UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST
BOARD OF DIRECTORS
THURSDAY 27 MARCH 2014

Title:	**REPORT ON INFECTION PREVENTION AND CONTROL UP TO 28 FEBRUARY 2014**
Responsible Director:	Philip Norman, Executive Chief Nurse and Executive Director for Infection Prevention and Control
Contact:	Dr Beryl Oppenheim, Director of Infection Prevention and Control. Ext 16523

Purpose:	To provide the Board of Directors with information relating to infection prevention and control issues (including the reportable cases of MRSA bacteraemia, MSSA bacteraemia and episodes of *Clostridium difficile* infection) up to 28 February 2014. The paper also provides an update on Water Quality.
Confidentiality Level & Reason:	None
Annual Plan Ref:	Strategic Aim 4 : Quality of Services
Key Issues Summary:	This paper sets out the position for the 2013/14 MRSA bacteraemia and *Clostridium difficile* infection trajectories and provides incidence of MSSA and *E. coli* bacteraemia within the Trust and supporting actions to ensure continued improved performance. The paper also provides an update on water quality.
Recommendations:	The Board of Directors is asked to accept this report on infection prevention and control progress, including the update on water quality.

Approved by:	Philip Norman	**Date:** 12 March 2014

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REPORT ON INFECTION PREVENTION AND CONTROL UP TO 28 FEBRUARY 2014

PRESENTED BY THE EXECUTIVE CHIEF NURSE

1. Introduction

This paper provides a report on performance against the 2013/14 objectives for meticillin-resistant *Staphylococcus aureus* (MRSA) bacteraemia and *Clostridium difficile* infection (CDI), up to 28 February 2014. It provides an update on performance for meticillin-sensitive *Staphylococcus aureus* (MSSA) bacteraemia and outlines reporting requirements for *Escherichia coli* (*E. coli*) bacteraemia while identifying related infection prevention and control actions. It also provides an update on Water Quality.

2. Executive Summary

The annual objective for MRSA bacteraemia is 0 avoidable cases. During February 2014 there were no cases of MRSA bacteraemia.

The annual objective for CDI for 2013/14 is 56 cases. Performance for February was 6 Trust apportioned post 48 hour cases, all of which were reportable to the Health Protection Agency (HPA) in accordance with Department of Health guidance, meaning that we now have 75 cases to end of February. However with agreement from commissioners all cases are being reviewed against avoidability criteria, those deemed unavoidable are being excluded from consideration of local penalties.

All incidences of MSSA and *E. coli* bacteraemia continue to be reported in line with the HPA mandatory reporting requirements.

3. Incidents of MRSA Bacteraemia

3.1 MRSA bacteraemias 2013/14

There were no cases of MRSA bacteraemia during February, Figure 1 shows the number of Trust apportioned cases of MRSA against the monthly trajectory (April 2011 – February 2014). Monthly incidence of MRSA bacteraemias to end February 2014 is shown in Table 1.

Figure 1: Number of Trust apportioned MRSA cases at UHBFT against the monthly trajectory (April 2011-February 2014).

