

Annual Report of the

INFECTION PREVENTION & CONTROL TEAM

2017 - 2018



Chairman Professor Sir Bruce Keogh Chief Executive Officer Sarah-Jane Marsh

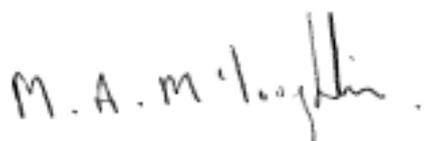
By your side

Foreword

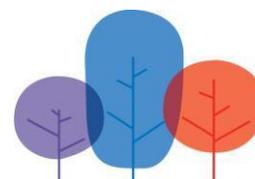
This Annual Report celebrates some of the successes of the Infection Prevention & Control Team (IPCT) at Birmingham Women's and Children's NHS Trust over the past year; it focuses particularly on how we are taking an increasingly multidisciplinary approach to emerging new infection prevention and control challenges. The emergence of new infectious diseases and the global threat to public health from antibiotic-resistant bacteria are making infection prevention & control far more complex.

This brief report is not intended to describe all the activities of the Infection Prevention & Control Team, or to provide a comprehensive picture of the state of infection prevention & control in the Trust. The Board obtains on-going assurance of infection prevention & control performance at BCH via the Infection Prevention & Control Committee and Clinical Risk & Quality Assurance Committee.

We work tirelessly to ensure our hospitals are clean and that we protect everyone from infections, aiming for zero hospital acquired infections. To do this we work closely with all clinical wards/departments to ensure every member of staff understands and embraces our infection prevention and control practices.



Michelle McLoughlin
Chief Nurse
Director of Infection Prevention & Control



Monitoring infections

Relates to:

- Hygiene Code Criterion 1: Systems to manage and monitor the prevention and control of infection
- Hygiene Code Criterion 5: Ensure prompt identification of people who have or are at risk of developing an infection so that they receive timely and appropriate treatment to reduce the risk of transmitting infection to other people

Methicillin-resistant *Staphylococcus aureus* (MRSA)

Birmingham Children's Hospital	<ul style="list-style-type: none">• No MRSA bloodstream infections 2017/18• 142 patients colonised or infected with MRSA
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Birmingham Women's Hospital	<ul style="list-style-type: none">• No MRSA bloodstream infections 2017/18• 26 patients colonised or infected with MRSA
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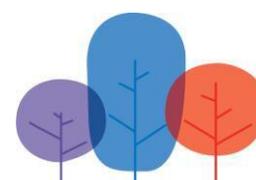
The number of patients coming to BCH with MRSA has been very stable for the last three years, but higher than during the period preceding that. By contrast, the number of patients identified with MRSA at BWH is decreasing. Screening to identify symptomatic carriers, vigilance to identify cases of hospital transmission, and careful management of MRSA-positive patients, remains vital to prevent both patients getting serious infections such as bloodstream infections and MRSA spreading in the hospital.

Methicillin-sensitive *Staphylococcus aureus* (MSSA)

Birmingham Children's Hospital	<ul style="list-style-type: none">• 16 episodes of MSSA bloodstream infection• Ten of these were CVC-related
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Birmingham Women's Hospital	<ul style="list-style-type: none">• 4 episodes of MSSA bloodstream infection. Only one episode was considered potentially avoidable.
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We are continuing to make progress in preventing avoidable serious infections with MSSA, the number of infections we are seeing now being around one third of that seen less than a decade ago. By contrast, the national picture is that far less progress has been made in preventing bloodstream infections with MSSA.



Multidrug-resistant Gram-negative bacteria

Birmingham Children's Hospital	<ul style="list-style-type: none">• 213 patients colonised or infected with ESBL-producing Enterobacteriaceae• 5 patients colonised or infected with carbapenemase-producing Enterobacteriaceae
Birmingham Women's Hospital	<ul style="list-style-type: none">• 42 babies colonised or infected with ESBL-producing Enterobacteriaceae, compared with 16 during 2016/17• Although the number of isolates of ESBL-producing Enterobacteriaceae from adult patients is relatively low, the rate of increase is very high. In 2017/18 there were 48 cases, compared with 25 and 19 in the previous two years• No carbapenemase-producing Enterobacteriaceae were identified

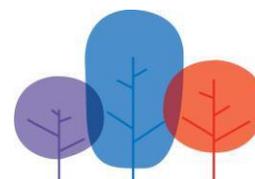
These are the bacteria that most of the recent media stories about infection becoming difficult or impossible to treat relate to. At BCH the number of patients found to have these bacteria seems to have plateaued at BCH. However, at BWH we are seeing a substantial increase in the numbers of both babies and adults with ESBL-producing Enterobacteriaceae. This is putting pressure on isolation facilities, especially on the NICU; the action that we have taken in response to this is described in a separate section of the report.

