

An Evaluation of East of England Hospitals Ability to Meet the National Antimicrobial Resistance CQUIN 2016-2017

East of England Pharmacy Infection Network

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Introduction

In 2016-2017, a national commissioning for quality and innovation (CQUIN) incentive scheme was developed in England to tackle the alarming increase in antibiotic consumption in secondary care and the rise of resistant organisms [1]. Consumption targets were set for piperacillin/tazobactam, carbapenems and total antibiotics [2].

The East of England Antimicrobial Pharmacist Network reviewed the CQUIN data and analysed additional patient outcome data namely length of stay (LOS), mortality and *Clostridium difficile* figures to determine if the antibiotic consumption targets had unintended consequences to patient safety and outcomes.

Methods

A data collection form was produced using Microsoft excel® and the content was agreed between all antimicrobial pharmacists working in Secondary care within the East of England. Participating antimicrobial pharmacists provided data from their employing organisation. Data for the 72 hour review audit for the financial year 2016-17 was obtained from the Public Health England (PHE) Fingertips website which is used to collate national CQUIN data. Antibiotic consumption, mortality, and length of stay figures were obtained from individual hospital records for the financial year 2013-14 and 2016-17. The *Clostridium difficile* rates however were compared for the period of 2015-16 and 2016-17.

Results

Ten hospitals out of 18 participated in the survey. All hospitals included in the survey met the antibiotic review target with results ranging from 90% to 99.4% (see table 1). Only 4 out of the 10 (40%) hospitals were able to secure additional resources to support work towards the CQUIN. Recruiting additional employee(s) was the most favourable strategy, with staffing levels increasing by 0.2 to 1.3 whole time equivalents (WTE). Five out of the 10 (50%) hospitals achieved a reduction in carbapenem consumption. This was achieved by a variety of different methods such as daily review of all meropenem prescriptions by an antimicrobial pharmacist, mandatory microbiology approval prior to prescribing meropenem, reviewing ward stock and the use of carbapenem sparing agents. Five hospitals did not achieve the necessary reduction in piperacillin/tazobactam consumption and all but three hospitals achieved the total antibiotic reduction target.

Mortality, LOS and hospital apportioned *Clostridium difficile* figures were also compared (see table 2) to examine the relationship between the impact of the CQUIN and measurable specific patient outcomes. The majority (80%) of hospitals found that there was a reduction in the number of *Clostridium difficile* cases and 60% of hospitals recorded a reduction in LOS compared to the baseline year 2013/2014. The mortality data was variable between the different Trusts.

Hospital Results	72 hour review	Carbapenems	Piperacillin/Tazobactam	Total Antibiotics	Additional staffing resources obtained
National target	90%	1% reduction from baseline 2013-2014			
1	98.7%	35.1%	-30.3%	-10.2%	0.2WTE
2	91.3%	69.4%	14.6%	5.9%	1.3WTE
3	98.3%	43.0%	53.0%	-20.0%	None
4	94.2%	-22.0%	-45.0%	-13.0%	None
5	92.7%	-5.1%	-25.0%	-19.7%	None
6	99.4%	28.0%	-9.2%	-9.4%	0.2WTE
7	90.0%	-4.4%	-12.4%	-1.6%	None
8	90.7%	-26.2%	-0.4%	15.5%	None
9	96.5%	-11.7%	199.2%	-53.0%	0.5WTE
10	93%	30.6%	12.7%	27.7%	None

Table 1: East of England Hospitals data for the national AMR CQUIN 2016-2017. Figures highlighted in yellow show results that have achieved or exceeded the CQUIN targets.

Conclusions

All hospitals in the East of England that participated in the survey met the 72 hour review target and all but three hospitals met the target for reducing total antibiotics. Only 50% of hospitals achieved the necessary reductions in carbapenem and piperacillin/tazobactam consumption. Extra resources did not seem to have an impact on hospitals ability to meet the CQUIN targets.

It is difficult to assess the unintended consequences of the CQUIN given the limited dataset available. However, 80% of the Trusts included in this project saw a reduction in *Clostridium difficile* counts. This may be a consequence of more focused AMS programmes and a reduction in broad spectrum and/or total antibiotic consumption.

Hospital	Difference in Mortality Data from baseline 2013/2014 to 2016/2017 (%)	Difference in LOS from baseline 2013/2014 to 2016/2017 (days)	Difference in C.diff numbers from 2015/2016 to 2016/2017
1	5.1%	-0.4	No difference
2	No difference	0.6	-5
3	10.6%	-0.6	-8
4	22.2%	-0.2	-4
5	7.5%	-0.3	7
6	-3.6%	0.2	-3
7	9.6%	-0.1	-14
8	No difference	-0.5	-9
9	0.1%	0.03	-6
10	1.5%	0.2	-2

Table 2: Difference in mortality and length of stay (LOS) figures for the year the CQUIN was implemented compared to the baseline year of 2013-2014. Trust apportioned *Clostridium difficile* figures for the year the CQUIN was implemented compared to the previous year 2015-2016. Figures highlighted in yellow show an improvement in patient outcomes.

References

- [1]: NHS England, Commissioning for Quality and Innovation (CQUIN) –Guidance Technical Annex for 2016/2017. 9th March 2016.
 [2]: PHE, English Surveillance Programme for Antimicrobial Utilisation and Resistance, November 2016.