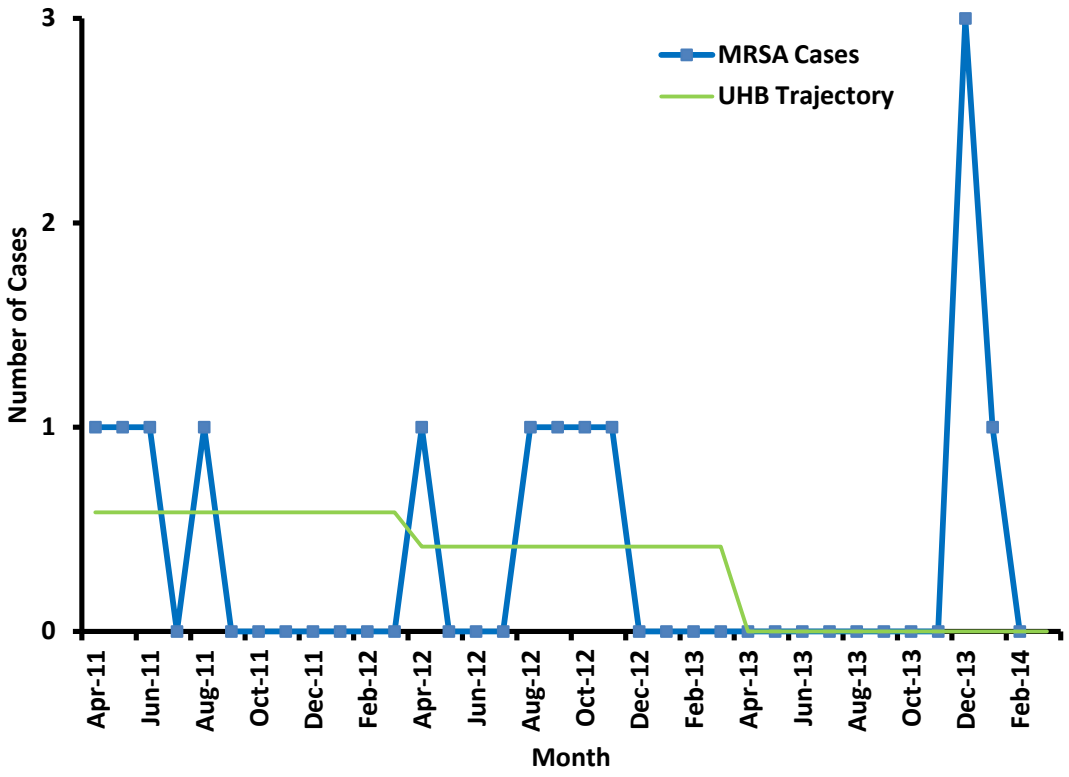


Table 1: Monthly number of MRSA bacteraemias at UHBFT up to 28 February 2014.

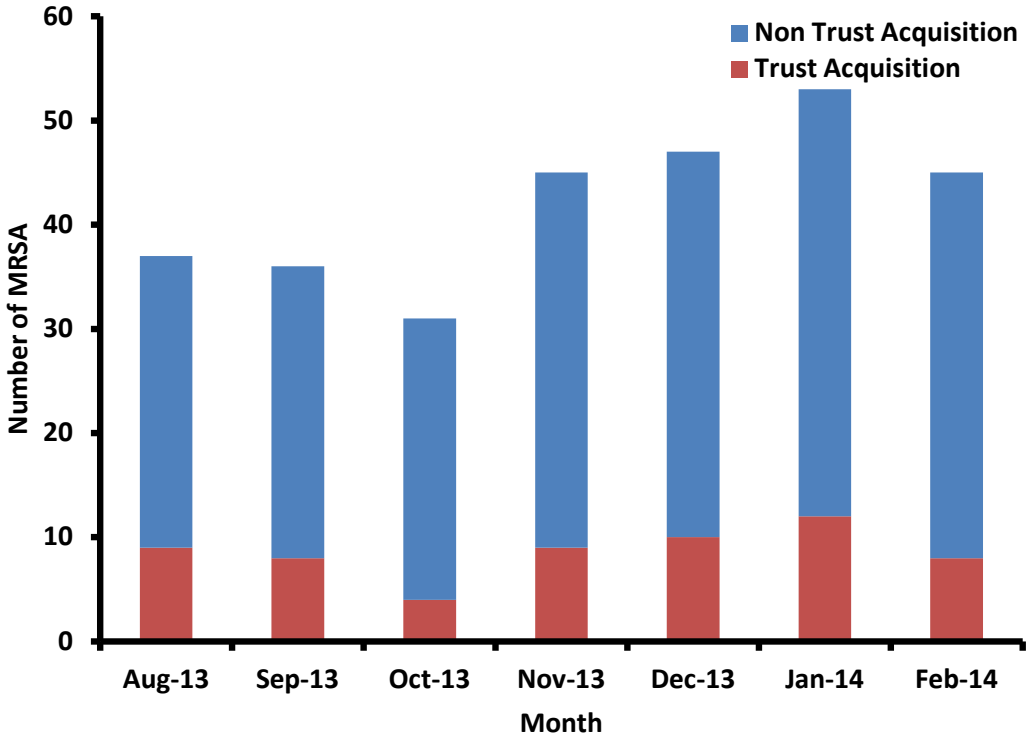
Month	Total bacteraemia	Time of bacteraemia acquisition?	
		Non Trust apportioned	Trust apportioned
April 2013	1	1	0
May 2013	0	0	0
June 2013	0	0	0
July 2013	0	0	0
August 2013	0	0	0
September 2013	0	0	0
October 2013	0	0	0
November 2013	0	0	0
December 2013	3	0	3
January 2014	1	0	1
February 2014	0	0	0
Total	**5**	**1**	**4**

Note: Objective for the financial year 2013/14 is zero avoidable cases.

