Getting surgical prophylaxis on time for MRSA patients: microsystems at play in spread of initiatives

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Introduction

The use of surgical bundles has been proven to be an effective means of preventing surgical site infections. However, the practice of timely delivery of prophylactic intravenous vancomycin may prove to be challenging for intravenous vancomycin (administered over 1 hr infusion usually) as it needs to be completed before skin incision.

It was noted that this is indeed challenging for methicillin resistant Staphylococcus aureus (MRSA) patients scheduled for elective orthopaedic surgeries at a 1750-bedded acute care tertiary hospital in Singapore.

Method

Workflow was reviewed and modified to bring patient to induction room at operating room early. Several PDSA cycles were done before significant improvements was seen (See Fig 1-3).

Results

A pilot was conducted in 2015 by an appointed multidisciplinary team led by an orthopaedic surgeon. The aim was timely delivery of intravenous vancomycin for the MRSA patients undergoing knee and hip procedures with the goal of completing its administration before commencement of the surgery.

Spread and its challenges

Spread of the initiatives was then planned first by the Infection Prevention & Epidemiology Department (IPE) for the remaining surgical procedures in the Orthopaedic Surgery Department in April 2017 and then inpatients in Jan 2019. Spread to remaining surgical departments were planned in phases: following brief communication to the heads, it was rolled out successfully to Neurosurgery in Jan 2019, General Surgery in Feb 2019 and then Plastic Surgery and Vascular Surgery in March 2019.

However, a manpower crunch occurred with reduction of staff in the Anaesthesia Department, and this posed as an obstacle in spread of initiative to remaining surgical departments.

Conclusion

The delivery of healthcare is complex and the challenge lies in each microsystem to work well with each other. Awareness of these systems and the proactive approach to want to make the system safe for the patient is a good start towards achieving patient safety. Mindfulness is necessary and can be facilitated by key stakeholders e.g. Infection Prevention or Patient Safety.

Leadership support was next sought for and obtained by IPE. This then helped the team to consider other practical solutions to ensure timely delivery of intravenous vancomycin to MRSA patients. New workflow is being developed for SDA patients to be sent to PACU for initiation of intravenous vancomycin with initial monitoring by the PACU nurses before they are being moved to their respective operating rooms later for their procedures.

Our experience showed that spread of improvement initiatives require good understanding of the working culture of the organization. Leadership intervention not helped to drive the importance of the project but also clearly the obstacle for potential resistance.

We have demonstrated how this can be successfully done when leadership is kept updated and then approached for help in a timely manner.

Data collection and analysis with timely feedback has proven to be effective means of update to ground staff and motivating them for continual efforts in improvement.

Sustainability of the improvement initiatives will require close monitoring, continual engagement of stakeholders and regular update to leadership.