As noted last year, clinical staff are very aware of the threat posed by CPE. As such almost all patients at risk of having CPE are being isolated and screened without the intervention of the IPCT.

Clostridium difficile

Birmingham Children's Hospital	<ul style="list-style-type: none">• 3 cases of <i>C. difficile</i> infection (CDI) in 2 patients.• We detected a further 20 <i>C. difficile</i> excretors, compared with 9 and 17 in the previous two years
Birmingham Women's Hospital	<ul style="list-style-type: none">• No <i>C. difficile</i> cases

We are continuing to see low numbers of cases of CDI, although a number of high-risk patients at BCH are colonised with toxigenic *C. difficile*. During 2017/18 we did see one case of recurrent CDI at BCH; we have changed our treatment recommendations for the highest risk patients based on that experience.

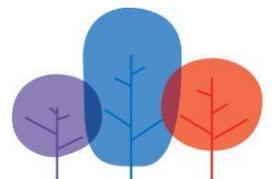


Influenza

There were 79 cases of influenza diagnosed at BCH, compared with 40 in the previous year. BWH saw an even greater rise in the number of cases, with 17 cases against only two in the previous year.

We had a very successful staff vaccination programme. It started with a 'Jabathon' on 2 October 2017 under the same slogan as last year of 'Get a Jab, Give a Jab'.

The Birmingham Women's & Children's NHS Trust achieved the CQUINN target, in reporting 82% uptake of the vaccine.



Bloodstream infections with Gram-negative bacteria

Relates to:

- Hygiene Code Criterion 1: Systems to manage and monitor the prevention and control of infection
- Hygiene Code Criterion 5: Ensure prompt identification of people who have or are at risk of developing an infection so that they receive timely and appropriate treatment to reduce the risk of transmitting infection to other people

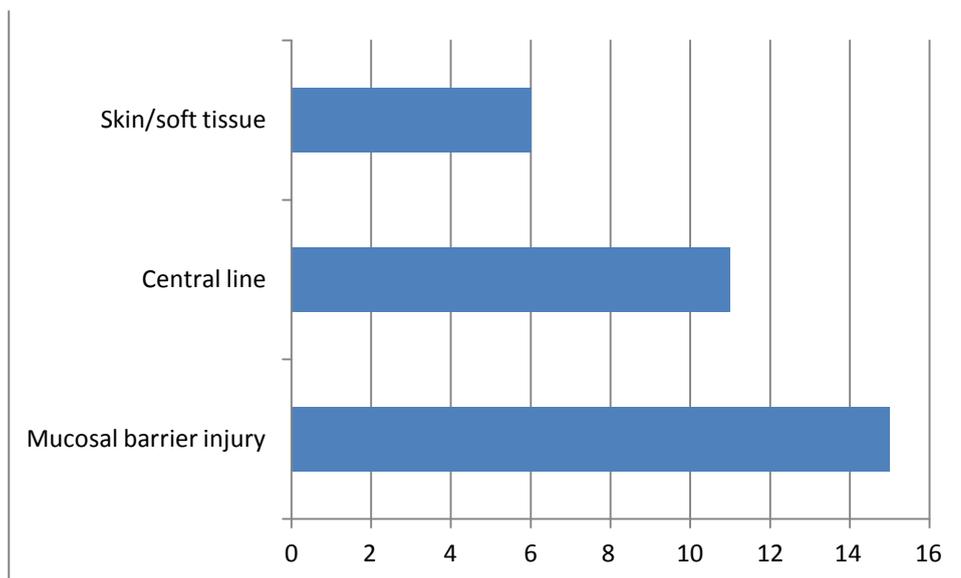
Background

In November 2016 the Government announced an ambition to halve the number of Gram-negative bloodstream infections (BSI) in England by 2020. The initial focus was on *E. coli*, but during 2017/18 reporting of *Klebsiella* spp. and *Pseudomonas aeruginosa* also became mandatory.