3.2 MRSA acquisitions

MRSA bacteraemias are frequently associated with new MRSA acquisitions during inpatient episodes. Figure 2 shows the number of Non Trust and Trust acquired MRSAs from November 2013

Figure 2: Number of Non Trust and Trust Acquisitions of MRSA (August 13 – current).



Note: A Non Trust acquisition refers to a patient's first MRSA isolate (new MRSA infection or colonisation) on admission to the Trust. A Trust acquisition refers to a patient previously identified as MRSA negative however has had a newly identified MRSA positive isolate (new MRSA infection or colonisation) during an inpatient episode.

3.3 Actions to improve performance for MRSA bacteraemia

A renewed focus on clinical practice is required to regain our performance. Issues to be addressed as part of the learning from the recent cases include:

- Improving the clinical management and documentation of all invasive devices including central and peripheral cannulae, urinary catheters, nephrostomies and stents in accordance with Trust policies and procedures.

- Ensuring that all relevant staff are aware of patients' MRSA status and what the implications are

- Ensuring the optimal management of all patients with MRSA colonisation and infection, including decolonisation treatment, prophylaxis during procedures, and treatment of infections.

4. Episodes of *C. difficile* Infection (CDI)

4.1 Current Figures

The annual CDI objective for 2013/14 is 56 cases; following the introduction of a new review tool with local commissioners unavoidable cases are discounted for the purposes of locally agreed penalties. Performance for February 2014 was 14 reportable cases of which 6 were post 48 hours and attributable to the Trust. Figure 3 shows the number of Trust apportioned cases of CDI against the monthly trajectory (April 2011 – current). Monthly incidence of CDI to date is shown in Table 2.

We have now heard about the arrangements for the CDI objective for 2014/15 which commends our system of joint review with commissioners and recommends a similar process for England. We will be updating our processes based on learning during 2013/14 to ensure the optimal arrangements for review of cases and development of action plans to address any deficiencies in management.

Figure 3: Number of Trust apportioned cases of CDI at UHBFT against the monthly trajectory (April 2011-current).

