A review of MRSA prevention and management in South Tees Hospitals NHS Foundation Trust

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A review of MRSA prevention and management in South Tees Hospitals NHS Foundation Trust

Background

South Tees Hospitals NHS Foundation Trust consists of two main hospitals - the 1000 bedded James Cook and the Friarage site which has 200 beds. Three years ago the Trust acquired a number of primary care hospitals which include inpatient beds. The James Cook Hospital was built in 1981 but has had a number of buildings added to it since then. There are 37 wards on the site including two intensive care units, a coronary care unit and a paediatric intensive care unit. Clinical neurosciences, renal services, cancer services and spinal injuries are also provided at this site. The Trust is the major trauma centre for the southern part of the Northern region. The Friarage Hospital functions as a district general hospital. It provides an elective orthopaedic service and also has a high dependency unit. The primary care hospitals include several one ward hospitals. One of the primary care hospitals is new, the others are very old buildings.

Like every other hospital organisation in England, South Tees had high numbers of MRSA bacteraemias in the early 2000s which have dropped in number since 2006. This is true for both Trust apportioned and community apportioned cases. The Trust reported no MRSA bacteraemias between the months of February 2012 to February 2014 inclusive. As a consequence, South Tees was the best performing trust in England in 2012/13 for MRSA bloodstream infections. However, in 2014, the Trust has reported four cases of MRSA bacteraemia - two cases in March and a case in both June and July. There were seven community apportioned MRSA bacteraemias in 2012/13 and six community apportioned cases in 2013/14. The Trust provides healthcare services over a wide area. As a consequence of the services crossing over clinical commissioning group administrative boundaries, there has been discussion and disagreement about the apportioning of some of these MRSA cases. Monitor, the relevant regulator for South Tees, has expressed concern about the apparent increase in number of MRSA bacteraemias. As a consequence the Trust has requested external scrutiny of the MRSA infection prevention and management arrangements within the Trust, in particular, assessment of compliance with the following key areas:

1. Are there effective overall infection prevention and control arrangements within the Trust to minimise and control MRSA?
2. Is the infection prevention and control team appropriate to support the MRSA agenda?
3. Is there appropriate and effective reporting and escalation of MRSA?
4. Is there appropriate performance monitoring of MRSA infections and colonisation?
5. Is the root cause analysis process appropriate and effective?
6. Is MRSA policy within the trust in line with national guidance?
7. Is there an appropriate antibiotic policy and guidelines in relation to MRSA?
8. Do key staff receive appropriate and effective MRSA training?
Review process

This review is based on written documentation obtained prior to visiting the Trust which took place on 11 July 2014, at which time oral evidence from a range of clinical and support services was collected and a number of wards at the James Cook hospital visited. The written documentation is summarised in appendix 1 and a summary of the oral evidence is given in appendix 2.

Opinion

In line with many other acute trusts in England over the last 10 years, South Tees has delivered an impressive reduction in the number of trust-attributed MRSA bloodstream infections. Going for more than 12 months without any MRSA bloodstream infections in 2012/13 was a remarkable achievement especially for a Trust which has over 1200 beds and operates on a large number of sites providing an extensive range of clinical services including regional referral specialties as well as community hospitals. While it must have been disappointing for the Trust to have to report four cases this year, this is still a small number. It should be borne in mind that even in the best of healthcare organisations there will always be a small chance that MRSA bloodstream infections will occur. However, the Trust is right to reflect on if it is doing all within its power to minimise the risk of MRSA bloodstream infections. The fact that the Trust has requested an external review demonstrates its continuing commitment to providing a safe environment for the care of patients.

In this review, I have attempted to answer the questions set out in the brief. I have also listed a set of actions which the Trust may wish to consider as further actions to reduce further the risk of MRSA bloodstream infections. This list is given as appendix 3.

1. Are there effective overall infection prevention and control arrangements within the Trust to minimise and control MRSA?

The Trust has implemented a range of measures intended to decrease the risk of MRSA infection. To a large extent, these have been effective as demonstrated by the reduction in MRSA bloodstream infections, non-bloodstream MRSA infections and a decrease in incidents of MRSA acquisition in the Trust. Measures include MRSA screening (both conventional culture-based screening and rapid PCR-based testing), the use of chlorhexidine body washes and nasal mupirocin in cardiac surgery and intensive care patients, alcohol gel hand rubs and the use of 2% chlorhexidine in alcohol disinfectant prior to intravascular cannula insertion and chlorhexidine patches at the site of insertion of central vascular lines in renal dialysis patients. These measures are either evidence-based or follow national policy and are backed up by local policies, including the isolation of patients with MRSA carriage and environmental cleaning practices such as the use of chlorine-based disinfectant solutions in certain situations, steam cleaning and hydrogen peroxide vapour decontamination. In addition, the Trust appears to have a rigorous governance approach to reviewing serious MRSA incidents. All MRSA bloodstream infections are subject to a root cause analysis, as required by national policy. Of note, the Trust’s MRSA policy requires a detailed case report of every MRSA bacteraemia which is to be reviewed by a panel usually chaired by the medical director or chief nurse.

However, elements of the Trust MRSA policy are potentially confusing. The rules for designating patients as either low, intermediate or high risk for MRSA for the purposes of MRSA screening are
not straightforward and I could imagine that they may be misinterpreted. Screening is used to monitor the results of topical treatment with Octenisan and mupirocin. The policy implies that negative screening results following such treatment equates to eradication of MRSA carriage. I think this is an overinterpretation of the effectiveness of topical treatment and the use of the word “eradication” in the policy is potentially misleading. In my experience, a number of patients who have had negative screening swabs immediately following the use of topical treatment have subsequently had positive swabs on re-screening. Eradication implies no more risk which I believe to be a false reassurance. Bio-burden reduction or decontamination is probably a more accurate description of the benefits of topical treatment. I suggest considering a review of the screen policy both to simplify it and also to change the language used within it to indicate that patients who have had positive MRSA screening swabs or positive clinical specimens should always be considered a risk for MRSA carriage. The recent publication of new Department of Health guidance on admission MRSA screening (https://www.gov.uk/government/publications/how-to-approach-mrsa-screening) is another reason to review screening practice in the Trust.

2. Is the infection prevention and control team appropriate to support the MRSA agenda?

The South Tees infection prevention team appears to be adequate in number and expertise. It is led by an enthusiastic and well informed deputy director of infection prevention and control who is placed at a high level in the nursing hierarchy and who therefore should be able to exercise appropriate authority and leadership within the nursing structure of the Trust. I was told that the infection prevention nurses used to provide seven days a week cover but that this has been reduced to 5 days a week to provide cost improvements. If the weekend slack was taken up by the on-call microbiologist, this need not be too concerning. However, I was told by the microbiologists that in fact they do not provide a significant infection prevention function out of hours. Consequently it appears that it is left to the wards to take appropriate action when they receive a result which indicates the presence of an infection control alert organism such as MRSA. This seems to me to be an insecure arrangement.

I believe that the effectiveness of the infection prevention team could be significantly improved through the acquisition of an infection prevention and control software system. This would integrate routinely generated microbiology laboratory data with data from the patient activity system, operating theatre data, supplemented by clinical reports of infections. There are a large number of benefits in having an infection prevention software package. Depending on how the system is set up, it should be possible to identify previously recognised MRSA carriers who have been booked for admission well in advance of their admission date and ensure that wards are aware of the impending patient and are able to make appropriate arrangements for receiving the carrier. MRSA carriers who are admitted as emergencies would trigger an alert as would the new recognition of MRSA carriage in an existing inpatient. Infection prevention software systems should also be able to identify possible incidents of MRSA cross infection. In addition, infection prevention software will help generate regular reports on the incidence of MRSA infections in different clinical areas, contributing to an increased understanding of the epidemiology of infection with this organism and aiding the assessment of the impact of infection prevention interventions. These benefits are not restricted to MRSA. A good infection prevention software system will make a valuable contribution to all aspects of infection prevention and control. The use of such a system need not be limited to the infection prevention team. Depending on the number of licences available, access to infection
prevention software may be extended across the organisation so that wards can be encouraged to use the infection prevention package to get early warning of patients with infection issues who are due to arrive in the ward. Ward staff could also use infection prevention software to enter newly identified clinical problems such as infections of surgical sites, urinary, respiratory and gastrointestinal tracts.

The James Cook site has the benefit of an antimicrobial pharmacist who carries out antibiotic rounds with the infection control doctor. However, the relationship between the antimicrobial pharmacist and the infection prevention team could be strengthened to their mutual benefit. If the antimicrobial pharmacist shared office space with infection prevention team, communication between the pharmacist and infection prevention nurses would be strengthened and it is very likely that they would both gain in terms of knowledge and information. The antimicrobial pharmacist would also run less risk of being called in to do dispensing duties if she is not based in the pharmacy. There does not appear to be an antimicrobial pharmacist on the Friarage site. A hospital the size of the Friarage could justify a part-time antimicrobial pharmacist and there is an argument for providing antimicrobial pharmacy function to the community hospitals.

3. Is there appropriate and effective reporting and escalation of MRSA?

The MRSA policy outlines a reporting and escalation process for MRSA bloodstream infections. This appears to be followed in practice and this should ensure a rapid awareness of incidents of MRSA bloodstream infection at the highest levels of the Trust management structure.

Given the infrequent occurrence of MRSA bloodstream infections, some consideration should be given to including other serious MRSA infections in the reporting and escalation process. For example, all MRSA infections at sterile sites could be included in the reporting process. Additionally, the Trust may find it valuable to use the same reporting process to investigate hospital-attributed MSSA bloodstream infections. MRSA and MSSA bacteria differ only in the presence or absence of the meca gene which determines resistance to meticillin. In all other regards, they are effectively identical. Consequently, more frequent MSSA bloodstream infections can be considered as a valuable proxy for rarer MRSA bacteraemias. MSSA bacteraemias should be seen as free feedback on how well the Trust’s MRSA control measures are working. An organisation that can really get on top of hospital-acquired MSSA bacteraemias will have no problem with MRSA bacteraemias.