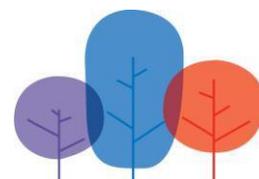
What we did in 2017/18

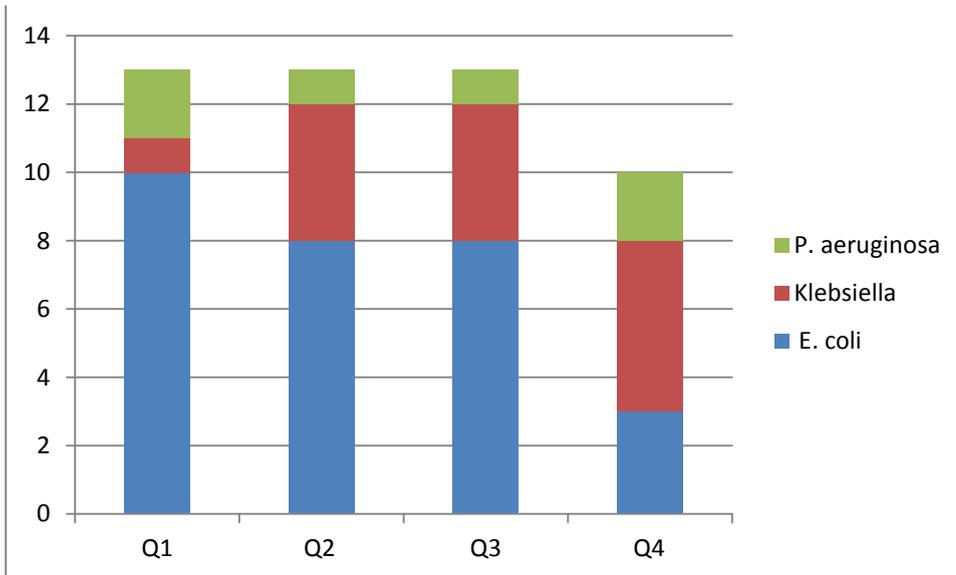
At BCH, during the first six months of the year we undertook a detailed analysis of all episodes of Gram-negative bloodstream infection (GNBSI) to understand why these infections occurred, and to identify avoidable factors.

Of 34 episodes of GNBSI we identified three major categories of root causes or contributory factors:



Multidisciplinary working groups to address each of these three categories have been established. Although longer term data analysis has shown that there is expected natural variation the quarterly numbers of GNBSI, the data for 2017/18 does show an encouraging reduction in the last quarter:

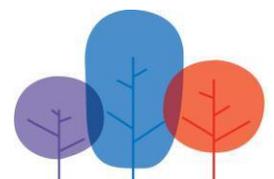




At BWH, we undertook a review of the impact of the asymptomatic bacteriuria (ASB) pathway on *E. coli* bloodstream infections. This pathway was developed jointly by Microbiology and Maternity Services in 2015. We found that implementation of the ASB pathway has led to a 50% reduction in *E. coli* BSI in maternity cases, but has had no impact on either chorioamnionitis-related cases or early-onset neonatal sepsis.

What happens next?

We will continue to undertake surveillance of cases at both sites, and ensure that we will roll out this approach to include BWH as well. We expect to see further benefit from the output of the working groups.



Focus on reducing blood stream Infections – Haematology Oncology CVC Working Group

Relates to:

- Hygiene Code Criterion 1: Systems to manage and monitor the prevention and control of infection
- Hygiene Code Criterion 5: Ensure prompt identification of people who have or are at risk of developing an infection so that they receive timely and appropriate treatment to reduce the risk of transmitting infection to other people

What we did in 2017/18

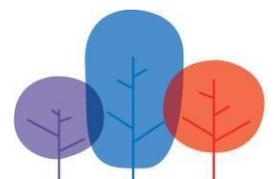
The Haematology Oncology working CVC group has continued to examine all aspects of CVC care from insertion, on-going care to removal of the CVC. Key actions have included:

- We have produced a CVC booklet for patients and families for care of a CVC, and have a big focus on Infection prevention & Control guidance, this booklet is given to families on insertion.
- We have a very clear guidance for washing of patients' pre line insertion with an Octenidine based product, which links in with our pre line screening for MSSA & MSRA.
- We have Trust wide flow charts relating to the safety of CVC insertion, on-going care and discharge guidance.
- We have engaged with the Anaesthetic team, attending their meetings to keep them updated on changes in care.

Finally, we are a good way forward on developing a care bundle for CVCs; further work is required in some elements for outpatients.