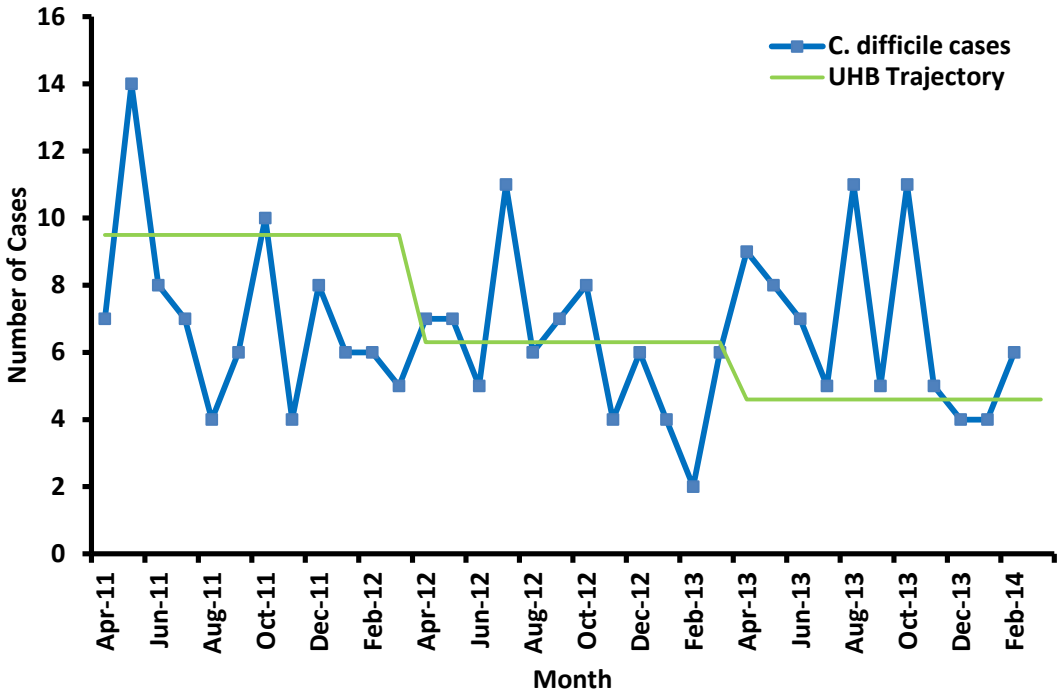


Table 2: Monthly number of CDI cases at UHBFT up to 28 February 2014

Month	Total number of CDI	Objective (Trust apportioned) Monthly/ (annual)	Time of CDI acquisition		Commissioners reviewed unavoidable cases	Commissioners reviewed avoidable cases
			Pre	Post 48 hours (Trust apportioned)		
April 2013	10	4.6	1	9	7	2
May 2013	12	4.6	4	8	6	2
June 2013	9	4.6	2	7	6	1
July 2013	8	4.6	3	5	5	0
August 2013	18	4.6	7	11	7	4
September 2013	6	4.6	1	5	5	0
October 2013	16	4.6	5	11	9	2
November 2013	7	4.6	2	5	3	2
December 2013	10	4.6	6	4	3	1
January 2014	7	4.6	3	4	4	0
February 2014	14	4.6	8	6	4 (1 pending)	1
Total	**117**	**52 (56)**	**42**	**75**	**59 (1 pending)**	**15**

Note: Following the introduction of a new review tool with local commissioners, unavoidable cases will be discounted for the purposes of locally agreed penalties. The final two columns of the above table provide details of the commissioners reviewed figures for all Trust apportioned cases of CDI.

4.2 Actions to improve performance for CDI 2013/14

Continued focus and challenge will be required to improve performance regardless of systems to exclude certain cases on avoidability grounds. Particular areas to focus on in the immediate future include:

- Continued review of patients bowel management procedures and the appropriateness of stool sampling with clear documentation of the decision making process which has reduced the number of inappropriate samples.

- Reinvigorate the antimicrobial stewardship programme which includes: ensuring that antibiotic prescribing is in line with Trust guidelines; mandating the requirement for a written indication for every antibiotic prescription; and ensuring and documenting an early review of the continuing appropriateness of each prescription.

- Continuation of the rapid reviews by the Infection Prevention & Control team of any area reporting two or more cases of CDI.

4.3 Facilities Update

- The environmental monitoring of clinical areas through the monitoring audits continues to exceed the 95% compliance requirements.

- The department has supported the deep cleaning and reopening of wards affected by Norovirus during February.

- Two additional hydrogen peroxide 'misting' machines have been purchased to support the old QE ward areas.

5. Other Alert Organisms

5.1 Multiple resistant gram negative bacteria

There were no cases of carbapenemase producing Enterobacteriaceae, *Pseudomonas aeruginosa* or multi drug resistant *Acinetobacter* reported in February. There has been significant media interest and alerts around the increasing numbers of carbapenemase producing Enterobacteriaceae nationally. While we have had few cases to date, it will be extremely important to ensure that all possible measures are being taken to identify cases and minimise the potential for transmission, including fully implementing the recently published national toolkit. An action plan to address all issues related to prevention of transmission and compliance with national guidance has been developed and is being monitored on a monthly basis through the Infection Prevention and Control Group.

5.2 Meticillin-sensitive *Staphylococcus aureus* (MSSA) bacteraemia

Reporting of MSSA bacteraemia has been mandatory since 1 February 2011. Performance for February 2014 is 11 cases, 4 of which were Trust apportioned.

5.3 *E. coli* bacteraemia

From 1 February 2011, reporting of *E. coli* bacteraemia has been mandatory. *E. coli* is part of the normal bacterial flora carried by all individuals. It is the commonest cause of clinically significant bloodstream infection. *E. coli* bacteraemia represents a heterogeneous group of infections. Performance for February 2014 is 6 Trust apportioned and 13 non-Trust apportioned cases.

6. Update Report on Water Quality

6.1 Background

In recent years there has been an increase in nationally published evidence relating to outbreaks and incidents in augmented care units related to *Pseudomonas aeruginosa*. To manage this recognised risk, a Water Quality Group was set up in the Trust in July 2013 under the Chairmanship of the Director of Infection Prevention and Control. Membership and Terms of Reference have been agreed with representation at the Group from Microbiology, Infection Prevention and Control, Trust Estates and Cofely.