4. Is there appropriate performance monitoring of MRSA infections and colonisation?

The Trust presented me with a very impressive set of slides recording a complete time series of various aspects of MRSA infection epidemiology, set out in a statistical process control format. This clearly indicates that the Trust is on top of monitoring of MRSA infections and colonisation. I was less certain that the data being presented had been fully analysed. When I asked about high risk areas for MRSA infections, it was stated that review of recent MRSA colonisation and infection incidents do not reveal a patient group with a relatively higher risk of MRSA. The only exception to this is the recent experience of five obstetric patients with MRSA infection who were MRSA negative on admission screens. However, it was suggested that areas of clinical practice which are expected to be high risk for MRSA infection and acquisition within the Trust include the renal unit, oncology and haematology wards, and areas where there is a high usage of Hickman lines. This contrasts with my understanding of messages given by the statistical process control charts referred to above. From
these charts, clinical areas with most MRSA cases include acute medicine, elderly care and surgery/ENT. However, it is difficult to interpret these data without knowing the denominator, the number of patients seen in these areas. The charts showing the number of Trust- attributed new MRSA cases suggests that the largest number of new cases occurs in acute medicine, critical care and surgery/ENT. The caveat about knowing the denominator applies here too.

I was given sight of a number of audits including the 2014 MRSA eradication audit and the isolation of MRSA positive patients audit. These indicated a significant shortfall in practice against policy. For example review of prescription charts to check the administration of decolonisation treatment indicated that only half of the expected treatment episodes had been signed. The implication of this is that the treatments were not given. One quarter of patients with MRSA carriage were not isolated in single rooms which is a deficit when compared to the Trust MRSA policy. Additionally, of those MRSA positive patients who were isolated in single rooms, one quarter did not have dedicated medical equipment in their single rooms and in two thirds of cases the doors of single rooms were not closed. This indicates an opportunity for improvement in practice.

5. Is the root cause analysis process appropriate and effective?

The process for root cause analysis, including the review of individual cases seem to be appropriate. Given the very small number of MRSA bloodstream infections over the last three years, there is probably little opportunity to learn a great amount from this activity. As mentioned above, extending this to other hospital-acquired bloodstream infections, particularly those caused by MSSA, may provide greater insights, especially if a program of analysing RCAs and summarising major themes is carried out on a 3 to 6 monthly basis. However, I was satisfied that senior management in the Trust is engaged with this process. The requirement to present to either the medical director or chief nurse should be a significant stimulus to ensuring that the root cause analysis process is carried out thoroughly.

6. Is MRSA policy within the Trust in line with national guidance?

The Trust’s MRSA policy was consistent with national policy in England and in some instances went beyond what is required. The use of topical decontamination in high risk areas including intensive care and cardiac surgery is up-to-date with recent evidence. As mentioned above, recently published revised guidance from the Department of Health on MRSA screening should be reviewed and may be an opportunity to simplify and reduce the amount of MRSA screening carried out in the Trust. It will also be an opportunity to carry out a communications campaign in the organisation to revitalise efforts against MRSA infection.

7. Is there an appropriate antibiotic policy and guidelines in relation to MRSA?

The importance of antibiotic treatment as a factor in the spread of MRSA is debatable. However, there is some evidence to support the view that quinolones, cephalosporins and macrolides promote MRSA. Consequently, antibiotic stewardship programs should consider these risks. The Trust’s philosophy around stewardship is to use persuasion rather than restriction as a tool to ensure appropriate prescribing. This is a legitimate approach but the organisation should be confident that it is having the appropriate effect. The antibiotic audit assessment from June 2014 revealed evidence
of poor adherence to the Trust’s antibiotic prescribing policy. There was poor performance against the Trust policy in recording the reasons for antibiotic prescriptions in both the prescription charts and the patient notes, and evidence of poor practice in conducting a daily review of antibody prescribing and recording of a prescription end date.

The Trust policy for treating MRSA infections is up to date in recognising the importance of measuring the vancomycin MIC of MRSA isolates to determine whether or not the isolate is likely to respond to this antibiotic. The alternatives in the policy are appropriate agents for treating infections less likely to respond to vancomycin.

8. Do key staff receive appropriate and effective MRSA training?

All ward staff, including domestic as well as clinical staff, should undertake regular training in infection prevention. The Trust’s 2012/13 annual report states that one of the Trust’s key clinical priorities is to protect patients, visitors and staff from the risk of healthcare associated infections. The report goes on to say that the Trust has a zero tolerance approach to poor hand hygiene and failure to adopt best practices and that regular audits are carried out in wards and departments to check that staff comply with hand hygiene policies. The report also states that all staff in the hospitals have regular training in infection prevention and control. The Trust aims to ensure that all staff working in the Trust have appropriate infection control knowledge, skills and behaviour. The infection prevention policies that I reviewed provided clear instruction on infection prevention practice and serve as a valuable source of information for clinical staff.

Whilst I was walking round wards at the James Cook site I carried out an informal audit of adherence to the bare below the elbow policy. All the clinical staff I saw were following this policy to the letter. I also noticed that clinical staff used the alcohol hand gel which was widely available in the clinical areas that I visited.

Hand hygiene audits in the Trust regularly report 90 to 100% adherence to the WHO five moments of hand hygiene guidelines. While this appears to be reassuring, it is likely that this is a significant over estimate of adherence. Hand hygiene practice audits in the University Hospitals of Geneva, which has been an international leader in the implementation of good hand hygiene practice, still only report about 70% adherence. Consideration should be given to validating hand hygiene audits.

Intravascular lines were stated to be a major factor in MRSA bacteraemias in the Trust. In recognising this, the Trust has created three peripheral vascular cannula nursing posts to provide education and training on best practice. There is a program for training cleaners and the infection prevention and control team is involved closely with this. The domestic training was reported as being very useful. However, minutes of the infection prevention action group from the 7 May 2013 reported that the attendance of infection prevention link practitioners at infection prevention training sessions had declined. This, in combination with new link practitioners coming in to post, indicated that link practitioners were not becoming increasingly out of date with relevant information.

While the significant reduction in MRSA infections over the last 10 years could not have occurred without the widespread adoption of good infection prevention practice, this is an area which needs
constant revision, reinforcement and audit. A schedule for ensuring this should be arranged and staff must be given time to undertake this training.

I would like to add a number of other points to this report over and above the responses to the questions set out in the brief.

My overall impression is that infection prevention practice in the Trust is generally good. There are examples of excellent practice including the way that renal services has seized ownership of infection prevention in their patients and developed excellent practice supported by good governance arrangements including prospective audits of line insertion and infections. This should be highlighted to the rest of the Trust as an example to follow. In addition, I was impressed by the quality and detail of the MRSA statistical process control charts. The microbiology laboratory has an up-to-date approach to MRSA screening including the use of polymerase chain reaction for the rapid screening of patients when necessary. Antimicrobial ward rounds by the infectious diseases consultant and antimicrobial pharmacist at the James Cook site is also an example of good practice. The cleaning services were repeatedly described as good. However, it appeared that the cleaners were sometimes hindered by poor access to clinical areas.

It was stated that there had been disagreement between the Trust and commissioners on how recent MRSA bacteraemias should be apportioned. From the information I was given, it appears that there has been inappropriate allocation of at least one bacteraemia to the Trust. I understand that commissioners may not have adequate expertise to understand how to apportion cases. In future disagreements, I would support the Trust in asking for an independent review.

Given the low numbers of MRSA bacteraemias in the Trust over the last three years, it may be a challenge to motivate staff to tackle a problem which hardly exists. To deal with this, I suggest that the emphasis should be broadened. Although MRSA has received special attention as a cause of healthcare infections, numerically there are more important bacterial causes of infections in hospitals including MSSA and Escherichia coli. In addition, there are many more types of healthcare infections other than bloodstream infections. I believe that the Trust is in a very good position to say that while MRSA is still on the infection prevention agenda, and while measures aimed specifically at MRSA should still be supported, it is now time to revitalise the approach to infection prevention in the Trust by introducing a set of actions which will not only reduce the risk of future MRSA bacteraemias but will also significantly reduce other causes of bloodstream infections and non-bloodstream infections.

Accordingly, I would like to suggest that the Trust considers the list of actions described in appendix 3 which aims to deliver low risks of MRSA bloodstream infections by reducing the risk of MRSA carriage, non-bloodstream MRSA infections and all-cause hospital-acquired bacteraemias. Successful implementation of this strategy would not only deliver reductions in MRSA bloodstream infections but also reductions in a wide range of other healthcare infections too.

The interventions listed in appendix 3 are not mutually exclusive. On the contrary, their combined effect is likely to be at least additive and possibly synergistic.

Knowing that these interventions are succeeding in lowering the risk of MRSA bacteraemia is problematic in the situation where MRSA bacteraemias are already infrequent, if not rare. It makes
sense in these circumstances to measuring both processes as well as outcomes and use proxies where necessary. Potentially useful process measures include audits of adherence to screening protocols, decolonisation policies, hand hygiene practice and isolation policies. To an extent, these are already in place in the Trust. Measures of outcome can include the number of positive MRSA screens, the number of patients acquiring MRSA within the healthcare organisation, the number of non-bacteraemia MRSA infections and the total number of healthcare associated non-MRSA bloodstream infections. In particular, given that MSSA is biologically identical to MRSA apart from the absence of the mecA gene which imparts meticillin resistance, hospital-acquired MSSA infections of all types but particularly bacteraemias are an especially valuable proxy outcome measure of MRSA control processes.

I would like to draw attention to the use of topical disinfectant body washes as a tool for decreasing infections caused not only by MRSA but also other infections. The Trust is already using this approach to a limited extent in intensive care and cardiac surgery patients. My experience in Leicester is that use of this in all adult in-patients, starting before admission in elective patients can significantly decrease the number of MRSA bloodstream infections, albeit in the context of higher numbers of MRSA bacteraemias than currently prevails in South Tees. It also appears to have reduced MSSA bacteraemias in Leicester which runs counter to the national picture.