What happens next?

We will continue with the work of the Haematology Oncology CVC group, widening the membership to more specialities and more disciplines. Benchmarking with other Paediatric Trusts, to continue to improve our care.



Screening of patients for carbapenemase-producing Enterobacteriaceae

Relates to:

- Hygiene Code Criterion 1: Systems to manage and monitor the prevention and control of infection
- Hygiene Code Criterion 5: Ensure prompt identification of people who have or are at risk of developing an infection so that they receive timely and appropriate treatment to reduce the risk of transmitting infection to other people

Background

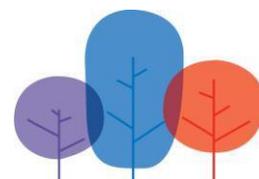
Our screening policy is based on DH Guidance and requires that patients who have been inpatients in hospitals in Greater Manchester or London or in overseas countries need to be isolated (including strict isolation until the first negative test result is obtained) until three negative faeces samples or rectal swabs collected 48 h apart have been reported as negative. This policy is expensive, blocks isolation beds, is unpleasant for patients, and can interfere with clinical care.

What we did in 2017/18

We identified that at least 75 isolation bed days per month are being lost at BCH whilst patients are being screened. Moreover, the costs of isolating patients until the result of the first sample is obtained are high, because of the need for persons entering the room to wear disposable gowns. A business case is being developed to use molecular testing to speed up that screening process.

What happens next?

We expect that molecular testing, although more expensive than culture, will deliver a net saving to the Trust, as well as being clinically beneficial and better for patients and their families.



Preventing surgical site infections after cardiac surgery

Relates to:

- Hygiene Code Criterion 1: Systems to manage and monitor the prevention and control of infection
- Hygiene Code Criterion 5: Ensure prompt identification of people who have or are at risk of developing an infection so that they receive timely and appropriate treatment to reduce the risk of transmitting infection to other people

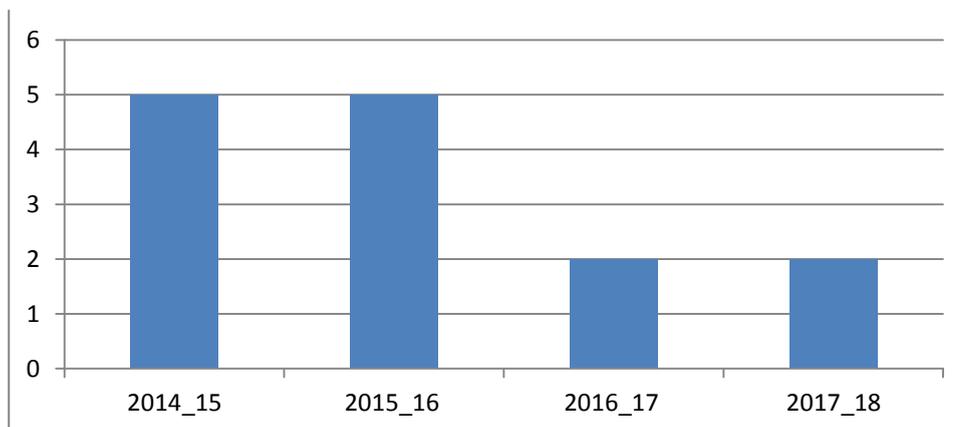
Background

Surgical site infections after cardiac surgery can cause serious morbidity. The IPCT has been collaborating with the Cardiac Surgery and PICU Teams for two to three years to ensure that we are doing everything possible to prevent these infections.

What we did in 2017/18

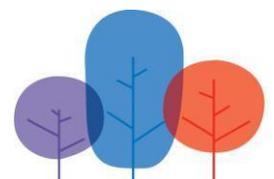
During 2017/18 we undertook an audit of antibiotic concentrations in patients following cardiac surgery. Two antibiotics are routinely used as prophylaxis: flucloxacillin and cefuroxime. Whilst we found that patients' flucloxacillin concentrations were adequate post-operatively, cefuroxime concentrations were much more variable. We changed antibiotic prescribing regimen in response to this finding.

The figure below shows that we are consistently seeing fewer bloodstream infections associated with surgical site infections than before. More particularly, the last such infection that we saw was in August 2017, before the new antibiotic prophylaxis regimen was implemented.



What happens next?

We will continue to monitor infection rates, and to look for new means of preventing infections in this patient group.