The main remit of the Group is to review and advise the Trust on all aspects of the microbiological safety of water throughout the Trust and to develop and keep under review a Water Safety Plan and associated documents.

In line with national guidance, the Water Quality Group has produced a draft Water Safety Plan which is currently under consultation with the members of the Group. The Water Safety Plan will be the overarching document and will contain reference to any policies and procedures relating to microbiological safety of water. Other supporting documents are also in the process of being reviewed/updated prior to circulation.

The Water Quality Group reports to the Infection Prevention and Control Group chaired by the Executive Chief Nurse/Executive Director for Infection Prevention and Control. The Water Quality Group has 3 sub groups: Legionella, Renal and Endoscopy. However the primary focus of the Group at this time has related to the management of pseudomonas following the recent publication by the Department of Health of Health Technical Memorandum (HTM) 04-01: *Pseudomonas aeruginosa* – advice for augmented care units.

6.2 Pseudomonas

An important aspect of adherence to national guidance is undertaking risk assessments to identify those areas deemed to treat patients at high risk of acquisition of *Pseudomonas aeruginosa* from water and the Group has identified that the following areas be designated as high risk for the purposes of water sampling and clinical surveillance of *Pseudomonas aeruginosa*:

- Critical Care Unit
- Burns Centre
- Ward 303 (Renal)
- Ward 301 (Renal Dialysis)
- Ward 625 (Haematology/Bone marrow transplantation)

A major focus of the work of the Group is to ensure that water sampling is performed according to national guidance and local procedures and to review results and ensure appropriate remedial action is taken where samples are positive for pseudomonas. This sampling process has identified the need to focus on showers within the Critical Care Unit and Burns Centre. Changes have been made to various flushing and cleaning regimens in these areas and results are currently under review. Following recent sampling it has been noted that approximately 12% of initial samples are positive although after local decontamination the samples are negative (ie local decontamination has been successful).

6.3. Legionella

There are no major concerns on legionella management within the Trust and any positive result is appropriately managed.

Risk assessments are in place and an audit of compliance has also been undertaken and the report is awaited. This will be reviewed by the Water Quality Group.

6.4. Water Quality in Renal Clinical Areas

The primary focus of the Group is to monitor governance compliance and compliance with Renal Dialysis guidance. Progress has been made on reporting of results and maintenance testing by Cofely, development of heat sanitisation protocols including responses to failures and heavy metal testing. Work is underway to establish an in house endotoxin testing facility to further improve response times thus reducing risks.

6.5 Water Quality in Endoscopy Units

The quality of the endoscopy water continues to be closely monitored and has improved since the washers were decontaminated, various parts replaced and alterations made to filtration/water flows within the machines.

6.6 Reporting

Ongoing results and remedial actions are reported promptly by Cofely and Trust laboratory services and reported monthly to the Infection Prevention and Control Group.

7. Outbreaks of Diarrhoea and Vomiting

There were no outbreaks of diarrhoea and/or vomiting reported in February 2014.

8. Serious Incidents Requiring Investigation (SIRI) related to Infection Prevention & Control

All MRSA bacteraemia, and CDI cases that result in death (Part 1 of the death certificate) or surgery, are reported as Serious Incidents Requiring Investigation (SIRIs). Those deaths on Part 2 of the certificate are of patients considered to have died *with* MRSA or CDI rather than *of* it. There have been no MRSA deaths reported on Part 1 or 2 of the death certificate for February 2014. However there has been one CDI death reported on Part 1 of the death certificate for February 2014.

9. Recommendations

The Board of Directors is asked to accept this report on infection prevention and control progress, including an update on water quality.

Mr Philip Norman
Executive Chief Nurse and Executive Director for
Infection Prevention and Control

12 March 2014

Appendix 1

Infection Prevention and Control Report

Explanation of the terms used in the report

Meticillin Resistant *Staphylococcus Aureus* (MRSA) – sometimes referred to as a 'superbug'

Staphylococcus aureus (also known as staph) is a common type of bacterium (bacteria or germ). It is often carried on the skin and inside the nostrils and throat, and can cause mild infections of the skin such as boils as well as much more serious infections.

MRSA is a form of *Staph aureus* which is resistant to many of the commonly used antibiotics. It is extremely rare for healthy people to carry this bug but it is found in around 1-2% of the population in the United Kingdom. Individuals who have MRSA on their skin and in their nose are described as being 'colonised', which does not usually cause harm to people who are healthy.

