# DIRECTOR OF INFECTION PREVENTION AND CONTROL REPORT



# EXECUTIVE • SUMMARY



This report describes the activities we have undertaken to improve and sustain safety for our patients, visitors and staff across all of our healthcare settings, much of which has been achieved in collaboration with partner organisations and system working.

We have a number of successes to celebrate in 2021-22 including the reduction of healthcare associated infection within the Trust despite the challenges of an ongoing Covid 19 pandemic.

Our successes were in MRSA, C difficile, E coli, and Klebsiella. We also saw a significant reduction in the number of outbreaks due to diarrhea and vomiting, but an increase in outbreaks due to Covid in line with local community transmission rates.

Our commitment and focus to achieve excellence as standard for our population is as strong as ever despite and because of the pandemic.



#### **Lindsey Robertson**

Chief Nurse, Director of Patient Safety and Quality, Director of Infection Prevention and Control

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# INFECTION PREVENTION AND CONTROL ARRANGEMENTS



The Infection Prevention and Control (IPC) Team provide a service covering all Trust settings and also support local care homes, hospices independent hospital. We have a team of experienced IPC nurses supported by clerical and surveillance staff, and working in close collaboration with Consultant biomedical Microbiologists, scientists. the antimicrobial pharmacist and clinical teams. The Director of Infection Prevention and Control (DIPC) who is also the Chief Nurse/Director of Quality and Patient Safety is supported in leading improvement in infection prevention across the Trust by the Associate Director of Nursing, Patient Experience & Quality and the Lead Nurse for IPC.

The DIPC provides an update to each Board of Directors via an Integrated Compliance and Performance Report. A performance update is provided monthly to the Patient Safety & Quality Standards Committee, which is a subcommittee of the Board and is chaired by a Non-Executive Director. There is a quarterly Infection Control Committee (ICC) and quarterly Healthcare Associated Infection (HCAI) Operational Group which provides operational information to the ICC. The HCAI Operational Group undertakes targeted pieces of work as required by publication of new guidance, recommendations from incident investigations or audit findings.

OUR VISION IS THAT NO PATIENT, VISITOR
OR STAFF MEMBER WILL BE HARMED BY
A PREVENTABLE INFECTION

# INFECTION PREVENTION AND CONTROL ARRANGEMENTS

The Trust participates in the mandatory HCAI surveillance programme facilitated by Public Health England including:

- Clostridioides difficile infection (CDI)
- Meticillin-resistant Staphylococcus aureus (MRSA) blood stream infection (bacteraemia)
- Meticillin-sensitive Staphylococcus aureus (MSSA) bacteraemia
- Escherichia coli (E coli) bacteraemia
- Klebsiella species bacteraemia
- Pseudomonas aeruginosa bacteraemia
- Quarterly Mandatory Laboratory Return (QMLR)

National criteria are applied to establish whether cases of the infections above are attributable to the Trust (healthcare associated).

For CDI cases taken three or more days after admission, or those taken within 2 days of admission where the individual has been an in-patient in the trust in the previous 4 weeks are considered to be healthcare associated and count against any trust objective.

New criteria for healthcare associated cases using the same thresholds as for CDI were introduced in 2021-22 for blood stream infections.

National reduction objectives have been set for five of the six infections shown below and because of the impact of the Covid-19 pandemic on hospital admissions the baseline period used to set these objectives was the calendar year 2019. MSSA is the only infection without a national objective, however the Trust set an internal objective to achieve a reduction in cases. The changes to criteria mean that comparison with previous years is not possible, except for MRSA and CDI.