Communicating Trust infection prevention strategy and policy and the reasons for it to all members of the healthcare organisation is an important first step in creating a patient infection prevention-focused safety culture in the organisation. Consequently, the infection prevention team should invest effort in working with the Trust's communications department to develop a clear and compelling case for infection prevention which will engage all Trust and Carillion employees, not just clinical ward staff. The clear message should go out to all staff that healthcare infections are not inevitable. No opportunity should be lost to include infection prevention issues on the agendas of meetings at all levels in the organisation. Engagement and education should go hand-in-hand to prepare staff for the implementation and execution of infection prevention measures. Individual clinical areas should be encouraged to adopt infection prevention problems which are particularly relevant to their own areas and local multidisciplinary teams should be set up to analyse the potential causes and explore possible answers to these infection prevention challenges. The Plan Do Study Act cycle for introducing innovation should be widely taught and used. Senior clinicians should be expected to demonstrate leadership by being visibly involved in these activities. Staff appraisals could be used to review engagement with addressing infection prevention issues. Clinical areas that have successfully tackled infection prevention problems should be encouraged to share their approaches with other teams. The infection prevention team should dedicate time to support these activities. However, they should give the clear message that they are there to help but not to take over. Clinical areas should retain responsibility for their infection prevention problems.

Many infection prevention measures aim to change the behaviour of healthcare workers. Often, interventions have used an approach that has been characterised as, “It seemed a good idea at the time”. These interventions have often had disappointingly poor effect. A recent systematic examination of the behavioural change literature has led to the development of a methodology that seeks to identify capacities, opportunities and motivation which can be used as effective levers to change behaviour. Further details on this approach can be found at:
A presentation of this approach by one of its authors, Professor Susan Michie, can be viewed at:  

I recommend this approach to the infection prevention team in particular.

A recurrent theme in patient safety practice including infection prevention is the problem of how to deal with members of staff who do not use best practice, for example healthcare workers who do not comply with hand hygiene policy. Junior nursing and medical staff in particular often feel uncomfortable in tackling more senior colleagues who are non-compliant. This can be addressed by providing training in dealing with difficult colleagues and by ensuring that all employees of the Trust are aware of their responsibility to respond professionally to legitimate requests to improve practice or comply with Trust patient safety policy.

The infection prevention team has a particular role to play in the evaluation of infection prevention interventions. To carry out this role effectively, they will need skills in analysing data and delivering reports. There is evidence from the statistical process control charts that these skills are already in place. The infection prevention team should be encouraged to use these techniques to identify successful interventions and to ensure that the benefits of these successes are shared with the rest of the Trust. It is important that all measures of infection prevention practice are robust and reliable. The Trust should review how it measures compliance with, for example, hand hygiene practice. It is a common phenomenon to report implausibly high levels of compliance with hand hygiene practice. These potentially serve to provide false reassurance and are thus potentially dangerous. Other measures of compliance with hand hygiene policy include time series measurements of use of alcohol hand gel and hand wash soap divided by the number of occupied bed days in the clinical area to account for variation in workload over time.
Appendix 1. Review of South Tees Hospitals NHS Foundation Trust infection control policies

All policies seen were within their review date

Hand Hygiene Policy

This sets out the background to healthcare associated infections and describes the roles and responsibilities of Trust officers. All staff are expected to receive hand hygiene training. The hand hygiene policy is based on the World Health Organisation *my five moments for hand hygiene* program and incorporates bare below the elbow. Only single non-stoned wedding rings are permitted. Hand hygiene practice is reinforced through the use of instructional posters in all clinical areas. Hand decontamination can be through either hand washing or the use of alcohol gel.

Meticillin-resistant *Staphylococcus aureus* Policy

The aim of this policy is to prevent and control the spread of MRSA using effective and evidence-based practice. Patients found to be MRSA carriers are flagged on the hospital patient administration system record and a risk alert form is placed on the front of the patient’s notes. MRSA positive patients are placed in isolation. Isolation notices are available. Isolation is continued until the patient is deemed to be low risk. This requires one clear swab if the patient was previously positive before the current admission or three clear swabs if the patient has had a positive MRSA result on the current admission. The patient is recommenced on "eradication" therapy pending the return of a negative re-screen in a patient known to be positive prior to admission or a set of three negative screens in the case of patients found positive during the current admission.

The policy sets out the requirement to liaise with care homes or subsequent hospitals on discharge of the positive patient. Patients with MRSA infections are treated as high risk until the MRSA treatment has been stopped and there have been three clear swabs. Rooms which have been used to house MRSA positive patients are terminally cleaned with a combined detergent and chlorine releasing agent (Actichlor plus). Positive patients are given eradication therapy using nasal mupirocin and Octenisan. All elective patients undergo preadmission MRSA screening with the following exceptions: children, obstetric patients (but not elective Caesarean cases and any high risk cases who are screened), ophthalmology, endoscopy, dental and minor dermatology procedure patients. All non-elective admissions patience are screened except for maternity patients not classed as being at high risk of needing a Caesarean section, paediatric patients or patients expected to be discharged within 12 hours of admission. Only patients known to have either current or previous MRSA carriage are isolated pending the return of screening results. MRSA eradication treatment consists of nasal mupirocin three times a day for five days and daily washes with Octenisan for five days. Patients admitted to clinical areas where there is deemed to be a high risk of serious MRSA infection will be given MRSA eradication therapy on admission. These areas include the intensive care units, the renal unit and the surgical high dependency unit at the James Cook University Hospital. The choice of antibiotic therapy of MRSA infection is based on the minimum inhibitory concentration (MIC) of vancomycin. Patients whose MRSA isolate has an MIC greater than 1 µg/ml are treated with either linezolid or daptomycin.

There is a requirement in the policy to report all MRSA bacteraemias on Datix and the policy requires a detailed case report to be reviewed by a panel usually chaired by the medical director or chief
The MRSA policy contains a number of appendices. This includes appendix A. MRSA risk assessment, which categorises patients into high, intermediate or low risk. Appendix C details the process of a terminal clean. Appendix O is a handover checklist for when a patient is being transferred between clinical areas.

**Isolation Policy**

This policy describes the reasons and process for isolating patients. It contains the instruction that if no single room is available for a patient requiring isolation the bed manager should be contacted and advice sought from the infection prevention team. A list is provided in appendix A of this policy of the order of priority for isolation of patients with different infectious conditions. Patients diagnosed with MRSA carriage rank fifth in this list. Four other infectious conditions (patients with TB, carbapenemase producing organisms, patients with diarrhoea or vomiting from a non-diagnosed cause and patients with *Clostridium difficile* diarrhoea) outrank the need to isolate MRSA carrying patients.

**Urgent MRSA polymerase chain reaction (PCR) standard operating procedure**

This SOP describes the use of a PCR MRSA diagnostic system (Gene Xpert) for rapid MRSA screening of selected patients. Routine MRSA screening is carried out using bacterial culture. The methodology for doing this is included in another laboratory SOP.

**Antibiotic audit assessments for June 2014**

This reports adherence to prescribing antibiotics appropriate to patient's allergy histories, and the recording on the drug chart and the patient's notes of the reason for the antibiotic prescription, the prescription and date of this and evidence of the daily review of the antibiotics. Adherence to recording the reason for the antibiotic prescription on the chart was flagged as red while recording of the prescribing reason in the patient's notes was flagged as amber. Stating the end date of the prescription in the charts and notes were flagged as mixture of red and amber, as was the evidence of a daily review.

**South Tees Hospitals NHS Foundation Trust annual report and accounts 1st April 2012 to 31st March 2013**

The 2012/13 annual report states that one of the Trust’s key clinical priorities is to protect patients visitors and staff from the risk of healthcare associated infections. The report goes on to say that the Trust has a zero tolerance approach to poor hand hygiene and failure to adopt best practices and that regular audits are carried out in wards and departments to check that staff comply with hand hygiene policies. The report also states that all staff in the hospitals have regular training in infection prevention and control. The Trust aims to ensure that all staff working in the Trust have appropriate infection control knowledge, skills and behaviour. The Trust is also committed to ensuring that patients' carers and the public are informed of infection prevention and control issues and associated decision-making in the Trust.

**Directorate of service strategy and infrastructure strategic cleaning plan**
The director of service strategy and infrastructure is the designated board member responsible for cleanliness.

**PLACE assessment results 2013**

PLACE assessments took place during April-June 2013. These showed the Trust to be above average for cleanliness and for condition, appearance and maintenance.

**Cleaning responsibility matrix June 2014**

This specifies cleaning standards for patient equipment on wards, and cleaning standards for the building, fixed assets including switches, light pulls, walls and ceilings, hard and soft floors, electrical fixtures and appliances furnishings, walled kitchen fixtures and appliances, toilets, sinks, and washbasins, bathroom and shower fixtures. A feature of the patient equipment cleaning schedule is the application of tape following cleaning to indicate that the equipment is clean and ready to use.

**MRSA statistical process control chart data**

These data include weekly MRSA prevalence, total incidence of MRSA and incidence of Trust attributed MRSA. They are an impressive record of the declining number of patients with MRSA carriage. Of note, the weekly total incidence of MRSA appears to have levelled off from 2012 onwards at the James Cook University Hospital site, albeit at a low level. The slide showing the weekly incidence of Trust attributed MRSA indicates a range between zero and two new cases per week. Clinical areas with most cases include acute medicine, elderly care and surgery/ENT. However, it is difficult to interpret these data without knowing the denominator, the number of patients seen in these areas. The charts showing the number of Trust attributed new MRSA cases suggests that the largest number of new cases occurs in acute medicine, critical care and surgery/ENT. The caveat about knowing the denominator applies here too.

**Audit report MRSA eradication re-audit 2014**

This audit aims to assess and ensure patients colonised or infected with MRSA are isolated in a side room and provided with the appropriate decolonisation and medical equipment to reduce the risk of cross infection to other patients, as set out in Trust MRSA policy. 20 patients were included in the audit in February 2014. The results indicate that only 50% of the expected administrations of decolonisation treatment are signed for. Only 40% of the decolonisation prescriptions have a stop in date recorded on the prescription chart. Additionally 25% of the patients with MRSA carriage did not have a dedicated stethoscope or blood pressure cuff in their rooms. Side room doors were closed in only 35% of the rooms audited.

**Isolation audit report November 2013**

This audit aims to compare isolation practice to the standard stated in the infection control policies. MRSA carriage was the most frequent indication for the need for isolation (16 patients). Of the 16 patients with MRSA, four patients were not in isolation at the time of the audit. Of all patients in the
audit requiring source isolation, only 57% were appropriately isolated. Keeping the door of the single room closed was a frequent item of non-compliance, with only 34% of single room doors closed at the time of the audit. The audit also reported that only 34% of the time were staff seem to perform hand decontamination before putting on gloves. The use of correct isolation room signage, the correct use of personal protective equipment and its removal by clinical staff after leaving the room as well as appropriate hand hygiene on leaving the room scored higher at about 70%. Daily cleans of the room had a high compliance rate of 96%.