MRSA can cause infections such as blood stream infections and wound infections, particularly if there is an opportunity for the bacteria to enter the body such as a result of surgery (operation) or catheters (tubes or lines) going into veins. The transmission and risk of MRSA infection, including MRSA blood stream infection, can be addressed effectively if measures are taken to identify MRSA carriers as potential sources, then they are treated (with antibiotic body wash) to reduce the risk of transmission (referred to as decolonisation).

This requires screening of patient populations for MRSA carriage, either before or on admission to hospital, to identify carriers and implement a decolonisation regimen.

***Clostridium Difficile* Infection (CDI)**

Clostridium difficile is a bacterium present in the large bowel of approximately 10% of healthy individuals. It usually causes no problems. However, antibiotics given to treat other infections can suppress the "normal" bacteria in the bowel, leaving the *Clostridium difficile* bacteria to overgrow.

This overgrowth can lead to the production of toxins (poisons), which have an irritant effect on the gut (bowel), causing inflammation of the bowel. Patients can exhibit no symptoms at all, but commonly they have watery diarrhoea, abdominal (tummy) pain and sometimes fever, especially in the elderly and in people who are immunosuppressed (where the immune system is less effective in fighting diseases, for example in individuals who have cancer).

There is also the possibility of person-to-person spread. To prevent such spread, hand washing with soap and water is key, along with isolating the patient to prevent further spread (individual is cared for in single room which is referred to as 'source isolation'), appropriate antibiotic prescribing (used only when necessary) and for the shortest period that is appropriate and cleaning of the environment to remove *Clostridium difficile* spores (an especially tough form of the bacteria) which may persist in the environment.

Meticillin Sensitive *Staphylococcus Aureus* (MSSA)
MSSA is the term used for the more antibiotic sensitive form of *Staph aureus* and is a common type of bacterium that can live harmlessly on the skin. Around 30 % of people carry *Staph aureus* in their nose or on their skin, causing them no harm. MSSA is not normally a risk to healthy people and the majority of people who carry it do not have symptoms and are not aware they are carrying it. People who have MSSA in their nose or on their skin are said to be 'colonised'.

Sometimes MSSA can cause wound infections including after surgery, abscesses or boils, which may take a long time to heal and can sometimes lead to blood poisoning.

Escherichia coli or *E. coli* infection
E. coli is the name of a germ, or bacterium that is present in the bowel of humans and animals.

There are many types of *E. coli*, and most of them are harmless. But similar to Clostridium Difficile Infection, some can cause problems and symptoms can include bloody diarrhoea. *E. coli* can also be a common cause of urinary and abdominal (tummy) infections including in patients in hospital and some of these cases can also lead to blood stream infections.

Carbapenemase producing Enterobacteriaceae (CPE)
Enterobacteriaceae are a family of bacteria that live in the gastro-intestinal tract (bowel and stomach) of humans and animals. They include bacteria such as *E coli* and Klebsiella. These bacteria are a common cause of infections such as urinary infections, abdominal (tummy) infections and blood stream infections.

A major threat to our being able to treat these infections has been the development in these bacteria of mechanisms to evade the action of antibiotics (bacteria becomes resistant to antibiotics).

Carbapenems are a very important class of antibiotics used to treat the most serious of infections, so bacteria with the ability to evade these groups are a particular threat to all aspects of modern medicine such as surgery, intensive care and organ transplantation.

Augmented Care Setting
Refers to a particular clinical setting or service where water quality must be of a higher microbiological standard than that provided by the supplier.

Pseudomonas aeruginosa
Pseudomonas aeruginosa is a bacterium, commonly found in wet or moist environments. It is commonly associated with disease in humans with the potential to cause infections in almost any organ or tissue, especially in patients compromised by underlying disease or immune deficiency.

Pseudomonas aeruginosa thrives in relatively nutrient-poor environments at a range of different temperatures.

Pseudomonas aeruginosa is an opportunistic pathogen that can colonise and cause infection in patients especially those who are immunocompromised.

Management of water systems to reduce the risk of microbial growth is vital to patient safety. It requires surveillance and maintenance of control measures including temperature control, usage, cleaning and disinfection measures.

Legionella
Legionella is a bacterium which causes legionnaire's disease (legionnaire's disease is a form of pneumonia caused by any species of gram negative aerobic bacteria).