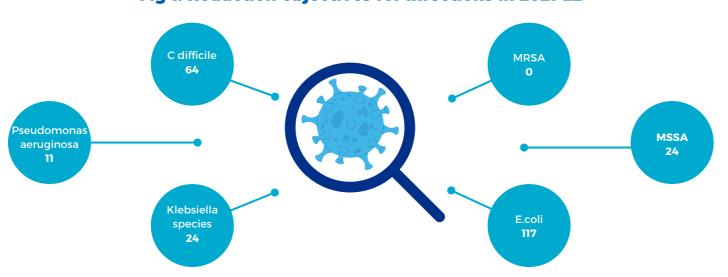


Fig 1. Reduction objectives for infections in 2021-22

## CLOSTRIDIOIDES DIFFICILE INFECTION (CDI)

TClostridioides difficile (C difficile) is a bacterium that is found in the gut of around 3% of healthy adults. It seldom causes a problem as it is kept under control by the normal bacteria of the intestine. However certain antibiotics can disturb the bacteria of the gut and the C difficile can then multiply and produce toxins which cause symptoms such as diarrhea.

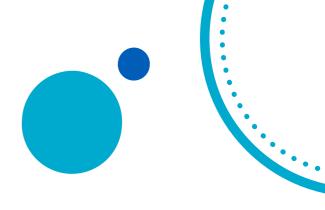
During 2021-22 we reported 50 healthcare associated cases of CDI which was a good position against the objective of 64 cases. Although it appears that performance has deteriorated since 2020-21 it should be remembered that hospital admissions reduced significantly for part of that year, and that patients being admitted with Covid-19 have often required antibiotic treatment which increases the risk of CDI. Root cause analysis is carried out on each healthcare associated case and any themes from these investigations are discussed at clinical meetings.

Actions to reduce CDI form part of the Trust HCAI Improvement plan and are discussed at regular meetings. These include a continued focus on hand hygiene and environmental cleanliness and promotion of good antibiotic stewardship.

Fig 2. C difficile cases 2018-22

Year	Healthcare associated cases	Community onset cases
2018-2019	61	54
2019-2020	53	39
2020-2021	49	44
2021-2022	50	55

### MRSA BACTERAEMIA



TStaphylococcus aureus is a bacterium found commonly on human skin which can cause infection if there is an opportunity for the bacteria to enter the body. In serious cases it can cause blood stream infections. MRSA is a strain of this bacterium which has developed resistance to many antibiotics, making it more difficult to treat.

Many individuals carry MRSA on their skin and this is called colonisation. It is important that we screen some groups of high risk patients when they come into hospital so that we know if they are carrying MRSA. Screening involves a simple skin swab. If positive we can provide treatment that helps to reduce the number of bacteria and therefore reduces the risk of infection developing.

In 2021-22 we reported zero healthcare associated MRSA blood stream infection. This is an improvement on the previous year. One community associated case was reported and although the case does not count against the Trust there was some learning identified on investigation relating to prompt screening and treatment.

Fig 3. MRSA bacteraemia cases 2015-22

Year	Healthcare associated cases	Community onset cases
2015-2016	2	3
2016-2017	1	2
2017-2018	4	2
2018-2019	0	0
2019-2020	0	3
2020-2021	1	2
2021-2022	0	1

### MRSA BACTERAEMIA



MSSA is a strain of Staphylococcus aureus that can be effectively treated with many antibiotics. It can cause infection if there is an opportunity for the bacteria to enter the body for example via a wound or invasive device, and in serious cases it can cause blood stream infections.

In 2021-22 we reported 38 healthcare associated cases of MSSA bacteraemia against the internal objective of 24 cases. Genetic typing was undertaken for a number of cases which were suspected to be linked to particular wards. The results showed that cross infection had not occurred however there was an increase in infections linked to phlebitis due to an intravenous cannula. The work plan for 2022-23 includes projects to increase awareness of cannula care.

Fig 4. MSSA bacteraemia cases 2021-22

Year	Healthcare associated cases	Community onset cases
2021-2022	38	54

### E COLI BACTERAEMIA

E coli is a very common bacterium found in the human gut which can cause serious infections such as blood poisoning.

In 2021-22 we reported 78 healthcare associated cases against an objective of 117 cases successfully achieving a 5% reduction required by NHS England/Improvement. The most common source of infection remains the urinary tract, with some cases being related to urinary catheters. Quality Improvement work including agreeing criteria for urinary tract infections and improve testing and catheter care were commenced during this year.