Gram-negative bacteria on the NICU

Relates to:

Hygiene Code Criterion 2: Provide and maintain a clean and appropriate environment in managed premises that facilitates the prevention and control of infections

Hygiene Code Criterion 6: Systems to ensure that all care workers (including contractors and volunteers) are aware of and discharge their responsibilities in the process of preventing and controlling infection

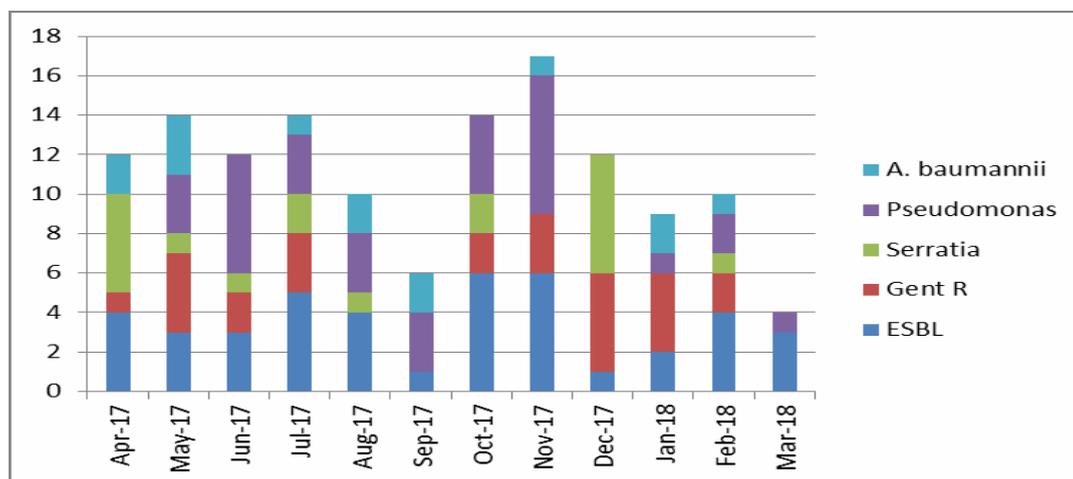
Background

Many NICUs in England and other countries have to close because of outbreaks with Gram-negative bacteria, especially strains that are multidrug resistant. At BWH we undertake routine surveillance of babies on the NICU for the following potentially problematic bacteria:

- Gentamicin-resistant Enterobacteriaceae
- ESBL-producing Enterobacteriaceae
- *Serratia* spp.
- *Acinetobacter baumannii*
- *Pseudomonas aeruginosa*

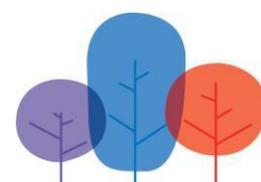
What we did in 2017/18

134 isolates of these bacteria were seen in 2017/18, which is comparable to the 127 in the preceding year. During the year we introduced a new isolation procedure that allowed for cohort isolation of babies colonised with bacteria that national guidelines on multidrug-resistant bacteria indicate are a lower priority for isolation. Monthly surveillance data indicates that, if anything, the number of babies acquiring these bacteria has decreased since implementation of this new policy:



What happens next?

We have identified that reuse of pacifiers from day to day represents a potential means of transmission of Gram-negative bacteria to babies. We are working with the NICU to ensure that pacifiers are used in accordance with national guidelines.



Management of Norovirus

Relates to:

Hygiene Code Criterion 2: Provide and maintain a clean and appropriate environment in managed premises that facilitates the prevention and control of infections

Background

During 2016/17 we saw a dramatically increased number of patients with norovirus infection compared with previous years. This resulted in several outbreaks of infection, control of which required full or partial ward closures.

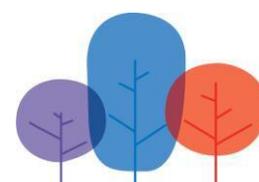
What we did in 2017/18

To try to understand how we could prevent, or at least better control norovirus outbreaks we undertook a multi-disciplinary table top review of the previous season's outbreaks during the summer of 2017. A common theme in many of the outbreaks was onset during weekends or school holidays, times when more children visit the hospital, and when hospital staff may be less well prepared to respond to outbreaks promptly. The table top review identified a number of actions in preparation for 2017/18 norovirus season. These included Trust-wide communication for staff using Daily Voice, Trust-wide banners, posters for parents' rooms, and a message heard on telephoning the Trust advising people not to come to the hospital if they had diarrhoea and/or vomiting. Most importantly we worked closely with ward/departmental staff to educate them on recognising signs that there may be an increase of diarrhoea or vomiting on the ward/department and the immediate actions that needed to be taken. Staff were also empowered to put restrictions into place as soon as concern about a possible outbreak was identified.