**Infection prevention action group minutes**


These minutes appear to indicate that the infection prevention action group meets every two months. Of relevance to this review is the discussion in the 13 November 2012 minutes around the infection prevention and control team informing wards about the admission of patients previously positive for MRSA. It appears that ward staff rely on the IPC team informing them that new admissions are known MRSA carriers rather than the ward staff using the patient administration system, CaMIS, to identify previously positive patients. This subject was further discussed at the 11 July 2013 meeting.

A discussion about redistribution of cleaning hours was recorded in 13 November 2012 minutes.

Minutes from the meeting on 28 March 2013 reported a survey of patient satisfaction with MRSA screening practice.

The meeting of 7 May 2013 reported that the attendance of infection prevention link practitioners at infection prevention training sessions had declined. This, in combination with new link practitioners coming in to post, indicated that link practitioners were not becoming increasingly out of date with relevant information.

**Laboratory MRSA and MSSA anonymised results**

These indicate that the monthly number of screens positive for MRSA has remained constant over the last 18 months at about just over 60 per month.

**Annual Clean Your Hands audit data, April 2012 to May 2014.**

This is audit data of adherence to hand hygiene policy. There is a consistent monthly score of around 90% adherence.

**MRSA pathway audit March 2013**

This audit aimed to measure compliance with the Trusts MRSA care pathway. There was evidence of complete compliance with use of the MRSA pathway.

**Organisation Chart infection prevention and control team July 2014 and the Infection prevention and control structure**
This provides a clear illustration of the management and communication structure of the team. The number of posts is appropriate at both the nursing, administrative support and medical input.

**Patient complaints related to MRSA between April 2011 and March 2014.**

During this time period there was only a total of seven complaints, none between April 2013 and March 2014.

**South Tees Hospitals Foundation NHS Trust Antibiotics Policy**

This sets out the terms of reference for the Antibiotic Working Group

**2013 antimicrobial drugs guide**

The importance of identifying MRSA previously positive patients in order to ensure they get appropriate empirical treatment is emphasised in this drugs guide.
Appendix 2. Summary of Oral Evidence

Session 1.

The incidence of MRSA bloodstream infections since 2001 was presented. This demonstrated a clear reduction in numbers of MRSA cases over the last 13 years. The reduction was attributed to infection prevention policy, the use of MRSA screening including the selective use of PCR rapid testing, infection prevention training, follow-up of MRSA positive patients, the use of an MRSA pathway for positive patients and root cause analysis of both MRSA and MSSA hospital attributed bacteraemias. MRSA bloodstream infections are subject to a clinical incident review where details of the case are presented to a executive director level lead, either the medical director or chief nurse. This is not the case for MSSA bacteraemias. These are not subject to a clinical incident review. However, it is expected that lessons to be learnt from MSSA bacteraemias are shared at governance meetings.

The view was expressed that the major risk factors for MRSA bloodstream infections in the Trust are vascular lines and urinary catheters. There has been work put into developing peripheral cannula care pathways. Three peripheral vascular cannula nursing posts were created to provide education and training on best practice. VIP charts and patient note stickers were introduced at the same time. Cannula packs have also been introduced. The Trust returns data to the Safety Thermometer programme, including data on catheter associated urinary tract infections (CAUTIs). This data has revealed a high use of urinary catheters within the Trust compared to other trusts. The HOUDINI tool for assessing the need for urinary catheters is in use in the community and is under consideration for introduction into the acute Trust. Silver coated urinary catheters are used in patients where the catheter is expected to be in place for more than 24 hours but not for long-term use. The view was expressed that these have been helpful in bringing down MRSA bacteraemias.

Chlorhexidine-containing dressings (Biopatch) have been used for several years in renal patients with central lines. Recently, the Biopatch dressing has been swapped for a cheaper alternative.

The Trust’s PFI partners are Carillion who took over 10 years ago and who provide domestic services. Microfibre cleaning has been in place since October 2013. Both detergent and disinfectant-based solutions are used for cleaning of clinical areas depending on circumstances.

The Trust adopted the Clean Your Hands campaign when it was launched around 10 years ago. Hand hygiene is subject to regular audits. However, there is concern about the accuracy of the audits because many of the audits report an unlikely 100% adherence. As a consequence the audit methodology is under review. There is an intention to refresh the promotion of hand hygiene.

There are monthly reports to the Trust Board which are presented by the Chief Nurse and Director of Infection Prevention and Control (DIPC), Ruth Holt. The view was expressed that there is strong leadership around infection prevention extending from the Board to wards. The current Chief Executive was previously the DIPC for the Trust and she continues to support the infection prevention programme. A number of the non-executive directors have demonstrated an interest in infection prevention. However, a non-executive director has not been allocated specific board level responsibility for infection prevention.
Concerns have been raised about the quality of nurse cleaning of patient equipment. This has been raised particularly in the context of *Clostridium difficile* infections. However, there is an expectation that improved equipment cleaning should also contribute to a reduced risk of MRSA infection.

Patients undergoing cardiac surgery are routinely given treatment aimed at reducing MRSA carriage. This consists of nasal mupirocin and body wash with Octenisan for five days, starting pre-admission for elective patients or on admission to the cardiac surgery ward for non-elective patients. Decolonisation treatment for five days is also provided for intensive care patients and other high-risk patients including vascular and renal patients. This treatment is then followed by MRSA swabbing. Patients with positive swabs undergo a further cycle of treatment.

Patients are screened for MRSA in line with national guidance introduced in 2009 and 2010. The MRSA positivity rate is believed to be less than 1% of all screens.

It was stated that review of recent MRSA colonisation and infection incidents do not reveal a patient group with a relatively higher risk of MRSA. The only exception to this is the recent experience of five obstetric patients with MRSA infection who were MRSA negative on admission screens. However, areas of clinical practice which are expected to be high risk for MRSA infection and acquisition within the Trust include the renal unit, oncology and haematology wards, and areas where there is a high usage of Hickman lines. The Trust was involved in the Matching Michigan study, aimed at reducing bloodstream infections associated with central line use.

The infection prevention and control team use statistical process control charts to track MRSA incidents by each ward.

There is a bacteraemia service at the James Cook Hospital which follows up all patients with bloodstream infections.

Richard Bellamy, infectious diseases consultant and infection control doctor at the James Cook site, runs an outpatient antibiotic treatment (OPAT) service where antibiotics are given through Hickman lines. It was reported that he has not had any bloodstream infections for several years. He has offered to teach his central line model of care to nursing staff in the Trust but so far this offer has not been taken up, apparently because the workload of nursing staff prevents this.

Surgical site infection surveillance is mainly limited to orthopaedic prosthetic surgery surveillance which is carried out for one quarter every year.

When asked about how good medical engagement is with infection prevention governance, renal doctors were highlighted as very engaged.

There is variable ability of wards to identify and manage patients identified as MRSA carriers on previous admissions. Previously MRSA positive patients are flagged in the Trust’s patient admissions system and the information in this system is available to the wards but this is variably used and acted upon by wards. The infection prevention nurses review on a daily basis every single inpatient known to be currently or previously MRSA positive. They report coming across patients known to be MRSA carriers who are being nursed in open bays because a ward hasn’t made itself aware of the patient’s MRSA status.
Whenever an in-patient is newly found to have MRSA, the infection prevention nurses review possible reasons for this. If lapses of care are identified, this is recorded on Datix. However, the process for learning from non-bacteraemia MRSA incidents is less developed than for MRSA bloodstream infections. Each ward has daily board rounds but these are used for clinical management decision-making and are not specifically used as an opportunity for learning from adverse events. There is no Trust wide practice of individual clinical areas adopting a clinical practice governance problem on a regular basis in order to identify causes and solutions.

Session 2

A consultant renal physician recounted how he was struck by the number of *Staphylococcus aureus* bloodstream infections when he started in the Trust in 2001. The number was far higher than he had experienced in his previous post. He began an audit of bloodstream infections in his patients and recorded a peak incidence in 2005 of around one MRSA or MS SA bloodstream infection per week. He reported how when Saving Lives was introduced in 2005, MRSA bloodstream infections were seen by some in the Trust as, “Just one of those things.” However, he also reported how the Trust had responded by setting up a multidisciplinary working group, headed by the medical director, aimed at preventing MRSA bloodstream infections. This was an effective working group due, it was said, to the expertise of the members of the working group, the willingness to do something about the high number of bloodstream infections, and the resources made available to this group. In 2007 nine renal unit-attributed MRSA bloodstream infections were recorded. This prompted an investigation of the renal unit by a Department of health team and consequent improvements in practice. MRSA bloodstream infections fell. The one MRSA bacteraemia in 2013 was the first in the renal unit in four years and may in part have been due to the acquisition of MRSA in a referring hospital. It was reported that there has been a dramatic reduction in bloodstream infections caused by Gram positive organisms including MSSA and coagulase-negative staphylococci as well as MRSA. However bloodstream infections caused by Gram negative bacilli are still a problem but less so than before.

A number of reasons was given for the reduction. Stopping the use of un-tunnelled lines as the route of intravenous access for dialysis was emphasised as an important explanation for this reduction. This change in practice challenged established behaviour which saw the use of un-tunnelled lines as acceptably routine. The use of the femoral site for line insertion was also reduced. This site is now avoided or, if used, used only for a maximum of five days. Necklines are used for a maximum of 10 days and tunnelled lines for longer term dialysis. “Railroading” – the replacement of lines through the same insertion site over a guide wire, is avoided if at all possible. The renal unit took over ownership of line insertion and set up a dedicated room for this procedure. Patients are screened for MRSA before insertion and a single dose of teicoplanin is given as prophylaxis. The site of insertion is cleaned with 2% chlorhexidine in alcohol and Tesio lines are used instead of Permacaths. Biopatches are used for the first six weeks following line insertion and the line is locked with Taurolock. The room used for line insertion is decontaminated between patients. A prospective audit of line insertion is maintained using both an electronic database and entry into patient notes and folders.