Fig 5. E coli bacteraemia cases 2021-22

Year	Healthcare associated cases	Community onset cases
2021-2022	78	184

### KLEBSIELLA SPECIES BACTERAEMIA

Klebsiella species are a type of bacterium that are found commonly in the environment and also in the human gut, where they do not usually cause disease. However in a vulnerable individual they can cause pneumonia, wound and surgical site infection and can be associated with invasive procedures such as venous cannulation or urinary catheterisation.

We reported 15 healthcare associated cases of Klebsiella bacteraemia in 2021-22 against an objective of 24 cases.

Fig 6. Klebsiella bacteraemia cases 2021-22

Year	Healthcare associated cases	Community onset cases
2021-2022	15	44

#### PSEUDOMONAS BACTERAEMIA

Pseudomonas aeruginosa is a bacterium often found in soil and ground water. It rarely affects healthy individuals but can cause a wide range of infections in those with a weakened immune system. It is resistant to many commonly used antibiotics.

In 2021-22 we reported 14 healthcare associated cases against an objective of 11 cases. The number of cases is still small in terms of identifying trends but a number of cases were identified in patients who were in need of critical care. It is possible that this was because of their increased length of stay and longer periods of mechanical ventilation which increase the risk of infection.

Fig 7. Pseudomonas bacteraemia cases 2021 -22

Year	Healthcare associated cases	Community onset cases			
2021-2022	14	22			

# GLYCOPEPTIDE RESISTANT ENTEROCOCCUS (GRE)

Enterococci are normally found in the gut and are part of the normal human gut flora. Although a common cause of urinary tract infections they can also cause serious infections such as endocarditis and can be a particular risk to immunocompromised patients.

The number of blood stream infections caused by GRE is low and sporadic in the Trust. In 2021-22 we reported 2 cases only which were both healthcare associated. Genetic typing did not show a link between the cases. More commonly we see GRE from screening swabs which is more likely to be colonisation than infection.

# SURGICAL SITE INFECTION (SSI)

All trusts are required to submit surgical site infection data for a minimum of one quarter per financial year. Since 2019 we have been reporting data continuously across the year and have expanded the number of surgical procedures included in the surveillance to include breast, spinal, large bowel, small bowel, gastric and surgery. This year we have also added radius, ulna and humerus cases to the long bone fracture reductions which will increase the total number of procedures. In early 2021-22 the number of procedures carried out were reduced due to Covid. Surgical site infections identified are detailed in the table below. The national report has not been published for 2021-22 at the time of writing therefore we have been unable to benchmark our results against recent national figures.

All cases are subject to investigation and discussed at Infection Control Committee and the Service Line Meetings for the relevant specialties.

# SURGICAL SITE INFECTION (SSI) CONTINUED

Fig 8. Surgical site infection data 2019-22

	2019-2020	2020-2021	2021-2022	National average (%) 2015-2020
Primary total hip replacement - No of procedures/no of infections/%	322/0	146/0	238/3/ <b>1.2%</b>	0.5%
Primary total knee replacement - No of procedures /no of infections/%	399/0	146/0	327/0/0%	-
Reduction of long bone fracture - No of procedures /no of infections/%	39/0/**	186/0	303/4/ <b>1.3%</b>	0.9%
Repair of neck of femur - No of procedures/ no of infections/%	79/0/**	288/1	309/1/ <mark>0.3%</mark>	0.9%





Fig 8. Surgical site infection data 2019-22

	2019-2020	2020-2021	2021-2022	National average (%) 2015-2020
Breast surgery - No of procedures /no of infections/%	N/A	N/A	402/6/ <b>1.5%</b>	0.8%
Gastric surgery - No of procedures/ no of infections/%	N/A	N/A	<b>39/3/7.7%</b> (part year only)	2.4%
Large bowel surgery - No of procedures/ no of infections/%	N/A	N/A	225/17/7.6% (part year only)	8.3%
Small bowel surgery- No of procedures / no of infections/%	N/A	N/A	<b>74/3/4.05%</b> (part year only)	6.6%

#### **INFLUENZA**



In 2020-21 we have seen much lower than usual numbers of patients being admitted with influenza.

