



Microbiology - Outbreak of C.difficile

Event title	Microbiology - Outbreak of C.difficile.
Venue	The Royal College of Pathologists, London.
Target audience	A-level Students studying biology and chemistry. Students were recruited from both year 12 and year 13, so background knowledge varied.
Objectives	<ul style="list-style-type: none">• Enjoy working in groups carrying out hands-on experiments and activities using real scientific equipment with real pathologists.• Be inspired by medical science, in particular pathology, and realise how fun it can be.• Have a new and empowering experience.• Develop a deeper understanding about medical science e.g. how modern hospital laboratories operate.• Their stereotypical views of the medical profession will be challenged, i.e. realise that there are many career opportunities in medicine other than being a surgeon or a nurse.• Pathology is not CSI or Silent Witness.• Pathology is about the living not the dead, i.e. 70% diagnoses are made by pathologists.• Pathology is diverse.• Pathologists are part of a team and are a fundamental 24 hour element of the NHS.• Learn how to use common laboratory equipment such as microscopes, test tubes, pipettes etc.• Learn some core pathology skills e.g. visual pattern recognition and problem solving.• Be encouraged to consider a career in medicine, in particular pathology.
Age range	17 - 19
How was the event advertised?	It was advertised through Outreach Project Manager's network of teachers, other Colleges and Aim Higher.
Number attending	30
Booking required?	Yes.
Length of event	45 minutes.
Refreshments provided?	Yes – juice and biscuits on break.
Equipment needed	<ul style="list-style-type: none">• Petri dishes.• Gloves.• Safety glasses.• Bisto gravy.
People needed	There were 2 trainee microbiologists.

Printed material used	Hand-outs about microbiology, a resource with fabricated patient details and information about their challenge. Career leaflets were also distributed.
Room set up	Classroom style.
Event programme	<p>Students took part in a scenario workshop where they pretended to be microbiologists in a hospital working to determine if there had been an outbreak of <i>C. difficile</i>. Several patients have ongoing abdominal symptoms associated with <i>C. difficile</i>.</p> <p>Show them infected stool samples (expect big 'eugh' from students) - a 'fake' poo mixture which closely resembles patient diarrhoea. Using tests devised by microbiologists, they will identify which samples are and are not infected. This information will be used alongside patient notes that we prepared and ward details so they can determine whether or not an outbreak is present.</p> <p>Five patients stool samples have been collected (3 with <i>C. diff</i> and 2 without). All five patients have come from the same Orthopaedics ward – they have been in hospital for a mixture of hip replacements, knee surgery, post car accidents etc. All patients have had antibiotics either pre or post surgery to prevent and treat infections.</p> <p>It is suspected that these patients have been infected from a common source, so stool samples have been taken for testing. All five patients have been in the same part of the ward and identified as in high risk groups for infection. Points of infection would include toilets, bed pans, washing facilities, basins, and most importantly staff hands.</p> <p>The patients:</p> <ol style="list-style-type: none"> 1. Vera Smith. 76 years old. Hip replacement. 4 weeks on the ward. Recent history of lung infections (treated with multiple courses of antibiotics), which along with the surgery may have lowered her immune system. <i>C. diff</i> test positive. 2. Deepak Kahn. 68 years old. Spine surgery. 7 weeks on the ward. Usually lives in an old people's home. <i>C. diff</i> test positive. 3. Kate Maughn. 32 years old. Knee surgery. 4 weeks on the ward. Recently gave birth to her first baby, during which time she was also in hospital. 4. Jason Larlham. 44 years old. Shoulder operation. 1 week on the ward. Previously was treated with antibiotics for an ear infection by his GP. 5. Charity Woods. 71 years old. Neck trauma. 3 weeks on the ward. Diabetic. On intravenous antibiotics to treat a urinary tract infection. <i>C. diff</i> test positive. <p>Run through tests with students:</p> <ol style="list-style-type: none"> 1. Split students into pairs or threes, each 'team' will take on one patient and that patient's 'stool' sample and run their own test. 2. Does this patient have <i>C. difficile</i> infection? 3. The tests will take a while, with breaks in between different bits of the test, so be prepared to talk through what's going on with students. 4. At the end get all the student teams back together (if time) and talk through which patients had the infection and how they might have passed it between them. The three older patients are the ones who are ill, so you can talk about why the two younger patients did not get the infection. 5. If not all student groups finish the tests in time you can conclude as though they were just part of a normal team, that some tests take longer than others and you can give them the answers about who is ill, and discuss how the outbreak might have happened.
Possible variations	With these tests we only had enough time to run the test and try to get the results in the 45 minute session, rather than having a lot of time to talk about preventative measures and outbreaks. If we were to do this again, we would probably have at least an hour for it.

What did the audience particularly like?	They really liked the poo! It actually worked really well as an ice-breaker. They also found performing the tests quite fun though some did struggle with it.
What surprised the audience?	That pathologists (microbiologists) work closely with patients.
What else would the audience have liked?	They would have liked more time to talk to the microbiologists.
How much preparation was involved?	Not too much – it just took a bit of practice getting the poo right using bisto gravy!
Any other comments?	The test was very expensive and we will probably think of another way of doing this without the expense.
Images.	
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