Quality Improvement Project.

Delivering the 48-hour antimicrobial review on in-patient drug charts.

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FIS 2017 ACTION ON INFECTION — BIRMINGHAM, ICC

Barking, Havering and Redbridge University Hospitals NHS Trust

TAKING PRIDE IN OUR CARE

Introduction

A large proportion of patients receive antibiotics during their hospital admission. There exist clear guidelines on antimicrobial stewardship (1) which state that antibiotics should be reviewed at 48-72 hours of starting, this review constituting the “focus” element of the “start smart then focus" approach (2). Despite these guidelines we observed that this review was often not documented as having been carried out on our inpatient wards. This is disadvantageous in a number of ways:

1) Prolonged / inappropriate antibiotic therapy increases the risk of healthcare associated infections and the proliferation of anti-microbial resistant bacteria.
2) Patients inappropriately receiving antibiotics may experience a prolonged hospital admission (as switching from IV antibiotics to oral is a key discharge criterion).

Aims

Barking, Havering and Redbridge NHS trust recently introduced a new drug chart with a 48 hour antibiotic review section – (Figure 1). We aimed to improve the percentage completion of the 48-hour antimicrobial review box section of our in-patient drug charts to **over 90% across two 30-bed acute respiratory wards within 7 weeks**.

Methods

We used Model of Improvement methodology (Figure 2) to institute interventions designed to increase awareness and process change for the 48-hour review.

The **process measures** were:

1. Has the clinician signed the 48 hour review section? – (Chart 1)
2. Has the date of 48-hour review been documented?

The **balancing measures** were:

1: Has documentation of indication for antibiotics been negatively impacted? – (Chart 2)
2: Has documentation of duration of antibiotics been negatively impacted?

Our **outcome measures** were**:**

1: Has the 48-hour review box been ticked? – (Chart 3)
2: How many days in total was the patient was on IV-antibiotics? – (Chart 4)

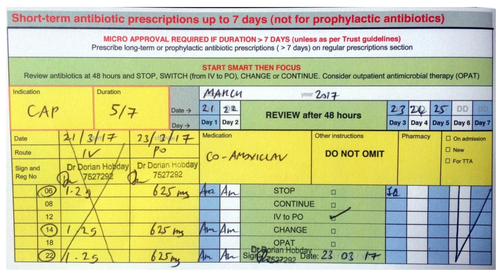


Figure 1: Antibiotic prescribing section of inpatient drug chart.

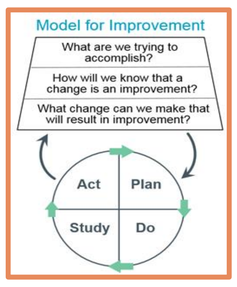


Figure 2: PDSA cycle model for improvement.

Data from 30 prescriptions was collected twice weekly for a seven week period to give fourteen data measurement cycles (total of 420 prescriptions reviewed). The source was the drug prescription chart. Additional information was collected on indication for antibiotic, type of antibiotic and number of days on antibiotic at time of data collection.

Quality Improvement Methods

Prior to measurement the quality improvement team developed a driver diagram to guide our improvement and select interventions (see Figure 3). Seven PDSA cycles were completed. A measurement took place at the end of each PDSA cycle and its effectiveness was assessed. These are described below.

Week	Intervention	Effect of intervention
1	**Incident report email.** Trust wide email encouraging pharmacists to submit an incident report when a 48-hour review not completed. *Note: not initiated by QIP team.*	**Slight improvement.** The threat of an incident report does motivate action however the QIP team felt this was a negative way to encourage change which may have limited the effect.
2	**Consultant announcement.** Consultant speaking directly to all MDT team members at morning board round to explain QI project and to educate on antimicrobial stewardship.	**Significant improvement.** May have been as it was a personal announcement from a senior figure to a wide range of the ward team.
3	**Visual Prompt. (Figure 4)** A4 poster in doctor’s areas of the wards to educate and remind of the importance of the 48-hour review.	**No effect.** May have been as the posters were small/not eye catching.
4	**Magnets on patient whiteboard.** Pharmacists put magnets on the patient board to highlight patients requiring a 48-hour review.	**No effect.** Unfortunately, magnets not available at the start of the week so intervention was not carried out properly.
5	**Reminder on handover sheet.** Doctors work from paper patient handover lists, so a section highlighting 48-hour review was created on the sheet to remind them.	**Significant improvement.** May have been as the handover sheet is constantly referred to by doctors on the ward round and throughout the day.
6	**Active pharmacist involvement.** Pharmacists encouraged to verbally highlight incomplete 48-hour reviews to doctors.	**Significant improvement.** Previously pharmacists had only documented the need for review on the front of drug chart which was often not looked at by doctors.
7	**Email to consultants.** Email sent to consultants detailing the positive improvement achieved by week six of the project and encouraging ongoing engagement with 48-hour review.	**Effect uncertain.** 100% of 48-hour review had been reached by this stage so effect cannot be quantified, however consultants expressed satisfaction with what project had achieved and appeared engaged .

Figure 3: Driver diagram for 48 hour antimicrobial stewardship project.