Staff vaccination is always a priority for the trust and we were delighted that over 80% of our staff and volunteers accessed the flu vaccine between October 2020 and February 2021. The Occupational Health Department once again led the flu campaign to increase uptake, and were supported by peer immunisers in workplaces and senior staff who encouraged vaccination.

### **HAND HYGIENE**





This year we have continued to carry out monthly selfaudit of hand hygiene for our clinical teams, with quarterly assurance audits by the IPC team. Overall the target of 95% compliance has been achieved each month. The pandemic may have had a positive effect on hand hygiene so the completion of the assurance audits is a good measure of consistent improvement.

Fig 8. Surgical site infection data 2019-22

Month	April 2021	May 2021	June 2021	July 2021	August 2021	Sept 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	March 2022
%	100	99.03	98.43	96.34	98.91	99.49	96.24	95.92	98.70	98.47	97.80	98.68
No. of audits	22	40	42	65	49	47	28	37	47	56	84	102

Hand hygiene scores from the previous week are discussed at each safety huddle, where actions for improvement are identified and any issues causing poor scores are discussed.

We use opportunities such as World Hand Hygiene day to raise awareness for our staff and patients and staff produce displays to support this





#### **OUTBREAKS**



We reported one outbreak of diarrhoea and vomiting in 2021-22, which was confirmed as Norovirus by stool sampling. The outbreak lasted 17 days and 16 out of 29 patients were affected and nine staff members. The index case was possibly a patient who was admitted from a care home, which also declared an outbreak.

An outbreak of Carbapenemase Producing Enterobacteriaceae (CPE) was also declared in October 2021. In total 29 patients have been linked to the same clinical area either by direct or indirect contact with a positive CPE case. Outbreak management included increased screening of all patients admitted to the ward and ongoing weekly screening for all inpatients. Despite environmental swabbing not identifying any concerns, domestic cleaning was increased in the clinical area and deep cleaning with hydrogen peroxide fogging was completed throughout. The ward matron and IPC team, with the use of educational displays on the risks of CPE, treatments and preventative measures, implemented a renewed focus on effective hand hygiene. Increasing hand hygiene observations and challenging poor practice was key to improving audit scores.

An outbreak of Vancomycin Resistant Enterococci (VRE) was declared in July 2021 on our Critical Care Unit (CCU). This involved five cases, linked directly by sharing the same environment/adjacent bed spaces. The challenges experienced in the CCU throughout the pandemic such as increased absence/vacancy, wearing personal protective equipment (PPE) for prolonged periods, including long sleeved gowns and increased prolonged activity on the unit have all impacted the daily routines and standards delivered by the team. The IPC team worked closely with the leadership team to deliver education directly to the team members, highlighting the importance of being bare below the elbows, hand hygiene and cleaning of the environment and patient equipment.

The IPC team continues to work with domestic and clinical staff to improve management of such outbreaks by early recognition, prompt action and enhanced cleaning, to reduce the impact on patient flow and outcomes.





An example of how we are using visual aids on whiteboards to educate and train Trust staff





The novel respiratory coronavirus SARS-CoV-2 which causes Coronavirus Disease 2019 (COVID-19) emerged in Wuhan, China in December 2019. The first cases were reported in the UK in January 2020. COVID-19 surveillance has been ongoing since January 2020, which due to the high number of cases, changes to guidance, outbreak management and completion of staff risk assessments continues to provide Infection Prevention and Control (IPC) teams with significant challenges and workload pressures.

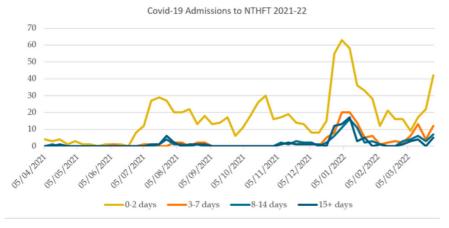
Multidisciplinary working groups continue to function within the trust and local authorities, ensuring that clinical decisions in relation to new and evolving guidance are discussed and implemented in a timely and appropriate way. The Trust continued to follow national guidelines and recommendations including the development of a Covid-19 vaccination program, working towards the Recovery Plan and continuing to deliver high quality care whilst maintaining strict infection control measures to provide safe environments for our patients, visitors and staff.