The renal physician was questioned about the use of arterio-venous fistulas. It was opined that although there was a national target for 85% of dialysis to be through arterio-venous fistulas, it was questionable whether this is achievable. Reasons against the likelihood of meeting this target
include patient factors such as their age, the presence of diabetes and other comorbidities which impose practical and technical limits on the ability to form arterio-venous fistulas. In South Tees only around 40 to 60% patients requiring renal replacement have what is seen as a definitive modality (arterio-venous fistulas, transplant or a Tenckhoff catheter). South Tees is not unusual in this. Neighbouring renal service units including Leeds and Newcastle, have similar levels of performance.

The sustainability of good infection prevention practice in the renal unit was addressed. There was confidence expressed that good line insertion practice was now embedded through the recruitment of trained colleagues and enthusiastic nurses. A checklist for line insertion has been developed which includes carrying out a pre-insertion MRSA screen and the use of antibiotic prophylaxis. Protocols and guidance are on the ward computers and it was felt that a patient safety culture is in place. However, the bloodstream infection audit is carried out by the renal consultant and would be at risk without this consultant.

The burden of MRSA carriage in renal patients was discussed. A number of MRSA point prevalence studies, begun in 2006 and repeated until 2012, indicated a low rate of MRSA carriage. The mechanism for attributing MRSA bloodstream infections in renal patients to either the acute Trust or the community was reviewed. It appears that any MRSA bloodstream infection in a renal patient, including those receiving outpatient dialysis, is attributed to the Trust even if the patient had not been an inpatient in the 48 hours prior to the blood culture being collected. The renal physician did not seem upset by this because he felt that the renal unit was largely responsible for the entirety of the medical care given to renal patients including care which is normally considered to be the responsibility of the patient's general practitioner.

When asked what more could be done to prevent MRSA bloodstream infection in renal patients the possibility of improving dialysis through a fistula was discussed. One problem that has been identified with increasing the use of fistulas is a difficulty in salvaging some fistulas. This requires input from radiology and vascular surgery. On the whole these two specialties provide a good service but, on occasion, delays have resulted in the loss of a fistula. Attention has been paid to improving the pathway for referral for fistula formation. However the medical lead for this is currently on maternity leave.

The organisation and practice of cleaning in the Trust was reviewed. Cleaners are employed by Carillion at the James Cook site. The Friarage Hospital and other North Yorkshire community hospitals currently have in-house cleaning arrangements. This difference reflects hangovers in historical contractual arrangements. Generally, there is a good relationship between cleaners and ward managers. Domestic staff are included in the Trust communications pathway and domestic staff were described as, “engaged and vocal”. For the purposes of cleaning, the James Cook site is divided into seven zones and there is a senior housekeeper for each zone. Whenever a replacement cleaner is required, for example to cover annual leave or sickness, a substitute cleaner is usually provided from within the same zone. The intention of this is to ensure that replacement cleaners have a familiarity with the areas in which they work. Since 2013, cleaners have taken part in an NVQ level 2 in cleaning, housekeeping and food services. Cleaning is to a combination of the 2001 and 2007 National cleaning standards. This approach was introduced in 2013 in order to increase cleaning input to high risk areas while reducing cleaning in low risk areas. Overall, it has led to an increase in daily cleaning on wards by up to 1.5 hours per ward. On average, wards get eight hours
of cleaning each day. This includes a full clean and one check clean. Toilets are cleaned five times each day in high risk areas or three times daily in other areas. Neutral detergent is used as the standard cleaning agent. Actichlor plus is used for all toilet cleans and for ward cleans experiencing a period of increased incidence of *Clostridium difficile* infection. Currently, cleaning is carried out using non-microfibre disposable cloths and microfibre mops. There is an intention to trial disposable microfibre cloths.

There are around 700 terminal cleans every month in the Trust. These are mostly cleans of side-rooms or bathrooms. Actichlor plus is used for terminal cleans. If the terminal clean is to clean an area previously used by a patient with *Clostridium difficile*, hydrogen peroxide vapour is used. This has been the practice in the Friarage Hospital for several years and was introduced on 15 May 2014 at the James Cook hospital. The aim is to complete the terminal clean with Actichlor plus within a four hour response time. However hydrogen peroxide vapour decontamination is less well supported and the response time for this is "as soon as possible". Terminal cleans of rooms used for the nursing of patients with MRSA only use Actichlor plus as the cleaning agent and not hydrogen peroxide vapour. An options appraisal is being drawn up to consider the use of hydrogen peroxide vapour for all terminal cleans. The view was expressed that a faster response time for terminal cleans is desirable. It was felt that four hours is too long a time to wait. There is no deep cleaning programme although an empty ward does exist which could be used as a decant facility. Steam cleaning has been in use since 2008 for sanitary areas including the toilets on wards with periods of increased incidence of *Clostridium difficile* infection. However this has reportedly caused flooring to lift. It was reported that cleaning resources are based on ward surface area rather than the intensity of workload of a clinical area. There is a program for training cleaners and the infection prevention and control team is involved closely with this. The infection control doctor at Friarage hospital meets fortnightly with the Friarage Hospital cleaning managers.

An antimicrobial pharmacist has been in post at the James Cook hospital since 2008 and for the last six years has undertaken antibiotic ward rounds with the James Cook infection control doctor. This has led to an improvement in the appropriate use of antibiotics in the management of patients with MRSA infections and has potentially prevented progression to MRSA bloodstream infections. There are no antibiotic ward rounds at the Friarage Hospital. Antibiotic prescribing in the Trust is supported by prescribing guidelines available on the Trust’s intranet. Advice on prescribing is also available for clinicians from the infectious diseases and microbiology departments doctors. A limited number of antibiotics (linezolid, daptomycin and tigecycline) are subject to restrictions. There are no restrictions on, for example, ciprofloxacin. Currently there are no mandatory antibiotic duration limits. New drug charts are being introduced which include review and stop dates but ward clinicians are able to decide whether or not to use these. Antibiotic prescribing teaching sessions are provided by microbiology. The philosophy in South Tees is to use a persuasive approach to manage antibiotic prescribing.

The work of the antimicrobial pharmacist is supported by pharmacy technicians who fill in antibiotic reports. These reports are matched to microbiology sensitivity reports and checked for congruence. If the antibiotic reports indicate the use of inappropriate antibiotics then the antimicrobial pharmacist will intervene. The antimicrobial pharmacist is employed by pharmacy and is physically based in the pharmacy department. Although it was agreed that the antimicrobial pharmacist would not undertake routine dispensary work, it appears that there is a continuing risk that this might
There is a weekly meeting involving infectious diseases, microbiology and the antimicrobial pharmacist. The antimicrobial pharmacist is a member of the antimicrobial working group. The antimicrobial pharmacist is not routinely notified of new MRSA isolates by the laboratory.

The ability to audit antimicrobial usage is limited by a shortage of ward pharmacists especially in the trauma/orthopaedics wards. Business cases are being prepared to increase the number of ward pharmacists.

Medical representatives from haematology and oncology reported on their experience with MRSA. Haematology reported only one MRSA bloodstream infection in the last seven years. However, because of the large number of Hickman lines in use in this specialty, it was reported that they see a significant numbers of bloodstream infections due to organisms other than MRSA. Haematology entered a newly renovated ward three weeks prior to the visit. There are 19 beds on this ward and seven of them are single-bedded rooms, all of which are en-suite. The other beds are in four-bedded bays and there is a large amount of space between the beds. Oncology have reported only MSSA bloodstream infections.

The renal unit has 24 beds of which six are in single-bedded rooms. Two of these single rooms have toilet facilities but no showers. The remaining 18 beds are arranged as three 6-bedded bays. There has been a plan to change these to 4-bedded bays but this has not progressed. The renal unit has four satellite dialysis departments. One is in Darlington and this is set out as a Nightingale-style ward. This is not considered to be a pleasant environment. However there are two new build satellite units, one in Stockton and one in North Hall. The remaining dialysis centre is in the James Cook hospital and has undergone recent refurbishment.

There are 285 side rooms overall in the South Tees Trust out of approximately 1200 beds across the James Cook and Friarage sites. None of the side rooms in the old build area of the hospitals have en-suite showers.

The infection prevention and control nurses do not have access to dedicated infection control software. Currently they use Excel spread sheets which are populated with lists of alert organisms sent to the infection prevention team by the microbiology laboratory. As a consequence, the infection prevention nurses rely on their memories to link potential cross infection events. The infection prevention nurses have investigated the purchase of dedicated infection prevention software including, in particular, ICNet. A number of requests have been made for this product including a bid to use the Nursing Technology Fund, but without success. The infection prevention nurses use the hospital’s patient activity system to check for admissions of patients with known MRSA carriage. This is facilitated by an MRSA flag and the infection prevention nurses search for new admissions with MRSA flags twice daily during Monday to Friday.

There is no infection prevention nurse service out of hours or at weekends. This used to exist but has been withdrawn as part of cost improvements. Out of hours and weekends, infection prevention in the Trust is theoretically covered by the on-call microbiologist but, in reality, microbiologists do not pick up infection prevention work. Wards are relied on to carry out any infection prevention actions arising out of relevant microbiology results such as new MRSA positive cultures.
The domestic services provided by Carillion were reported as doing a good job. There are challenges but Carillion is on top of them. The domestic training was reported as being very useful. The monitoring tool Credits 4 Cleaning is used to assess domestic services. This is performed as a self-audit by Carillion but there are frequent walk-rounds with matrons. The frequency of these has increased to weekly walk-rounds recently. In addition, sign off of key performance indicators of the cleaning service requires the ward managers signature and ward managers are encouraged to escalate concerns.

A process called clinical assurance rounds exists whereby senior nurses and infection prevention nurses meet on a monthly basis and go round clinical areas carrying out a 15 step challenge. This is not specifically targeted on environmental cleanliness - it also includes other issues such as pressure ulcers - but the “look and feel” of the ward environment is assessed during these rounds.

Patient opinions are elicited using quarterly questionnaires completed during face-to-face interviews with 250 patients. Aspects of services provided by Carillion including cleaning, portering, housekeeping, maintenance and security are included in this questionnaire.

There is an external audit of the cleaning services provided by Carillion which is currently being undertaken by Audit North, a local NHS organisation.