It took some time for the actions expected of ward-based staff to become embedded into routine practice. However, by the beginning of 2018 the system was working well. Wards now implement control measures independently outside IPCN working hours, and are also much better at collecting samples for laboratory testing.

What happens next?

The challenge will be to ensure that the good practice that became embedded in the latter part of the 2017/18 norovirus season is maintained through 2018/19. We are working with our Governance team to continue to improve the engagement of the Ward/Departmental teams through the root cause analysis process, given those teams ownership of the RCA's and embedding good practices into the wards/departments.



Infection Prevention & Control Week 2017

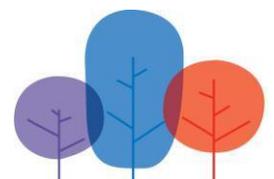
Relates to:

- **Hygiene Code Criterion 4: Provide suitable accurate information on infections to service users, their visitors and any person concerned with providing further support or nursing/medical care in a timely fashion.**
- **Hygiene Code Criterion 6: Systems to ensure that all care workers (including contractors and volunteers) are aware of and discharge their responsibilities in the process of preventing and controlling infection.**

This year our National Infection Prevention & Control Week our main focus was on multi-drug resistant bacteria, in line with the priorities of the Infection Prevention Society.

Of course we also focused on hand hygiene. We undertook training sessions and hand hygiene audits. Results were fed back at time of audits, and the IPCNs gave out rewards for good practice.

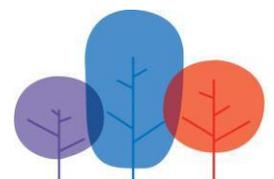
We are in the process of producing a film to promote our key Infection Prevention and Control messages which will be incorporated into our training programmes.



ANNEX 1: ASSURANCE OF COMPLIANCE WITH THE TEN CRITERIA DEFINED BY THE HEALTH AND SOCIAL CARE ACT 2008 (HYGIENE CODE)

The Health and Social Care Act 2008 details ten compliance criteria to which the Trust must adhere to in relation to preventing and controlling the risk of avoidable healthcare-associated infections. This annex supplements the Report of the Director of Infection Prevention & Control to provide assurance that the Trust demonstrates compliance with each of the ten criteria.

Compliance criterion		Assurance
1	Systems to manage and monitor the prevention and control of infection. These systems use risk assessments and consider the susceptibility of service users and any risks that their environment and other users may pose to them	Described in body of report
2	Provide and maintain a clean and appropriate environment in managed premises that facilitates the prevention and control of infections	Described in body of report
3	Ensure appropriate antimicrobial use to optimise patient outcomes and to reduce the risk of adverse events and antimicrobial resistance	The Trust has an Antibiotic Stewardship Committee, and during the year participated in research on antibiotic stewardship in children
4	Provide suitable accurate information on infections to service users, their visitors and any person concerned with providing further support or nursing/medical care in a timely fashion	Described in body of report
5	Ensure prompt identification of people who have or are at risk of developing an infection so that they receive timely and appropriate treatment to reduce the risk of transmitting infection to other people	The Trust has an active infection surveillance programme
6	Systems to ensure that all care workers (including contractors and volunteers) are aware of and discharge their responsibilities in the process of	The Trust has an active training programme in infection prevent & control. Infection Prevention & Control responsibilities are included in all job descriptions.



	preventing and controlling infection	
7	Provide or secure adequate isolation facilities	Access to sufficient isolation facilities is constantly monitored by the Infection Prevention & Control Team. During the year a new strategy for isolating neonates at Birmingham Women's Hospital was introduced. The new Waterfall House at the Children's Hospital site will provide additional single rooms in the year ahead.
8	Secure adequate access to laboratory support as appropriate	During the year the laboratory at Birmingham Children's Hospital secured UKAS Accreditation
9	Have and adhere to policies, designed for the individual's care and provider organisations that will help to prevent and control infections	An entirely revised set of policies were prepared to coincide with the creation of the new Birmingham & Women's NHS Foundation Trust in February 2017
10	Providers have a system in place to manage the occupational health needs and obligations of staff in relation to infection	The Trust appointed a new Occupational Health Provider from 1 st April 2018

