

# Faecal transplants - Can donations cure?

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Faecal transplantation is a promising option for *C.Â difficile* infections, yet itâ€™s not a mainstream treatment. Kate Woods investigates.

ON ITS own, a case of severe or relapsing *Clostridium difficile* infection (CDI) is a distressing problem.

The fever, loss of appetite, nausea, abdominal pain and tenderness resulting from severe diarrhoea and associated intestinal inflammation are debilitating for the patient.

That’s why when Sydney gastroenterologist Professor Thomas Borody met Sarah,\* a 14-year-old with Crohn’s disease who had just been diagnosed with *C. difficile*, he knew she was suffering.

“Sarah was experiencing the severe abdominal pain, she was vomiting daily and she was visiting the toilet 15–20 times a day,” Professor Borody says.

With antibiotic agents failing to rid her of the infection, Professor Borody suggested they try faecal microbiota transplantation (FMT).

While the procedure may seem unpleasant to some patients – it involves the transfer of bacterial flora from the stool of a healthy donor into the person with the infection – she gave permission straight away.

“Her parents were a little reticent; it took them a lot longer to give the permission.

But they finally agreed and we went ahead,” says the director of the Centre for Digestive Diseases in Sydney.

When the stool transplant nurse called several days after the transplantation to ask how she was feeling, Sarah replied: “Amazing! I have been just amazing.

““The only thing now is my legs – they really hurt because I have been dancing all day.”

In such a short period of time, Sarah had gone from visiting the toilet 15–20 times a day, to passing just one formed stool a day.

“This little girl had suffered so much,” Professor Borody says. “Her Crohn’s disease was pretty bad and then she had the *C. difficile* on top... These results changed her whole outlook – it was just wonderful to see.”

Despite encouraging results from Professor Borody’s group, FMT is far from standard practice in Australia.

FMT, also known as faecal bacteriotherapy, is a controversial treatment.

It involves taking bowel flora from the stool of a healthy donor and homogenising it in sterile saline.

The slurry containing the living protective bacteria is then infused into the bowel of the patient through colonoscope, enema or nasojejunal tube.

Professor Borody says the treatment is almost exclusively used to reverse severe or relapsing *C. difficile*.

“There is nothing that comes close as far as effectiveness. You need only a single infusion and you get virtually a 100% cure rate,” he says.

Furthermore, he says it is extremely safe.

Donors are screened for relevant communicable diseases and assessed for risk of infectious disease, gastrointestinal comorbidities and factors that can affect the composition of the intestinal microbiota.

“You would have thought that if you are using poo, things would be dangerous. The reality is diametrically opposite.

“You might have a bottom that is sore if a tube is inserted roughly, but there is not one instance of a complication caused by the bug flora itself.”

Professor Borody says 50% of the donor stools used in his clinic come from the relatives of patients and 50% from the clinic’s donor bank.

“Donors are tested every two weeks – blood and stool – and they need to have symptoms of normality; one formed sausage per day.”

While FMT is currently used for severe or relapsing *C. difficile* only, research has shown it may also be effective for improving other conditions such as ulcerative colitis and constipation.

There has also been a spate of recent publications suggesting FMT can change patients’ insulin sensitivity levels, and that it may be beneficial in the treatment of obesity, Professor Borody says.

“Research into this area is just burgeoning. I’d say that in the next 20–30 years, we are going to learn far, far more about the importance of the stool itself.”

Support for this procedure hasn’t been great in Australia; Professor Borody’s team is the only group who will carry out the transplant.

In the US however, there are about 200 centres performing FMT.

In fact, growing popularity there has led to the development of an inter-specialty position statement aimed at helping drive FMT towards US Medicare reimbursement by 2013.

In the statement, experts admit additional data is needed to assess the efficacy of FMT, but say there is encouraging data to date and pending data to show it is an effective treatment option.<sup>2</sup>

“Although vancomycin is the only drug that is approved by the FDA to treat CDI, it is clearly insufficient for many patients with recurrent disease. This predicament has forced a number of alternative therapies to be tried and to be developed,” they say.

“However, none has yet proved to be highly effective, safe and inexpensive. In contrast, with a cumulative reported cure rate of > 90%, negligible rate of significant adverse effects, and response of hours to days, FMT appears to fit these criteria.

“Furthermore, FMT is the only therapy that restores the phylogenetic richness of the recipient’s intestinal microbiota without prolonging the perturbation of the normal microbiotic composition.”

If approved, Professor Borody says the procedure will most likely fall into the same Medicare category as

bone marrow transplants and will be subject to the same ethical considerations as a blood transfusion, a sperm donation or an egg donation.

So why hasn't the procedure taken off in Australia?

According to Associate Professor Terry Bolin from the Gut Foundation, a big part of the reason is the offensiveness of the procedure to patients.

“While it is used extensively in the United States, I think in Australia most people have significant reservations about the procedure because it involves putting someone else's faeces into your colon,” he explains.

“I am not going to get into it and I know many others who are not getting into it.

Instead I think it will remain the tool of some very specialised people.”

Associate Professor Bernie Hudson, an infectious diseases physician at Sydney's Royal North Shore Hospital, agrees negative patient attitude towards FMT may play a big part, but suggests the other reason may be the procedure is not standardised.

“Obviously aesthetically it is not a particularly nice procedure to do, but I think a lot of people also feel that there needs to be standardisation before they will use it.”

He says he has referred a number of patients with *C. difficile* to Professor Borody when other therapies have failed.

“And in those couple of cases, it has worked absolutely perfectly. It has resulted in a complete cure without any side effects,” Professor Hudson says. “In fact these patients experienced more side effects from the treatments that only resulted in temporary relief from symptoms.”

He says with treatment options for relapsing *C. difficile* limited, he suggests more doctors may need to turn to FMT in the future.

“The current treatments just don't seem to work. People might get partial relief but then relapse quite quickly after stopping them. Different treatments may need to be seriously considered in the future.”

## Indications for FMT in *C. difficile* infections (CDI)<sup>2</sup>

1. Recurrent or relapsing *C. difficile* infection.

a. <sup>00</sup><sub>01</sub>At least three episodes of mild-to-moderate CDI and a failure of a 6- to 8-week taper with vancomycin with or without an alternative antibiotic.

b. <sup>00</sup><sub>01</sub>At least two episodes of severe CDI resulting in hospitalisation and associated with significant morbidity.

2. <sup>00</sup><sub>01</sub>Moderate CDI not responding to standard therapy (vancomycin) for at least a week.

3. <sup>00</sup><sub>01</sub>Severe (perhaps even fulminant *C. difficile* colitis) with no response to standard therapy after 48 hours.

In all cases, primary consideration must be given to the severity and pace of the patient's CDI when deciding whether early use of FMT is appropriate to prevent further clinical deterioration.

## References

1. Borody T. *Infection with Clostridium difficile.*

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2. Bakken JS et al. *Treating Clostridium difficile Infection with fecal microbiota transplantation. Clin Gastroenterol Hepatol* 2011, published online 23 August

***\*Name has been changed to protect the patient's identity.***

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