Soft services scores are reported to IPAG monthly and low scores or complaints prompt a review. The use of consumables, such as disposable cloths, Actichlor wipes and alcohol gel, are used as a proxy marker of cleaning practice and low use also prompts investigations. Sometimes the reasons for low cleaning scores include poor access to the clinical area because of clutter, the presence of visitors (the recent extension of visiting hours has reportedly had a negative effect on access) and ring-fenced time for patients to sleep during the day.

Bed cleaning was discussed. It was stated that there is a lack of clarity between nurses and cleaners on who cleans what and when. The schedule is to clean the top side of the bed daily and the underside weekly but this can be made difficult because of the movement of beds. Some thought has recently been given to the introduction of tags to indicate when a bed was last cleaned. Another challenge is that nurses have not had sufficient training in environmental cleaning and so the infection prevention team have introduced cleaning training sessions.

Ward visit

During my visit to the wards, I informally audited ward staff, both doctors and nurses, for compliance with the bare below the elbow requirement and looked for stoned rings or other non-permitted hand jewellery. Staff were 100% compliant with this regulation.

The hospital appeared clean. The new haematology ward and the spinal injuries unit appeared to be pleasant environments with sufficient patient space.

Appendix 3. MRSA Bacteraemia reduction actions
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<th>Objective</th>
<th>Intervention</th>
<th>Possible implementation patterns</th>
<th>Mechanism of action</th>
<th>South Tees Hospitals NHS Foundation Trust response and action.</th>
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</table>
| 1. Prevent MRSA entry into the Trust | 1.1 Pre-admission screen of elective patients for MRSA | a). Selective screening in surgical specialities where consequences of infection are severe, e.g. cardiac, orthopaedic surgery  
  b). All surgical specialities  
  c).All elective admissions (surgical and medical) | Screening for MRSA detects around 93% of carriers.  
  Outpatient MRSA carriers can be identified, given decontamination therapy and re-screened before admission.  
  Decontamination prevents MRSA entry into the Trust and protects both the carrier and other patients from MRSA infection. | The Trust is fully compliant with national guidance on MRSA screening. |
|          | 1.2 Pre-admission MRSA topical decontamination treatment | a). Reserved for patients with positive screens  
  b). Given in conjunction with screening regardless of result  
  c). Given to unscreened patients, either all or “high risk” patients.  
  In all of above, topical treatment may be given for limited duration or continued for whole of in-patient stay. | Decontamination therapy (skin/hair disinfection with e.g. Stellisept and nasal mupirocin) reduces MRSA carriage.  
  Its use in patients with a positive MRSA screen is well-established.  
  It may also be given to patients with negative screens, both to reduces undetected MRSA in patients with falsely negative screens and to reduce methicillin sensitive Staph aureus carriage (MSSA), where infection caused by this bacteria is also serious, e.g. cardiac surgery patients. | The Trust is fully compliant with national guidance on MRSA topical decontamination treatment. |
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| 2. Early detection of MRSA in in-patients | 2.1 Admission screen of patients for MRSA | a). Selective screening in surgical specialties where consequences of infection are severe, e.g. cardiac, orthopaedic surgery.  
b). All surgical specialties  
All emergency admissions (surgical and medical) | This approach detects MRSA carriage as soon as possible in patients admitted urgently. When combined with separation of patients of unknown status from known negative patients, by ring-fencing of screened-and-negative patients or isolation of patients awaiting screening results and/or topical decontamination therapy, this technique limits the risk for spread of MRSA. Its use is most likely to be valuable in clinical areas where the consequences of MRSA infection are severe, but, when used in such a setting, must be applied to all admissions to that area. | The Trust is fully compliant with national guidance on MRSA screening with additional early warning system via the PAS. |
| 3. Early decontamination of MRSA from in-patients | 3.1 MRSA topical decontamination treatment on admission | a). Selective application in surgical specialties where consequences of infection are severe, e.g. cardiac, orthopaedic surgery.  
b). All surgical specialties  
All emergency admissions (surgical and medical) | This should follow if in-patient screening identifies a carrier.  
It can be applied to all patients within a defined clinical setting, regardless of screening result, by extension of the arguments in 1.2 | The Trust currently implements decolonisation in high risk areas. |
<p>| 4. MRSA detection throughout admission | 4.1 MRSA screen triggered by specific events at any time during admission | Patients transferred to specific wards screened either prior to or on admission, for example, patients admitted to intensive care or ring-fenced (MRSA free) wards | Patients may move from clinical areas where MRSA infection has a low-risk to a high-risk area. This would require a corresponding change in approach to MRSA prevention, including clarifying MRSA carriage status. | The Trust is fully compliant with national guidance on MRSA screening. |</p>
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<td>4. MRSA detection throughout admission continued</td>
<td>4.2 Enhanced screen of contacts in response to MRSA detection in clinical specimen from index case</td>
<td>a). Patients in same bay b). Patients in same ward</td>
<td>Identification of an in-patient with MRSA, particularly one who was previously MRSA negative, is a potential marker of undisclosed MRSA transmission in the ward. Screening of contacts may uncover the source patient and other carriers.</td>
<td>Trust policy supports the implementation of selective MRSA screening in the event of a possible outbreak.</td>
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<td>4.3 Prospective random screening</td>
<td>Patients are selected at random for MRSA screening</td>
<td>This would give an estimate of total number of MRSA carriers in the Trust and would be a valuable indicator of the success of control measures</td>
<td>The Trust is fully compliant with national guidance on MRSA screening, therefore further screening not required.</td>
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<td>5. Prevent contact with MRSA positive in-patients</td>
<td>5.1 Quarantine new admissions in single rooms until MRSA negative status assured</td>
<td>Unscreened patients admitted to a ring-fenced ward are screened and nursed in a single room until they are known to be negative for carriage</td>
<td>Unscreened patients admitted from other wards/clinical areas could introduce MRSA into ring-fenced (MRSA free) wards. Quarantine in a single room until a negative screen result is returned allows the patient to receive appropriate care without endangering other patients.</td>
<td>Trust policy reinforces the need to isolate any previously positive MRSA patient.</td>
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<td>5.2 Remove MRSA colonised/infected patient to single occupancy room</td>
<td>a). High risk wards (e.g. surgery) b). All wards</td>
<td>The risk of MRSA transmission to other patients can be reduced by isolation of the MRSA positive in a single room.</td>
<td>Trust policy reinforces the need to isolate any positive MRSA patient.</td>
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<tr>
<td>5. Prevent contact with MRSA positive in-patients continued</td>
<td>5.3 Remove MRSA colonised/infected patient to cohort bay</td>
<td>a). High risk wards (e.g. surgery) b). All wards</td>
<td>In wards with insufficient numbers of single rooms to permit isolation of all MRSA positive patients, a less efficient approach to minimising transmission to other patients is to nurse all known positive patients together in a bay on a ward, and restrict staff to care for just one group of patients.</td>
<td>Trust policy reinforces the need to isolate any positive MRSA patient. Difficult to achieve due to the location of side rooms.</td>
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<td>Trust wide implementation of cleanyourhands campaign, revised audit tool (self and peer), competency for all clinical staff, external support from hand hygiene product supplier, staff and patient/visitor poster campaigns.</td>
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<td>5.4 Minimise in-patient length of stay</td>
<td>a). Promotion of day case surgery b). Promotion of out-patient investigations and treatment c). Active discharge planning</td>
<td>Increased length of in-patient stay increases the exposure to MRSA and hence risk of acquisition. Active management to ensure prompt discharge limits this risk.</td>
<td>Trust wide activity supports reduced length of stay, day case surgery and PDD.</td>
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<tr>
<td>6. Reduce MRSA acquisition from staff</td>
<td>6.1 Sustained effective hand hygiene</td>
<td>a). Alcohol hand gel b). Hand washing c). Appropriate use of gloves</td>
<td>Effective hand hygiene (before and after every patient contact) by staff reduces hand carriage of MRSA and is one of the most important ways of preventing cross-infection. Alcohol hand gel is the most efficient hand hygiene technique and should be the focus of all campaigns promoting hand hygiene. Hand washing is occasionally necessary to clean soiled hands. Glove use is appropriate in limited circumstances, although their use may give a false sense of security, and increase MRSA transmission.</td>
<td>Trust wide implementation of cleanyourhands campaign, revised audit tool (self and peer), competency for all clinical staff, external support from hand hygiene product supplier, staff and patient/visitor poster campaigns.</td>
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<td>6.2 Appropriate levels and skill mix of staff to match patient needs to ensure sufficient opportunities for good hand hygiene</td>
<td>a). Increase staff numbers of appropriate grades/skills</td>
<td>An excessive workload, or inappropriate skill mix, may be a major barrier to effective hand hygiene, and lead to sub-optimal infection control.</td>
<td>Trust wide reviews as part transformational work has been completed and included staff levels and skills mix.</td>
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<td>b). Decrease patient numbers to match existing staff grades/skills</td>
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<td>6.3 Reduce non-hand transfer of MRSA by staff</td>
<td>Ensure equipment that comes into contact with patient’s skin is cleaned between patients.</td>
<td>MRSA can survive on inanimate surfaces, which can subsequently serve as a vector for transmission. If these surfaces are cleaned between patients this route of transmission is interrupted.</td>
<td>Current focus and education on patient equipment cleaning. Funding of dedicated isolation room equipment has been agreed.</td>
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<tr>
<td></td>
<td>a). stethoscopes</td>
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<td></td>
<td>b). tourniquets</td>
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<td></td>
<td>c). blood pressure cuffs</td>
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<tr>
<td>6.4 Segregate staff to care for either MRSA positive or negative patients</td>
<td>a). High risk wards (e.g. surgery)</td>
<td>Segregation of staff to either MRSA positive or negative patients will limit transmission by transiently colonised staff from positive to negative patients.</td>
<td>This would be difficult to achieve in the current structure of the wards/Departments. Reinforce the need to comply with policy to minimise cross infection.</td>
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<td>b). All wards</td>
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<td>7. Reduce MRSA acquisition from environment</td>
<td>7.1 Improve efficiency of cleaning in clinical areas</td>
<td>a). Ensure clear guidance for effective cleaning is given to cleaners</td>
<td>The clinical environment is contaminated by MRSA on skin scales and hair and in respiratory droplets. This environmental reservoir can be minimised by effective cleaning. This is achieved by ensuring the cleaning staff have a clear knowledge of the cleaning schedule and that they have sufficient resources in terms of time and equipment to complete their tasks. Their job can be made easier by the removal of unnecessary furniture and equipment to storage, and by the presence of surfaces that do not hold dust and that can tolerate cleaning with appropriate cleaning products including disinfectants. Audit, feedback and implementation of remedial action ensures a clean environment.</td>
<td>On-going discussions with service providers Carillion relating to assurance of cleaning standards. Complete HP fogging in a number of areas. Domestics have annual training updates, manuals are available and cleaning schedules for each areas are displayed. Life cycle plans highlight the need of any remaining carpets to be replaced (currently only in offices). Environmental audits are completed; weekly clinical matron walkabouts and ‘Dump the Junk’ events in 2014 have been completed.</td>
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<td>b). Ensure adequate and appropriate hours available for cleaning.</td>
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<td>c). Ensure clinical areas are easy to clean, for example, remove unnecessary paraphernalia.</td>
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<td>d). Ensure all surfaces are readily cleaned, for example, replace all carpets with vinyl in clinical areas.</td>
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<td>e). Audit cleaning effectiveness</td>
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| 8. Design hospital environment to reduce risk of MRSA acquisition | 8.1 Ensure high proportion of single rooms in all new build | a). Minimum of 50% single occupancy rooms in high risk areas (e.g. surgical wards, ITUs, renal wards)  
 b). Minimum of 30% single occupancy rooms in low risk areas (e.g. general medical wards) | A high proportion of beds in single occupancy rooms is a major factor in the control of MRSA transmission by:  
  * Allowing the isolation of known MRSA carriers  
  * Reducing transmission from undisclosed carriers, fortuitously nursed in single rooms  
 Single rooms with adequate en-suite facilities are more easily created during new build, than as a retro-fit in established build. | The trusts has actively increased the number of side rooms in new builds (general HDU) and wards 1-12 refurbishments commencing with ward 3 plus reduced bed spacing by reducing bays 6 to 5 beds.  
 Further discussion around location of wards in relation to number of available side rooms to be completed. |
| | 8.2 Retro-fit single rooms into established build | a). Minimum of 50% single occupancy rooms in high risk areas  
 b). Minimum of 30% single occupancy rooms in low risk areas | Consider returning patient rooms that have been converted into non-clinical use, e.g. offices, back into single-occupancy patient rooms. This would help achieve optimal numbers of single occupancy rooms. | See above. |
<p>| | 8.3 Increase space between beds in ward bay areas | e.g. convert six-bedded bays into four-bedded bays | Increased space between beds in ward bay areas reduces direct transmission of MRSA between patients | See above. |</p>
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<td>8.4 Ensure facilities for hand hygiene are available in every clinical area</td>
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<tr>
<td>a). Alcohol hand gel dispensers close to every bed, examination couch and trolley</td>
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<tr>
<td>b) Hand wash basins and liquid soap dispensers in every clinical area</td>
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<td>The absence of convenient hand hygiene facilities in clinical areas is a major barrier to the practice of effective hand hygiene.</td>
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<td>All wards and departments have appropriate point of care alcohol gel and hand wash basins.</td>
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<td>9. Minimise therapeutic practice likely to promote MRSA emergence</td>
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<tr>
<td>9.1 Minimise macrolide (erythromycin, clarithromycin) use</td>
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<tr>
<td>a). Develop guidelines for appropriate use</td>
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<td>b). Audit and report adherence to guidelines</td>
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<td>There is a positive correlation between the quantity of macrolide antibiotics prescribed in a hospital with subsequent increases in MRSA cases. Although the mechanism for this is not clear it is possible that macrolide antibiotics provide selective pressure for the emergence of macrolide-resistant MRSA.</td>
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<td>Trust has antibiotic guidelines which are audited monthly, December 2014 compliance was 98%</td>
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<tr>
<td>9.2 Minimise fluoroquinolone (ciprofloxacin, levofloxacin) use</td>
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<tr>
<td>a). Develop guidelines for appropriate use</td>
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<td>b). Audit and report adherence to guidelines</td>
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<td>There is a positive correlation between the quantity of fluoroquinolone antibiotics prescribed in a hospital with subsequent increases in MRSA cases. Although the mechanism for this is not clear it is possible that fluoroquinolone antibiotics provide selective pressure for the emergence of fluoroquinolone-resistant MRSA.</td>
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<tr>
<td>9.3 Minimise 3rd generation cephalosporin use</td>
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| 10. Reduce total risk of bacteraemia | a). Establish venflon teams | Intra-vascular cannulae predispose to bacteraemias because:  
- They provide a direct route for skin bacteria, including MRSA, into the bloodstream.  
- Cannula manipulation (for drug administration and blood sampling) carries the risk of introduction of bacteria, including MRSA, from the hands of the health care giver.  
Risks can be reduced if cannulae are inserted only when necessary, by trained operators, maintained aseptically and removed as soon as possible.  
Peripheral venous cannulae (venflons) could be inserted, maintained and removed by a specialist venflon team to ensure the highest standard of care.  
Central venous cannulae, including Hickman lines, are specialist devices and must be inserted, | Trust has policy on insertion and management of peripheral intravenous cannula and associated devices. Monthly and annual VIP score audits are completed and included in the ward dashboards. Saving lives care bundles are completed in designated wards/departments.  
Specific central line project including an established task and finish group focussing on central lines has commenced.  
Consider the use of central venous cannula teams.  
Renal medicine applies strict MRSA management practices including fistula creation at the earliest |
c). Establish central venous cannula teams  
d). Set standards for central venous cannula insertion, maintenance and removal and audit performance  
e). Transfer chronic renal failure patients on haemodialysis from vascath to arterio-venous fistula access in | | |
accordance with NSF standards or better, and audit

