

# Can rapid integrated polymerase chain reaction-based diagnostics for gastrointestinal pathogens improve routine hospital infection control practice? A diagnostic study

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## Plain English summary

### Diagnostics for gastrointestinal pathogens

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## Plain English summary

Every year approximately 5000–9000 patients are admitted to a typical hospital with diarrhoea. The problem is that some diarrhoea is caused by infectious microbes such as *Clostridium difficile* ('C-diff'), but about 90% of cases have other, non-infectious, causes, such as taking antibiotics or laxatives. Determining which people do/do not have an infection is a slow process (typically 1–3 days). Meanwhile, patients are moved into single rooms, wherever possible, to stop them passing microbes on. These moves are often unnecessary because patients may not have an infection. Single rooms can get 'blocked' by patients without infectious diarrhoea, while other patients with true infectious diarrhoea remain close to, and therefore are a risk to, others.

As well as being slow, currently many labour-intensive, separate tests (for each possible microbe) have to be done on diarrhoea specimens. Development of a single quick test that could determine which of the 10–15 different microbes is responsible for causing a patient's diarrhoea could, therefore, provide major benefits to patients.

This study investigated two quick tests that look for multiple microbes. One (called MassCode) was not able to accurately detect the presence of microbes, which were known (from results of slow tests) to be in diarrhoea samples. Even worse, it suggested the presence of many other microbes in samples that were known not to contain them. The other (called Luminex) was better, but still failed to find one particular type of important microbe in about half of all tests. Unfortunately, neither test therefore meets the needs of the NHS.

In addition to assessment of the quick tests, a questionnaire survey which examined the current practice and cost of managing infectious diarrhoea was completed by infection control teams, microbiologists and microbiology laboratory managers. The survey suggested that infection control staff spent a lot of time managing infectious diarrhoea.



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