The trust has maintained a comprehensive screening service for staff, identifying staff contacts and outbreaks as early as possible. Over 1800 staff track and trace risk assessments were completed in 2021/22 by the IPC team, which was challenging alongside maintaining all other mandatory surveillance. The IPC team remained responsive to changes in Covid-19 guidance and provided training, risk assessments and advice when required. Covid-19 compliance audits continue throughout the trust with over 800 audits completed, achieving a compliance rate of between 98-100%. In response to increased demands during periods of high Covid-19 inpatient and staff cases, the IPC team continue to respond by providing a seven-day service when required.

# COVID 19 CONTINUED

From April 2021 to March 2022 the trust cared for 1231 patients positive for COVID-19, this is a slight decrease from the previous year where there were 1730 positive cases. 913 patients were admitted and had a positive Covid-19 result within 0-2days of admission compared to 1188 in 2020/21. A further 143 patients tested positive within 3-7 days of admission, a reduction to the previous year where 244 patients tested positive in the same time frame. Both of these categories remain attributable to the community. There were 91 cases identified within 8-14 days of admission and are possibly hospital acquired. This is a reduction of cases compared to 193 cases in the previous year. 83 patients tested positive after 15 days or more of admission, compared to 105 cases in 2020/21 and are categorised as definite hospital acquired cases.

Fig 10. Covid admissions 2021-22 by date criteria



During 2021/22 the trust saw an increase in the number of community-onset cases of COVID-19 infections from July 2021, in line with the reduction of measures as outlined by national guidelines.

Despite these increases, cases of nosocomial Covid-19 infections (cases where the patient has been in hospital for 8 days or more) remain reduced from 2020/21. In 2020/21 17% of Covid-19 cases admitted to the trust were in patients who had been an inpatient for greater than 8 days. This has reduced to 14% in 2021/22, despite activity within the hospital increasing. This is likely due to the increased screening regimes for patients and embedded infection control measures.

Outbreak management of the COVID-19 virus continues to be a challenge with increased activity and staff absences but continued collaboration with the regional IPC teams offers shared learning providing vital insight into outbreak management.



The Trust continues to provide IPC support to adult care homes and domiciliary care in Stockton and Hartlepool. The collaborative working with the local authorities continues to be strengthened throughout the pandemic and plans to focus on other public health priorities and quality improvement initiatives have begun.

Our vaccination program began in December 2020, with redeployed staff supported by volunteers and temporary vaccinators, based in our vaccination hub. Between December 2020 and March 2022

96% of our staff and volunteers had received their 1st dose of vaccine and 94% had received both doses. The Covid-19 booster program in October 2021 continued to offer further protection to our staff with 82% receiving their third vaccine.

# **POLICIES**

The Trust has a programme for review and revision of core infection prevention and control policies as required by The Health and Social Care Act 2008. Code of Practice on prevention and control of infection and related guidance (2015). All policies are available to staff on the trust intranet site and many are also available to the public on the external website.

A schedule for review and revision of policies forms part of the annual IPC programme. The review of some policies was delayed by COVID-19 but there is plan for all to be completed by July 2021. There are 19 active policies and the status at the end of March 2021 is below:



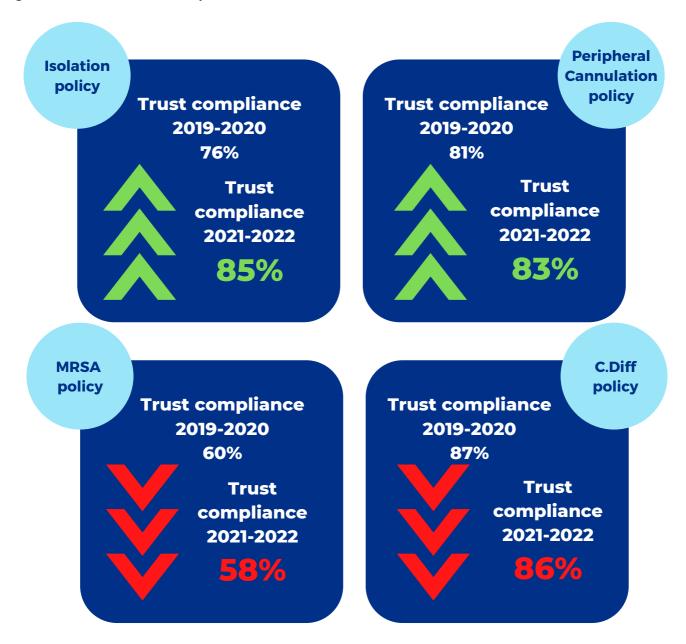
POLICIES UNDER REVIEW



# AUDIT PROGRAMME

Usually a programme of audits are planned for each year as part of the IPC annual programme. This allows us to monitor adherence to policy and identify areas for focused work. Despite 2021-22 still being a challenging year with Covid-19, our audit programme on our policies was completed, as below.

The IPC team has also managed to complete some unannounced visits and a new programme has been completed for 2022/23.





We apply a blended approach to IPC training with a mixture of face-to-face and online learning or workbooks to facilitate different learning preferences. As all training is in line with a regionally agreed programme and is recorded on the electronic staff record (ESR) it is portable between organisations which is beneficial for staff in rotational posts. Level 1 training is for non-clinical staff and is required every 3 years. Level 2 for clinical staff is required annually.

# ANTIMICROBIAL STEWARDSHIP

Our overall aim is to develop a culture of antimicrobial stewardship where we promote education and empower staff to question antibiotic prescribing decisions, not only among medics but also non-medical prescribers. We aim to achieve this through four main principles:

- Provision of easy to use up to date guidelines
- Education
- Collaboration with South Tees University Hospitals NHS Foundation Trust, and development of a local antibiotic stewardship committee.
- Audit and feedback.

#### **Provision of guidelines:**

- Current progress with South Tees regarding regional empirical guideline update is ongoing.
- Once finalised this will be uploaded on to the MicroGuide® app to facilitate easy access and promote prudent empirical prescribing.

#### **Education:**

- Education based on audit of prescribing practice and feedback to prescribers.
- Involvement in junior doctor trust induction training sessions.
- Promoting education in non-medical prescribing, for example training has been provided for district nurses.



 Discussion around forum to discuss cases and share expertise among non-medical prescribers.

### Collaboration with South Tees and development of a local antibiotic stewardship committee:

- Trust representative attending Antimicrobial Working Group meetings held by South Tees
- Highlighting antimicrobial related issues to key stakeholders within the CCG as part of trust collaboration.
- Issues include prescribing trends, new antimicrobial agents, guideline updates, C.difficile management/feedback etc.

#### **Audit and Feedback:**

- Antibiotic consumption data across the organisation as a whole has shown reductions in key broad spectrum antibiotics (Carbapenems) as a response to increased awareness and proactive interventions following prescribing reports and increased microbiology input.
- Overall total consumption of antibiotics has steadily increased across all trusts within the region.

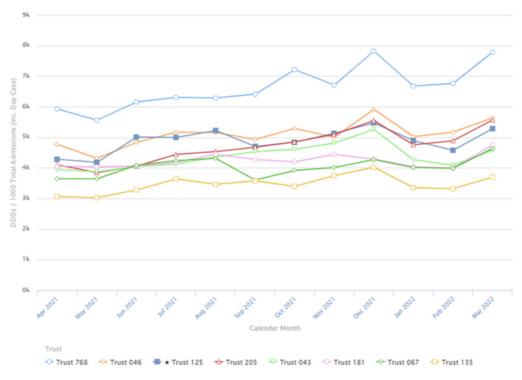
#### **Outpatient Parenteral Antibiotic Therapy (OPAT)**

- We have made great strides in providing OPAT services via the Accufuser® elastomeric device.
- This service allows us to provide equivalent IV antibiotic therapy in patients who require long term antibiotics but are well enough to be treated in their own homes.
- Due to the nature of the 24 hour infusions provided by the device, this not only reduces the need for broad spectrum antibiotics with a more convenient dosing pattern but also improves rapid response nurse capacity due to once daily contact time.
- The long term plan is to trial this device on base wards to determine if it will increase capacity for registered nurses.
- We are contributing capacity and consumption data to a national audit on the provision of OPAT services throughout the country.

