

Practice Forum

Reducing healthcare associated infections by adopting a proactive, preventive approach

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Abstract:

An increase in *Clostridium difficile* associated diarrhoea, rapidly rising MRSA bacteraemias and new cases of healthcare associated MRSA colonisation prompted the Royal Wolverhampton Hospitals NHS Trust to review and reform their infection control priorities. The aim was to reduce healthcare associated infections and reach the Department of Health MRSA bacteraemia target for the Trust.

By changing the emphasis from a reactive 'infection control' approach to a more proactive 'infection prevention' outlook; improving ward to board accountability; and implementing a number of infection prevention initiatives, the number of cases of hospital acquired infections due to *Clostridium difficile*, MRSA and *Acinetobacter baumannii* within the Trust have been effectively reduced.

Introduction

The Royal Wolverhampton Hospitals NHS Trust is an 850-bed district general hospital with specialties in cancer, ophthalmology, cardiothoracic surgery (with a dedicated 30 bedded critical care unit) and renal medicine (including a consistent case load of around 300 haemodialysis patients).

New Cross Hospital, the main site, was built in the 1970s and, following the closure of the Victorian city centre hospital, there was major expansion of the main site in the 1980s resulting in a sprawling development. The in-patient Heart and Lung Centre, opened in 2004. The old Victorian eye infirmary (with both in- and out-patient facilities) remained in the city centre. In 2006, there were 88,000 patient admissions.

In 2006/2007 a major restructure of services, including the closure of 100 beds as well as the relocation of the eye infirmary to the main hospital site, was planned. A new divisional structure was introduced and Matrons

were appointed. Consequently, there was concern throughout the Trust over job losses, service restructuring and rapid change.

Challenges

Rising infection rates

- There was an increase in cases of *Clostridium difficile* associated disease (CDAD), rising from 99 cases in the first half of 2003 to 258 cases for the same period in 2006. During this rise, an increase in the severity of the disease was noted. From specimens sent for typing, it was confirmed that the 027 strain was circulating in the Trust.
- The Department of Health (DoH) MRSA bacteraemia target was believed to be unattainable. Numbers within the Trust increased from 38 cases in 2003/4 to 82 in 2005/6. The DoH target for 2006/7 was no more than 24 cases.
- Rates of MRSA acquisition, such as results obtained from screening and clinical swabs, had remained stable over the previous 5 years at around 500 new cases



per year.

- The general Critical Care Unit had seen occasional, increasing clusters of *Acinetobacter baumannii*.
- There seemed to be a general acceptance of rising infection rates and a belief that they were unavoidable.

Reactive Infection Control Model

The Infection Control Team worked according to a traditional, reactive model of infection control, focussing on a high presence on the wards and reacting to clinical problems, outbreaks and alert organisms/conditions. This reactive model was not working. Something had to change.

Communication and Accountability

- Improving communication/accountability for healthcare-associated infection in all groups of staff was seen as a key priority and vital to success, but raising the profile of infection prevention and control when morale throughout the Trust was low was a particular challenge.
- Link Nurses met quarterly but little was known about their input in the clinical setting, with a variety of grades and bands being nominated.

Actions

Organisation, communication and performance monitoring

- The Trust established a sub-group of the Trust Board – the Infection Prevention Board (IPB) – in March 2006. Chaired by the Trust's Chief Executive, this multidisciplinary and influential group meets monthly and holds the Infection Control Team to account for the Annual Programme of Work (including the Saving Lives self-assessment and risk register). The Trust divisions are also accountable to this group for performance in their areas.
- A revised Divisional Performance Framework was introduced, including infection prevention and control Key Performance Indicators (KPI's). KPI's were also introduced to the Matrons' Performance Frameworks and Consultant Objectives with the aim of making infection prevention everyone's concern.
- A system to support attainment of these standards was put in place. The Senior Nurse meets with Assistant Directors of Nursing and Midwifery quarterly to discuss performance and areas of concern. Also, Matrons meet the Infection Control Nurses monthly for discussion and feedback on performance and Lead Nurses communicate with newly appointed Divisional Leads (many of whom are consultant medical staff) on a monthly basis.
- The Link Nurse group was disbanded and a new multidisciplinary group of Infection Prevention Departmental Leads was established, with a revised role profile. This group meets quarterly and provides routes of communication for sharing of best practice, initiating new projects, updating and involvement in the

Infection Prevention programme.

