

Chapter 10

CASE Study 10.1 An outbreak of gastroenteritis in a residential care home.

- What is your initial analysis of what could have gone wrong?

Food poisoning from contaminated food prepared.

- What samples would you suggest are taken?

Faeces samples from the infected residents and from staff involved in the food preparation. Samples of remaining food.

- How would you process such samples?

Using stomacher to macerate the food and then conventional techniques for isolation of salmonella in particular. At the request of EHO possible culture for *C.perfringens* and *S.aureus* although symptoms suggest probable salmonella.

- What possible causes would you suggest for the outbreak?

Based on symptoms salmonella most likely.

- What would be the role of the Environmental Health Office and Health Protection Unit (HPU)?

To collect and co-ordinate samples, liaise with management of the care home. Check facilities and make recommendations.

- If a salmonella was isolated how would you confirm its identity, what else would you do with the organism?

Best identify by MALDI-TOF and then antisera to determine the O group. Send to reference laboratory for full typing.

- What action would be required at the residential home?

Improvement of the kitchen facilities and staff training. Possible environmental sampling to determine source of the infection.

Case Study 10.2 Profuse watery diarrhoea.

- What would be your initial diagnosis of the patient's condition?

With such a high loss of fluid most probably cholera. Could be severe salmonella infection.

- What virulence properties would likely have resulted in the patient's symptoms?

Enterotoxin production affecting adenyl cyclase activity causing huge efflux of fluid.

- What is the causative organism and what treatment options would be considered?

Vibrio cholera and treatment would simply be constant IV fluid replacement.

- Would you send samples to the laboratory? If so what samples and what tests would you request?

Faeces samples for culture onto TCBS plate and alkaline peptone water enrichment to grow the organism. Remember the diagnosis is obvious so in some cases there would be no need to send samples from all infected patients. Once the index case is established as cholera no need for samples on patients with exact same symptoms.

- Why did these solutions cause the patient to recover?

Kept the patient hydrated and the body would rid itself of the organism and effects of the toxin.

- Since there are other patients with the same symptoms would any agencies need to be informed and why?

Cholera is a reportable disease and several agencies would be involved in dealing with the outbreak and preventing further spread.

Case Study 10.3 Profuse vomiting and diarrhoea

- What would you suggest as the cause of the D+V to be?

Could be a norovirus infection or salmonella. Unlikely to be campylobacter due to lack of blood in stools.

- Why did only two people require hospitalization?

Most likely due to dehydration which is particularly problematic in the elderly.

- What measures would the hospital take on admission of the two patients?

Isolation and Barrier nursing to prevent any spread to other patients in the unit.

- What samples (if any) would be required to confirm the diagnosis?

Faeces samples and food if still available.

- What culture media would you use and how would you identify the likely pathogen?

For salmonella, a chromogenic agar such as Salmonella ABC medium and selenite enrichment. PCR for norovirus. Identify bacterial cause by MALDI-TOF.

- Could this D+V outbreak have been prevented and if so how?

Yes - by avoiding preparing the meal if recently suffered from D+V. Scrupulous hand hygiene and cleaning of food preparation areas would have been vital. Meal may have been undercooked.
