RESPONDING TO AN ACINETOBACTER BAUMANNII OUTBREAK IN NEONATAL AND ADULT CCU

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CONTEXT

Mediclinic Tzaneen is a 129-bed private hospital in Limpopo with a 10-bed Critical Care Unit (CCU) and four-bed Neonatal Intensive Care Unit (NCCU). The hospital experienced its first outbreak of a carbapenem-resistant *Acinetobacter baumannii* in both these units starting in December 2013. Only a single infection had been reported in the 12 months prior.

PROBLEM

Adequate infection control measures are essential to prevent and manage outbreaks. We needed to contain the outbreak and ensure no further occurrences. This is particularly important as the number of patients admitted with community acquired *Acinetobacter baumannii* is increasing, creating additional risk for in-hospital spread.

INTERVENTION

When the first three infected patients were identified all staff members were informed about the organism and how to contain it. Management was informed immediately and kept up to date at management and infection control meetings and via email.

All patients were screened on admission to CCU, and immediately isolated if carbapenem-resistant *Acinetobacter baumannii* was found. Mothers were screened in the Obstetric Unit if in premature labour.

Gaps in environmental cleaning were identified: nursing staff were using alcohol handrub for surface cleaning because the hypochlorite solution was not readily available, being on the general assistant's trolley or in the sluice room. 70% alcohol surface disinfectant, which had not previously been used in the hopsital, was introduced.

An environmental cleaning summary with pictures of the products, was pasted in an 'on the spot' training book kept in each unit to record training so even staff not present could benefit.

The general assistant working in the CCU was found to be using hypochlorite in the water in her bucket (not measured out) to wash surfaces. She was taught to clean with a detergent first, and then spray with hypochlorite in the correct solution and leave it for 10 minutes.

The hypochlorite solution for the hospital was mixed centrally in the cleaning department by the supervisor. We noted the solution was too diluted, because insufficient product was being used to make up the solution. Despite the situation being explained to the supervisor, it was later discovered that she had reverted back to the previous dilution without informing hospital management because her budget didn't allow for adequate hypochlorite stock. The importance of the correct concentration was emphasised and assurance given that the hospital would carry the additional costs. The practice of attaching used packets onto the container with the date on was implemented.

Sieves in the taps of hand wash basins in the CCU were removed and not replaced.

Ultimately, dedicated cleaners were allocated to each of the NCCU and CCUs to avoid possible cross contamination, after which there were no further colonisations or infections in NCCU.

However, the same success was not noted in adult CCU where the organism continued to spread with the majority of infections and colonisations in the sputum of patients. We therefore improved disinfection of anything that came into contact with patients' mouths including ambubags and nebuliser masks, separated nasogatric feeding equipment from mouth care trays, and taught cleaners to dry bowls thoroughly before stacking (and preferably to leave them unstacked). Kidney dishes and basins were sent to CSSD for autoclaving once a week.

Despite all these interventions, there was no significant improvement in CCU and in May 2014 we started monthly hand hygiene audits. Individual infection control was found to be a problem: hand hygiene compliance was very low (37%), particularly before patient contact.

MEASUREMENT OF IMPROVEMENT STRATEGY

Run Charts[1] were used to track progress including 'days between' *Acinetobacter baumannii* infections and colonisations.

Acinetobacter baumannii was successfully eliminated from NCCU (Figure 1). However, there was no improvement in CCU (Figure 2) with the median remaining at seven days between hospital-acquired colonisations alone, 43 days between hospital-acquired infections alone, and five days between both collectively.

Hand hygiene remained very low at 37% over the four months since monthly audits began.

CHALLENGES AND LESSONS LEARNT

With an average of 2.3 patients a month already positive for *Acinetobacter baumannii* being admitted to CCU, the risk of spread between patients in CCU remains a constant threat.

Despite all our efforts to contain the infections, we failed to focus on the fundamental issue of hand hygiene, only introducing hand hygiene compliance audits six months into the improvement process and not responding vigorously when the scores were low. We will now focus on hand hygiene and assess the impact of improving compliance on the spread of the infection.

MESSAGE FOR OTHERS

Do not overlook the fundamentals – hand hygiene compliance is essential to prevent the spread of multi-drug-resistant organisms. If compliance is low, all other interventions will not be adequate to prevent the spread of infection.

CONFLICT OF INTEREST

None.

Figure 1: No further colonisations or infections occurred in NCCU once the interventions were in place.