- Ward to board accountability was established. The Director for Infection Prevention and Control (DIPC) sends monthly Statistical Process Control (SPC) charts for: new acquisition of MRSA; CDAD; and Staphylococcus aureus bacteraemia (including MRSA), to the Divisional Management Team, Matrons, executive lead and inpatient areas with problematic infection rates. SPC charts are also sent to all divisional leads and all wards, regardless of performance.
- A corresponding Escalation Plan has been initiated, identifying the action needed in the event of an area, division or the Trust rising above the control limit on the relevant chart.

Changing perceptions

- Infection Control job titles and policies were renamed 'Infection Prevention' to encourage a focus on prevention rather than control.
- Regular training sessions were adapted, explaining how all staff contribute to this important aspect of healthcare, to provide a motivational 'can do' approach. It was communicated that an acceptance of poor infection rates would not be tolerated.

Infection Prevention and Control Initiatives

MRSA Bacteraemia

- A root-cause analysis was undertaken for MRSA bacteraemia, including a retrospective study of the last 50 cases, and the findings were presented to the IPB. Peripheral venous cannulae were identified as the most common cause of MRSA bacteraemia, followed by central venous cannulae (including renal dialysis catheters), thus enabling areas for improvement to be prioritised
- 'Saving Lives High Impact Intervention 2B Peripheral Line Care' was introduced to every clinical ward and department and used weekly. 'High Impact Intervention number 2' was introduced to areas using central venous access devices. Compliance results were collated into a Trust wide score.

CDAD

- Regular commode/mattress auditing/replacement
- 'High Impact Intervention Number 6' introduced following every case of CDAD
- Hotel style bed space check lists introduced following discharge of every patient
- Matron-led ward de-clutter programme and regular clutter collection service introduced
- Root-cause analysis performed on every case of CDAD
- 200 domestic staff trained in CDAD, specifically emphasising the role of the environment
- Medical division nurse training on CDAD
- Grand Round presentation of case studies and action on CDAD, with mandatory attendance of at least one



member of every clinical team (250 attended).

- Revised antibiotic policy, eliminating cephalosporins and quinolones from routine use.

Results

A reorganisation of the infection control committee structure has resulted in significant improvements in the way infection control issues are communicated throughout the Trust. In particular, communication and sharing of best practice has been greatly improved.

Staff throughout the Trust are now committed to the programme and many clinical staff have become enthusiastic ambassadors of infection prevention.

Improvements in bacteraemia rates, both for MRSA and MSSA, have been achieved, with rates as low as 2 cases per month. New cases of MRSA bacteraemia levelled off to rates that had not been experienced in the previous 2 years (Figure 1) and, throughout 2006, there were monthly improvements in all *Staphylococcus aureus* bacteraemia rates, including MRSA (Figure 2).

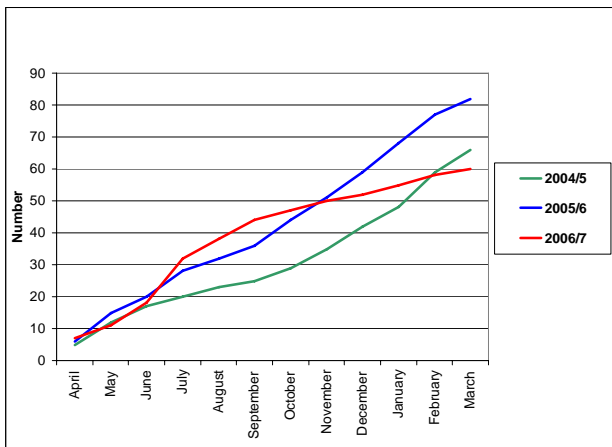


Figure 1: MRSA Bacteraemias - Cumulative Numbers RWHT

For CDAD, mapping of actions on the SPC chart clearly

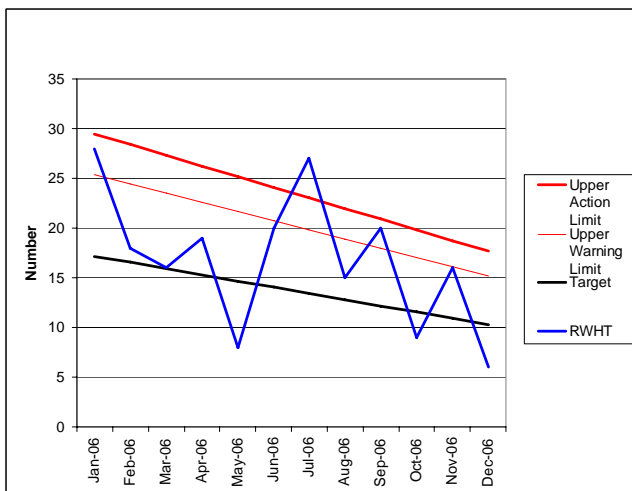


Figure 2: SPC RWHT *Staph. aureus* Bacteraemias

demonstrates that a multi-faceted approach is necessary to reduce CDAD (Figure 3). Notably, the most dramatic improvements were achieved through infection prevention methods (environmental and educational). The full effect of a revised antibiotic policy is still to be realised.

