bug’ Clostridium difficile infection (CDI) is a recurring and preventable bacterial infection of the colon that causes severe and potentially deadly diarrhoea.¹,²,³ CDI is also referred to as a healthcare-associated infection or ‘HAI’⁴ and is listed as an immediate public health threat requiring urgent and aggressive action by the Centers for Disease Control and Prevention in the U.S.⁵

C. difficile bacteria are naturally present in the gut of up to 3% of healthy adults, usually without any problems. This is because the bacteria are normally kept under control by the ‘good gut bacteria’.² An alteration in the balance of the gut microflora, often caused by broad-spectrum antibiotics, can reduce the number of ‘good’ bacteria allowing C. difficile to multiply and cause inflammation, severe diarrhoea and potentially life-threatening complications.¹,²

In Europe the incidence and severity of CDI is increasing,⁶,⁷,⁸,⁹,¹⁰ with nearly 125,000 cases a year,¹¹ posing a major threat to healthcare systems and patients.

How does it spread?

C. difficile bacteria produce spores which are shed in the faeces.¹,²,¹² These spores can live outside the human body for weeks, or even months,² and are resistant to common disinfectants and alcohol.² CDI is highly infectious; spores can be passed from person to person, infecting anyone who touches a contaminated surface.²,¹² One infection can therefore spread rapidly throughout the hospital environment.¹²

Who is at risk?

CDI is a highly infectious disease that can affect anyone who touches a contaminated surface and transfers spores to their mouth.²,¹² However, it is more common in;

Those taking antibiotics

CDI is most common in patients taking broad-spectrum antibiotics that disrupt the normal gut microflora, allowing C. difficile bacteria to multiply and start producing toxins.²,¹² CDI therefore threatens those who are frequently prescribed antibiotics.¹,²,¹²,¹³

The elderly

This risk of contracting CDI increases with age meaning that the elderly are particularly vulnerable,²,¹²,¹⁴ with those over 65 most at risk.¹²

CDI results in death for around one in seven (14%) elderly patients (>90yrs)¹⁵ and almost half (45%) of intensive care patients over the age of 65.¹⁶ The elderly are also more susceptible to recurrence.¹⁷

What are the symptoms?

Symptoms of CDI include:²

• diarrhoea
• abdominal cramps
• fever

Severe cases can require bowel surgery and even lead to death.¹,²

~125,000 CDI cases a year¹¹

CDI results in death for around one in seven (14%) elderly patients¹⁷ and almost half (45%) of intensive care patients¹⁶
The risk of contracting CDI increases with time spent in hospitals or nursing homes, meaning those who experience prolonged periods of hospitalisation are more vulnerable to infection.\(^1,12\)

CDI is one of the top 10 HAIs in Europe,\(^1\) and is estimated to be three times as deadly as MRSA.\(^13,18\)

People in hospital with CDI are up to three times more likely to die in hospital (or within a month of infection) than those without CDI.\(^1,19,20\)

One in 20 patients going into hospital will acquire a nosocomial (hospital-acquired) infection, with CDI being one of the most severe forms of these.\(^1\)

CDI may re-occur from the same strain or as a result of reinfection with a different strain,\(^26\) and is associated with worse outcomes including increased mortality rates, longer length of hospital stay and greater healthcare resource utilisation.\(^3,31\)

Vancomycin and metronidazole, antibiotics frequently used to treat CDI, have an unintentional effect, damaging the protective ‘good’ bacteria of the gut microflora.\(^5,12,32\) and increasing the risk of recurrent disease.\(^1,9,32,33\)

Recurrent infections could be significantly reduced with a targeted treatment, killing only the C. difficile bacteria while sparing the ‘good’ bacteria in the gut that are important to protect against recurrent infection and capable of offering a sustained cure.\(^29,33\)

**Those in hospital**

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CDI and CDI recurrences can have a particularly adverse impact for patients with underlying diseases such as cancer, resulting in delays of treatment and a prolonged stay in hospital.\(^21\)

**What is the risk of recurrence?**

Recurrent infection of CDI occurs in up to 25% of patients within 30 days of initial treatment with commonly used antibiotics (metronidazole and vancomycin) which have a broad impact on the gut microflora.\(^27,28,29\)

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**Those with underlying diseases**

CDI also threatens those with serious underlying diseases including patients with renal impairment or immunocompromised patients, such as cancer patients receiving chemotherapy.\(^1,14\)

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**Transplant patients**

Transplant patients are also at increased risk of CDI and recurrence,\(^21\) with incidence significantly higher in lung\(^23\) and kidney transplant patients\(^22\) and higher mortality rates among liver transplant patients.\(^25\)

**References**