maintained and removed by a specialist team.
There is evidence that the increased risk of MRSA bacteraemia in patients with end-stage renal failure is due to delays in transferring vascular access for haemodialysis from vascaths to arterio-venous fistulae.

| 10.2 Minimise risk of bacteraemia from surgical site infections | a). Establish surgical site infection surveillance in all surgical specialties | Infections at surgical sites include infections caused by MRSA. They can progress to bloodstream infections. Patients with surgical site infections due to MRSA are a significant source of infections to other patients on the ward through transfer on the hands of healthcare workers. In addition, surgical site infections are a significant concern in their own right, regardless of their contribution to the burden of MRSA bacteraemias.
Surgical site infection surveillance is a necessary preliminary to any infection prevention and control interventions in surgery. Without quantification of infection rates there can be no measure of success.
Antibiotics given prophylactically reduce surgical site infection rates, but inappropriate timing of administration or inappropriate agents can lead to adverse effects and promote the emergence of antibiotic resistant bacteria, including MRSA.
Surgical site skin preparation disinfects the incision site prior to surgery. Alcohol-based 2% chlorhexidine is the agent of choice.
Staff movement in theatres increases the risk of surgical site infection.
Hypothermia during surgery increases the risk of complications.

b). Establish use of antibiotics for surgical site infection prophylaxis and audit performance
c). Ensure effective surgical site skin preparation
d). Ensure surgical environment is appropriate and operating theatre staff movement is minimised.
e). Ensure patients remain normothermic before, during and after surgery unless hypothermia is a deliberate component of the surgical procedure.
f). Set/audit standards for hand hygiene for surgical operators and assistants

The Trust completed national standing of surgical site infection surveillance.
Surgical site infection surveillance within all surgical specialties requires further discussion to support an increase in data collection. Orthopaedic and cardiothoracic specialists are currently collecting data.
Antibiotic guidelines are available to support appropriate surgical prophylaxis treatment. To consider audit of practice.
Appropriate skin preparation is used based on EPIC guidance.
Clinical matron for theatres and IPC team liaise closely in relation to theatre standards and procedures.

Theatres complete monthly hand hygiene audit
g). Set/audit standards for aseptic care of all surgical site skin lesions  

h). Involve tissue viability nurses in the care of all infected surgical wounds  

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| 10.3 Minimise risk of bacteraemia from non-surgical site infected skin lesions | a). Ensure risk of pressure sore development is minimised                        |                                                                                                   | Pressure sores are avoidable. If they develop they can become infected and predispose to bloodstream infections.  

Any non-surgical wound, whether acquired outside or in hospital, can become infected. Any examination or manipulation of an unhealed wound must be performed aseptically to avoid this complication.  

Tissue viability nurses have expertise in the care of infected wounds, and their involvement in the care of a patient with an infection can accelerate healing and reduce the risk of complications including bacteraemia.  

Trust pressure ulcer management policy available and the Trust has established an pressure ulcer collaborative. Tissue viability team provision.  

See 10.2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | See above.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 10.4 Minimise risk of bacteraemia from urinary tract | a). Establish urinary catheterisation teams  
  b). Set standards for urinary catheter insertion, maintenance and removal and audit performance. | Urinary catheters almost inevitably lead to high levels of bacterial colonisation of the bladder urine, and predispose to urinary tract infection and bloodstream infection. Although most urinary infections associated with catheters are caused by Gram negative infections, the risk of MRSA bacteraemia is raised by urinary catheterisation in MRSA colonised patients. Risks can be reduced if urinary catheters are inserted only when necessary, by trained operators, maintained aseptically and removed as soon as possible. | Preventing infection's associated with short term indwelling catheters policy available. Complete annual urinary management audit and savings lives care bundles.  
 IPC team leading a urinary catheter project |
|---|---|---|---|
| 10.5 Minimise risk of bacteraemia from the respiratory tract | a). Set standards for endotracheal intubation, maintenance and removal and audit performance  
  b). Monitor ITU endotracheal intubation device-days and device-associated infection rates  
  c). Audit adherence to ITU care bundles relating to respiratory care | MRSA respiratory tract infection may be a frequent event in intensive care units, particularly in patients who are intubated for ventilation support. Endotracheal intubation bypasses the protection against infection provided by the epiglottis and tracheal ciliary mucous elevator mechanism. Respiratory tract infection with MRSA is associated with MRSA bloodstream infections.  
 Endotracheal intubation is a specialist procedure and must be performed by a specialist team. | Saving lives care bundles in use within critical care and collation of regional audit data is completed. |
| 10.6 Minimise risk of bacteraemia in immunocompromised patients | a). Establish protocols for assessing all patients for presence of immunocompromised state.  
  b). Require senior clinician authorisation for use of invasive medical devices in immunocompromised patients  
  c). Establish protocols for protective isolation of immunocompromised | Immunocompromised patients are more vulnerable to severe infection, including bloodstream infections, than patients with intact immune systems and so enhanced awareness and protection of immunocompromised patients may reduce their risk of developing bloodstream infection. | Specialist medicine protocol in place to support the management of immunocompromised patients and the provision of protective isolation rooms are available. |
patients
d). Establish protocols for assessing neighbouring patients as an infection risk.