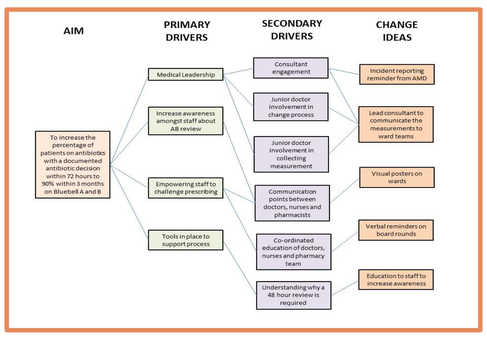
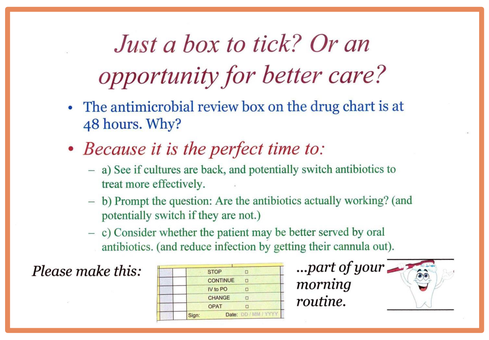


Figure 4: Poster used as visual prompt for prescribers.



Results

Process Measures: signing and dating of 48-hour review section

Our baseline measurement of the 48-hour review section showed only 33% of reviews were signed (Chart 1) and 37% were dated. Both rose to 100% by measurement cycles 11-14 – following the PDSA interventions.

Balancing Measures: documentation of indication and duration of antibiotics

Our baseline measurement showed 77% of patients had the indication for antibiotics completed on their drug chart (Chart 5). This did not diminish and in fact rose to an average of 95% by cycles 12-14 of the QIP. Similarly documentation of indication for antibiotic did not diminish but marginally rose from 93 to 97%.

Chart 1 – Process Measure

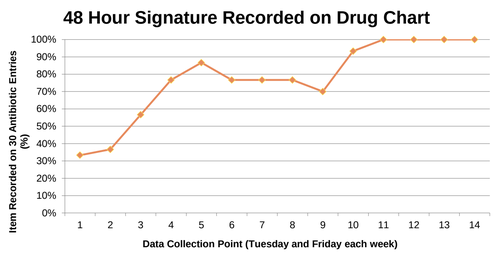
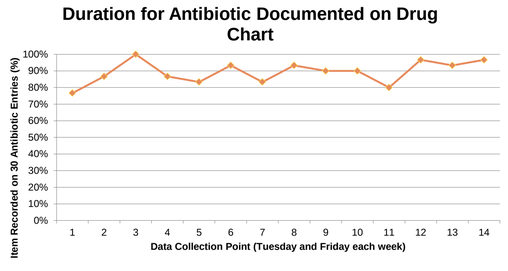


Chart 2 – Balancing Measure



Outcome Measures: completing the 48-hour review box and duration of IV antibiotics

Our first baseline measurement showed just 37% of patients had the 48 hour review box completed on their drug chart (Chart 3). This rose to 100% by measurement cycle 11 and was maintained thereafter. As can be seen below, the PDSA Interventions with greatest impact were 1) Educational talk by a consultant and 2) Inclusion of 48 hour review status on daily handover list.

Average time on IV antibiotics reduced steadily from a baseline measurement of 2.6 days to 1.5 days at cycles 13 -14 (Chart 4). This constitutes an average reduction of 1.1 days. The reduction in time on IV antibiotics is likely due to increased attention the 48 hour review.

Chart 3 – Outcome Measure

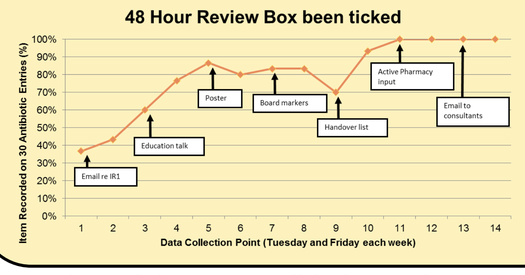
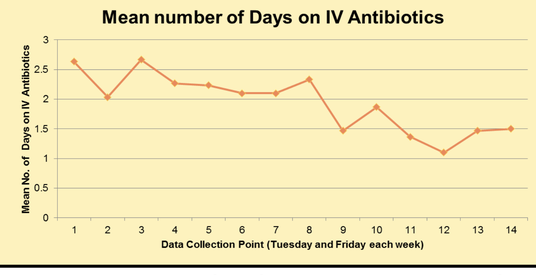


Chart 4 – Outcome Measure



Number of days on antibiotics at time of measurement remained constant at around 5 days (4.1- 6.1 days)

Conclusion

This QIP has shown a large improvement in the 48-hour review of antibiotics which was associated with a significant reduction of patients requiring intravenous antibiotics from an average 2.6 to 1.5 days. In addition there was improvement in the balancing measures of documenting duration and indication for antibiotic which are also elements of good antimicrobial stewardship. Our PDSA interventions were easy to implement and could be replicated on other inpatient wards.

References

1: NICE: Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use. NICE guideline [NG15]. Published August 2015. https://www.nice.org.uk/guidance/ng15
2: Antimicrobial stewardship: Start smart – then focus. Public Health England. Updated 25th March 2015. https://www.gov.uk/government/publications/antimicrobial-stewardship-start-smart-then-focus

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