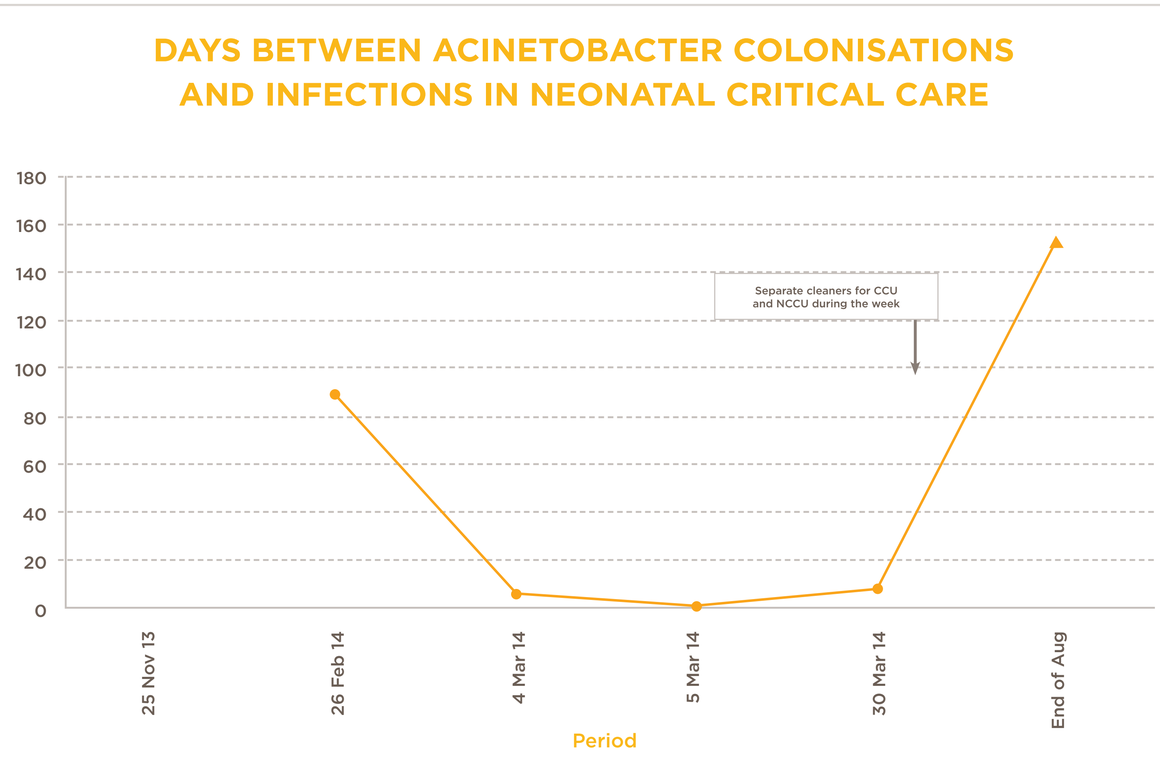
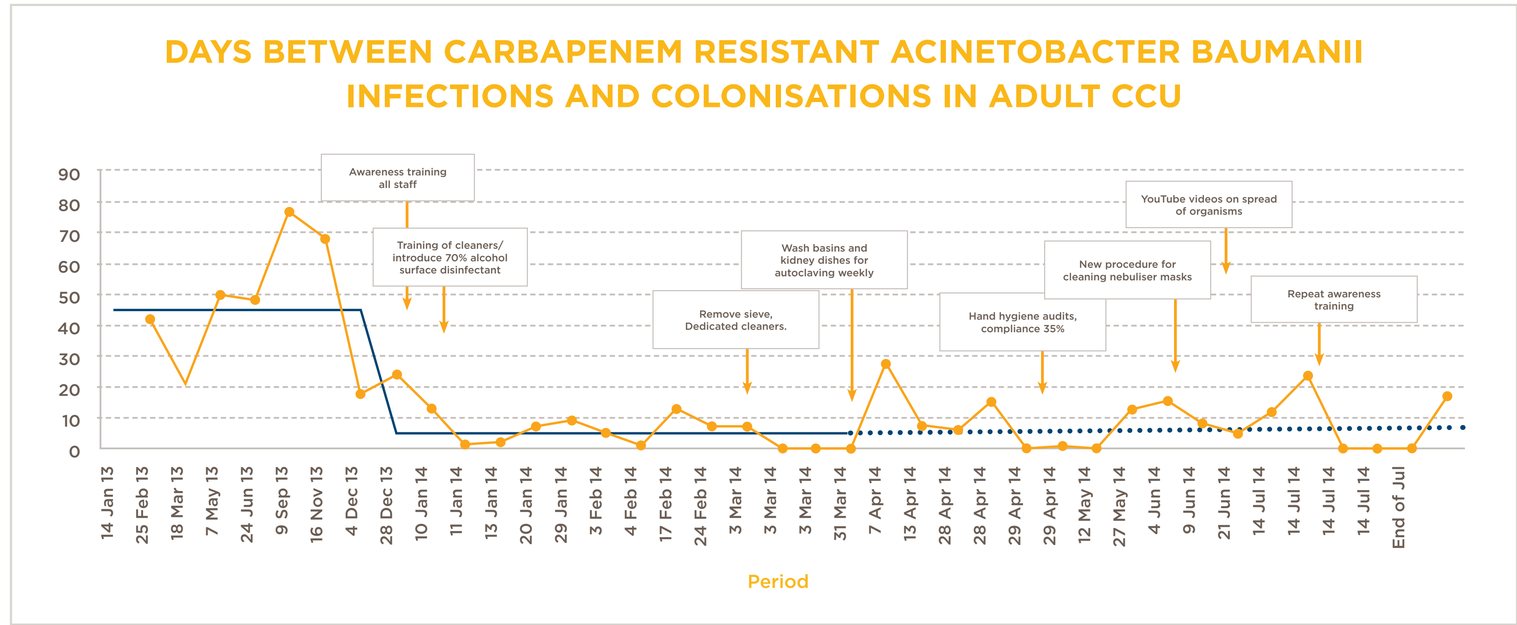


Figure 2: No significant improvement occurred in infections and colonisations in the CCU despite all the interventions.



1. Perla RJ, Provost LP and Murray SK. The run chart: a simple analytical tool variation for learning from variation in healthcare processes. BMJ Qual Saf 2011 20: 46–51. Downloaded from qualitysafety.bmj.com on January 31, 2011

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