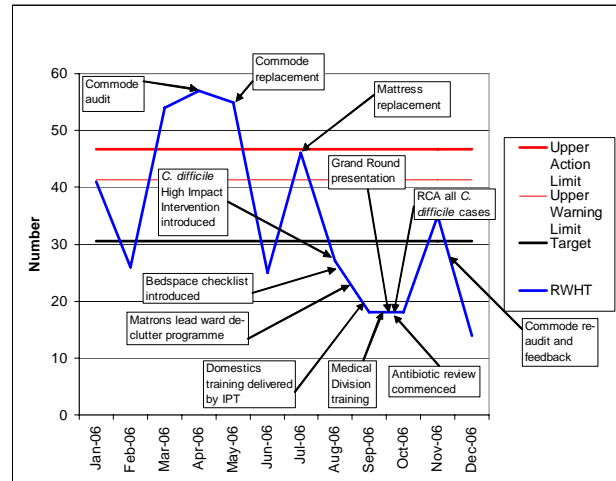


Figure 3: SPC RWHT *C. difficile* Toxin Positives

Improvements in CDAD rates were demonstrated (Figures 4 and 5). It should be noted that four ward outbreaks of Norovirus caused a rise in cases in November, 2006. These patients were colonised with *Clostridium difficile* but were symptomatic of norovirus with associated recovery rates.

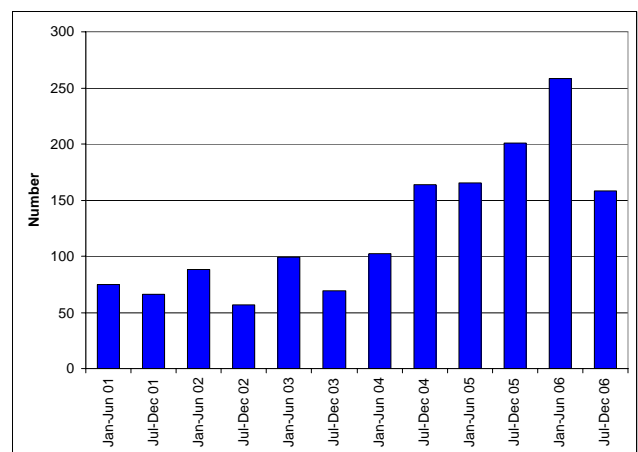


Figure 4: New *C. difficile* Toxin Positives by Six-Monthly RWHT 2001-2006

The initiatives and communication has led to other improvements in healthcare-associated infection within the organisation, including the reduction of *Acinetobacter baumannii* clusters in the general critical care unit (there have been no cases since August 2006).

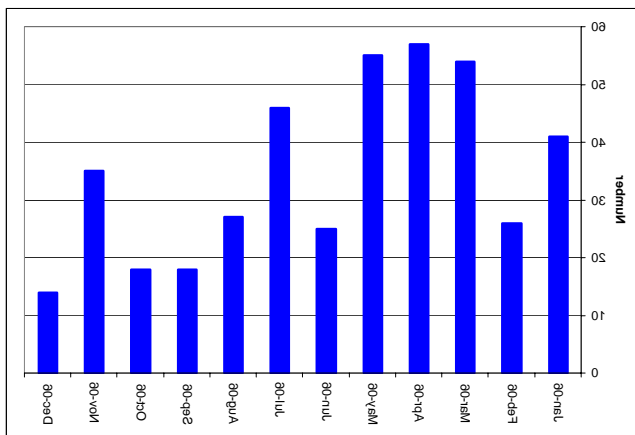


Figure 5: New *C. difficile* Toxin Positives by Month 2006

Conclusion

The team at the Royal Wolverhampton Hospitals NHS Trust has truly aimed at, and succeeded in, engaging all staff in the process of infection prevention and control in a proactive and positive way.

Every case of hospital infection is viewed as an untoward incident and the Infection Prevention Team remain committed to ensuring that infection rates remain low and patient safety a priority. The emphasis of the team has shifted from control to prevention and Infection Prevention currently remains the number one priority in the Trust. The coming year will see the work of 2006/7 built on with the emphasis on sustaining and furthering improvement.



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