# ANTIMICROBIAL STEWARDSHIP

Fig 11. Total antibiotic consumption, regional comparison (systemic antibiotics DDDs/1000 admissions.





### DECONTAMINATION OF THE ENVIRONMENT AND EQUIPMENT

Decontamination is a process which removes or destroys infectious agents or other contaminants from equipment and the environment in order to reduce the risk of cross contamination and subsequently the spread of infection. Cleaning is always the first step in this process, followed then by disinfection or sterilisation depending on the circumstances in which the equipment is used. An example of this would be a piece of medical equipment that is classed as 'reusable invasive equipment', this requires all of the above steps. The Decontamination Strategy document (Strat 09) has been ratified and is available via the trust intranet.

## DECONTAMINATION OF THE ENVIRONMENT AND EQUIPMENT

The Sterile Services Department is responsible for reprocessing reusable invasive medical devices and flexible endoscopes. All processes are fully validated and compliant to national standards HTM 01-01,HTM 01-06, ISO 13485:2016 and UK MDR 2002 (as amended) Part 11 Reg 14 and internally and independent externally audited process. In the last 12 months the department has had 3 x new steam sterilisers installed which are more reliable and will help future proof the service. Disposable items are efficient and used whenever possible.

Decontamination audits are completed annually in departments where local decontamination takes place, this for example would be where a piece of medical equipment is being decontaminated within a department outside of centralised sterile services.



The Decontamination Manager and IPC Nurse carry out assurance audits and all results of such audits are reported to the Decontamination Group which reports into the Trusts Infection Control Committee. The endoscope decontamination units (EDU) on both sites are validated and compliant with national requirements HTM 01-06 and also compliant to Joint Advisory Group (JAG) as part of the Endoscopy services accreditation. The EDU at Hartlepool has recently been upgraded with new endoscope washers and drying cabinets. An Independent Authorising Engineer (Decontamination) validates annual reports produced for compliance.

The provision of cleaning services in our hospitals and other premises is provided by 'NTH Solutions'. Performance monitoring is undertaken by Quality Monitors and the results are measured for compliance with the Trusts cleanliness standards and in line with National Standards of Cleanliness. The outcomes from these audits are reported into the Decontamination Group and the Trusts Infection Control Committee via a quarterly report presented by the Assistant Director of Operations (Decontamination Lead). Enhanced cleaning is provided by a response team and hygienist team with programmes in place for equipment deep cleaning. All decontamination staff have been a vital part of the work to reduce infections and particularly delivering the additional measures taken to mitigate the risk during the global pandemic. The teams have worked flexibly, often in unfamiliar settings and wearing full PPE supporting the clinical teams. We continue to be grateful for their continued support as part of our wider team.

# CONCLUSION

Reflecting on the last year, reducing the risk of infection has been our priority and remains so in the coming year. 2021-22 has continued to be a year of challenge and adaption for the trust in response to the Covid-19 pandemic. There have been and continue to be challenges in terms of the ability to respond quickly to rapidly changing national guidance, ongoing anxiety in staff and patients, changing community transmission rates of COVID-19 which impacts our patient pathways, impacted upon by workforce challenges. Antimicrobial stewardship and the availability of single rooms are two priorities for improvement in 2022-23 and we will continue to build on the collaborative relationships with our colleagues across the North east and North Cumbria Integrated Care system to make those improvements.

As we move forwards with the national plan 'Living with Covid' we must continue to evaluate and consider each step to ensure that patient safety remains at the forefront, as well as the wellbeing of our staff, who continue to rise to the challenge in a way that makes us very proud.



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