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| 11. Promote effective ownership of infection prevention and control | 11.1 Establish specialty infection control groups to manage specialty-specific infection issues in conjunction with the Trust Infection Prevention Service | a). Audit MRSA infection and colonisation rates, including MRSA bacteraemia episodes  
b). Audit antimicrobial prescribing, including the prescription of antibiotics predisposing to the emergence of MRSA  
c). Promote and audit hand hygiene practice within the directorate  
d). Audit environmental hygiene standards  
e) Identify barriers to good infection prevention and control practice, and find solutions | Infection prevention and control is the responsibility of all those who provide health care. Clinical specialty leads have a managerial responsibility to promote and ensure good practice by all their staff.  
The control of MRSA and the conditions that predispose to bloodstream infections are legitimate and obligatory clinical governance concerns. The establishment of a specialty infection control group can address these. This should be lead by a senior clinician, include representatives of all staff groups in the specialty including domestic staff, and be able to direct resources. Such a group can react swiftly to unsatisfactory situations and devise remedial actions.  
Surveillance data routinely collected.  
Monthly antibiotics audits completed.  
Monthly hand hygiene audit and promotion is completed.  
Clinical matron, IPC team and estates complete environmental audits.  
As above. |
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<td>12. Infection</td>
<td>12.1 Monitor the burden of MRSA</td>
<td>a) Audit MRSA infection and colonisation rates, including MRSA bacteraemia episodes</td>
<td>The amount of MRSA in a hospital drives the MRSA acquisition rate. It is made up of patients who have acquired MRSA during their current admission and those patients who have acquired MRSA either elsewhere or during a previous admission. The IP team should provide a regular estimate of the number of MRSA-patient days for the Trust and specialties as a guide to the success of the MRSA prevention programme. A regular report to the Trust and specialties of MRSA bacteraemia rates will provide an opportunity to compare progress against the projected MRSA bacteraemia reduction trajectory.</td>
<td>Statistical process charts and KPI’s are collated to monitor the incidence of MRSA. All MRSA bacteraemia are reviewed through a clinical incident review, RCA and clinical incident review panel. Monthly data is presented the trust board.</td>
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<td>Prevention team support</td>
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<td>12.2 Monitor antimicrobial prescribing</td>
<td>a) Audit antimicrobial prescribing across the Trust, in conjunction with the Trust Antimicrobial Pharmacist, including the prescription of antibiotics predisposing to the emergence of MRSA</td>
<td>The IP team should work closely with the Trust Antimicrobial Pharmacist and this liaison will allow collation and analysis of antibiotic prescribing practice across the Trust. The IP team/Antimicrobial Pharmacist should prepare a regular report to the Trust and specialties on the rates of antibiotic prescriptions, using defined daily doses per thousand bed-days. This will allow tracking of changes due to differences in prescribing practice and take changes in workload into account</td>
<td>See above point 9. Antibiotic prescribing section included in ten monthly board reports.</td>
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| 12.3 Promote and monitor good hand hygiene practice | a) Ensure the provision of hand hygiene products across the Trust  
 b) Organise Trust wide campaigns to improve and maintain good hand hygiene practice  
 c) Audit alcohol hand gel use across the Trust  
 d) Ensure appropriate use of hand washing and glove use | Centrally co-ordinated successive campaigns will provide an efficient and effective approach to hand hygiene across the Trust. | See 6.1 |
| 12.4 Monitor all bacteraemias | a) Audit bacteraemias by organism and whether community or hospital acquired | Bloodstream infections are caused by any one of a large number of bacteria and other microorganisms, apart from MRSA. Those acquired in the community may not amenable to control; those acquired within the hospital may be preventable, and may reflect a situation that could also predispose to MRSA bacteraemia.  
 Hospital acquired bacteraemias should be reviewed for avoidable risk factors. | See 12.1 |
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<tr>
<td>12.5 Investigate all MRSA bacteraemias</td>
<td>a). Root cause analysis of all such incidents</td>
<td>MRSA bacteraemias are the subject of this strategy. Their occurrence is an opportunity to understand their root causes and to discover possible preventative actions.</td>
<td>See 12.1</td>
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<tr>
<td>12.6 Investigate all MRSA infections of sterile sites</td>
<td>a). Root cause analysis of all such incidents</td>
<td>MRSA bacteraemias belong to the class, “MRSA infections of sterile sites”. Although not all MRSA sterile site infections may manifest themselves as bacteraemias, sterile site infections reflect a situation that could present as MRSA bacteraemias. Accordingly they offer the chance of understanding the same root causes underlying MRSA bacteraemias and the discovery of possible preventative actions.</td>
<td>Consideration to complete RCA’s for all MRSA of sterile sites to be completed.</td>
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<tr>
<td>12.8 Investigate all MSSA bacteraemias</td>
<td>a). Root cause analysis of all such incidents</td>
<td>Although MRSA bacteraemias are the subject of this strategy, MSSA bacteraemias occur as a consequence of identical risk factors. The occurrence of an MSSA bacteraemia is an opportunity to discover and understand factors that could predispose to MRSA bacteraemias and implement possible preventative actions.</td>
<td>Trust attributed MSSA bacteraemia are investigated within the directorates with an RCA completed by the clinical matron.</td>
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| 12.9 Promote the culture of patient safety throughout the organisation. | a). Promote the concepts that no infection is inevitable and that hospitals get the infections they are designed to deliver.  
  b). Use staff from unrelated clinical areas to provide a fresh pair of eyes commentary on practice in all clinical areas.  
  b). Ensure all staff are aware of how they are accountable for patient safety, including infection prevention.  
  b). Use the "Engage, Educate, Execute, Evaluate" model to drive the infection prevention agenda.  
  c). Use the "Behavioural Change Wheel" tool to understand the determinants that underpin damaging behaviours and how these can be changed to deliver safer practice.  
  c). Develop a wide awareness of skills and techniques that will enable all staff to challenge inappropriate clinical practice e.g. Stop The Line (Get attention, Express concern, State the problem, Propose a solution) | Healthcare workers readily accept current practice and consequences as normal and inevitable, even when it causes significant patient harm. Breaking out of this normative straitjacket is an essential first step towards designing safer processes for delivering healthcare.  
  Using your own staff as "external consultants" is an easy way to recognise damaging normative behaviour.  
  Accountability provides the link between theory (the proposed interventions outlined above) and their full and effective implementation.  
  The Engage, Educate, Execute, Evaluate model describes a continuous and iterative process that underpins a culture of continuous quality improvement. The Engage element captures the attention of staff and includes approaches such as story telling - e.g. describing how specific patients suffered as a consequence of poor practice, providing staff with comparator data from other healthcare settings to highlight how things can be different. The Educate element provides staff with the knowledge and skills to change practice. The Execute element implements these changes and the Evaluate element measures processes and outcomes to ensure that new practice is embedded and effective. | The Trust quality priorities included ‘reduce all forma of healthcare associated infections’. Staff key have been utilised to promote zero tolerance to healthcare associated infection and the establishments of the HCAI collaborative has supported the current focus on reducing C.difficile.  
  The Trust will be signing up to the NHS England ‘Sign up to safety campaign.  
  Human factors and behaviour change is being utilised in developments with hand hygiene and isolation practice compliance |
The Behaviour Change Wheel ([http://www.behaviourchangewheel.com/](http://www.behaviourchangewheel.com/)) is a collection of evidence-based behaviour change techniques to support the analysis of factors driving negative behaviours and the implementation of desired behaviours.

Inappropriate clinical practice is frequently recognised but left unchallenged, leading to normalisation of damaging behaviour. Staff often feel unable or uncomfortable in challenging poor practice, especially when the offender is more senior than the witness. Giving all staff the skills to challenge poor practice and ensuring that they will be supported by senior managers is an important step in establishing an effective patient safety culture. Staff must also be aware of their responsibility to respond professionally if they are challenged.

<p>| 13. Promote senior management overview of Trust infection prevention and control practice | 13.1 Establish infection prevention and control review as a regular agenda item at Trust Board and Executive meetings | a). Receive reports from the Trust Infection Control Committee | The important contribution of infection control to the quality of clinical care is demonstrated by the prominence given to it by hospital senior management. Trusts that neglect to include infection prevention and control concerns in their board and executive team discussions and decisions run the risk of suffering high infection rates, failing their patients and squandering their resources. Trusts that emphasise infection control by regular review at senior management meetings will reap the financial benefits that low infection rates bring, and their patients will be assured of first class care. | HCAI has a regular slot on Trust board and transformational board, which table a monthly report. Infection prevention action group receives an annual presentation from each centre. Managing directors, chiefs of service and heads of nursing support the monitoring and follow up of centre HCAI action plans and review panes. |</p>
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| 13.2 Ensure non-executive directors are effective advocates of infection prevention | a). Nominate a non-executive lead director to lead on infection prevention at Board level meetings. Include the requirement for them to raise difficult questions about the impact of all Board decisions on infection prevention practice in the Trust.  
b). Provide education about infection prevention to all Board directors, ensuring they are not only aware of MRSA and Clostridium difficile infections but also other organisms/conditions/antimicrobial resistance. | Having a "Devil's advocate" on the Board who challenges conventional thinking can prevent ill-considered adverse decision making. Trust Boards in Stoke Mandeville, Maidstone and Tunbridge Wells and the Mid Staffordshire Trust are examples of where Trust Boards focussing on financial or other targets developed group think which may have been avoided by having a designated contrary voice.  
Trust Board members need to well-informed about healthcare infections, their causes and preventative measures in order to be effective administrators of healthcare resources. | Maureen Rutter is the nominated non-executive lead for HCAI’s.  
Consider future HCAI training for the trust board members. |