

Does a national NHS England incentive scheme to reduce inappropriate antibiotic prescribing in primary care deliver improvement?



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INTRODUCTION

Antimicrobial resistance (AMR) is a national and global threat to health¹ and increasing bacterial resistance means infections are becoming harder to treat. The UK 5 Year Antimicrobial Resistance Strategy 2013-18 has seven objectives, one of which is optimising antimicrobial prescribing practice². The English surveillance programme for antimicrobial utilisation and resistance (ESPAUR) reports 75% of antibiotic prescribing originates in primary care³. The Advisory Committee on Antimicrobial Prescribing, Resistance and Healthcare Associated Infection (APRHA), which provides advice to the UK government, has agreed antimicrobial prescribing quality measures for primary and secondary care and national targets have been set to drive the reduction of inappropriate antibiotic prescribing in primary care in England⁴.

The NHS England Quality Premium (QP) is intended to reward clinical commissioning groups (CCGs) for improvements in the quality of the services that they commission⁵. Payment is based on CCG head of population, delinked for each indicator, and is subject to NHS constitutional gateway sanctions; payments are paid in the following financial year. During the 2 year period April 2015-March 2017 the QP has supported the UK AMR strategy by rewarding CCGs to reduce inappropriate antibiotic prescribing in primary care, and we report the effectiveness of this scheme.

METHOD

The AMR QP adopted the use of existing indicators: **Antibacterial items/STAR-PU** which reports volume of oral antibacterial prescriptions by population standardised for age and gender, and **Co-amoxiclav, cephalosporin & quinolone items as a % of all antibacterial items** which reports the proportion of broad spectrum antibiotic items.

Dispensed prescription data is reported by the NHS Business Services Authority⁶ (NHSBSA) and was extracted at CCG level for each 12 month period and has been reported as: Year 1 (April 2015-March 2016); Year 2:(April 2016-March 2017); Year 1+2 (April 2015-March 2017).

Reduction targets were calculated from the Financial Year 13/14 baseline data, and set as individual CCG targets, and as national target values. The baseline data set with CCG targets is published by NHS England and CCG performance is published monthly in the Antibiotic Monitoring Quality Premium dashboard as open data to ensure CCGs are aware of their performance⁷.

Antibacterial Items/ STAR-PU indicator reduction: In Year 1 all CCGs had an individual target to reduce by 1% from the CCG baseline. In Year 2 this changed to a reduction to 'at or below' the England mean baseline value of 1.161, or a reduction of 4% against CCG individual baseline; whichever was the easier to achieve. This approach ensured all CCGs had to improve in Year 1, while in Year 2 rewarded CCGs who met their indicator target, while supporting CCGs with very high antibiotic prescribing to continue to improve.

Broad spectrum antibiotic indicator reduction: In Year 1 all CCGs had to reduce to 'at or below' the median CCG value of 11.3%, or reduce by 10% from the CCG individual baseline, whichever was the easier to achieve. In Year 2 all CCGs had to reduce to 'at or below' a new national target of 10%, or to reduce by 20% from the CCG individual baseline. This approach rewarded CCGs with both appropriate and improved performance.

Where routinely reported, the impacts on associated costs have been included. The net ingredient cost of the reduction in antibiotic items has been calculated, and includes an estimate of the lost income from those antibiotic prescriptions that have a paid prescription charge. Costs of dispensing fees avoided have not been calculated. NHS England publishes full details of QP payments made to CCGs, which are lower than the potential full payment attached to the scheme due to linkage to NHS constitutional gateway performance⁵.

RESULTS

All 209 CCGs participated in both years of the QP scheme, and CCG performance is reported in Figures 1, 2 and 3.

Year 1 April 2015 – March 2016

201/209 (96%) CCGs met or exceeded their individual Antibacterial items/STAR-PU 1% reduction target, delivering a mean England reduction of 7.7%. This delivered an in year reduction of 2.7 million antibiotic prescription items from 37,033,310 to 34,337,167 items. The CCG median item growth was -7.1% (range: -15.9% to + 8.1%). 2 CCGs increased antibiotic prescribing in Year 1, but reduced and met their QP target in Year 2.

189/209 (90%) CCGs met or exceeded their target to reduce the proportion of broad spectrum antibiotic items, delivering a 14% reduction to a mean England indicator value of 9.7%. This delivered an in year reduction of 626,302 broad spectrum antibiotic items from 3,935,090 to 3,308,788 items. The CCG median item growth was -14.9% (range: -37.2% to +3.5%). While 12 CCGs increased their indicator value in Year 1, 11/12 CCGs remained 'at or below' the national indicator target of 11.3%. Four of these 12 CCGs continued to increase during Year 2, but performance remained 'at or below' the national indicator target value of 10%.

Year 2 April 2016 – March 2017

183/209 (88%) CCGs met or exceeded their individual Antibacterial items/STAR-PU 4% reduction target, or remained 'at or below' the national target value of 1.161. This resulted in an additional reduction of 17,983 antibiotic prescription items during the 12 months to March 2017. The CCG median growth in antibiotic prescription items was -0.2% (range -11.3% to + 7.6%).

174/209 (83%) CCGs met or exceeded their target to reduce the proportion of broad spectrum antibiotic items, delivering a 21% reduction to a mean England indicator value of 8.9% and below the APRHA ambition. This delivered an in year reduction of 278,579 broad spectrum antibiotic items. The CCG median broad spectrum antibiotic item growth was -7.6% (range: -31.5% to +10.4%).

Year 1+2 April 2015 – March 2017

Between April 2015 and March 2017 there was an overall 7.3% reduction of 2,714,126 antibiotic prescription items that delivered a lower England Antibacterial items/STAR-PU value of 1.060 and below the APRHA ambition. While 201/209 CCGs reduced growth in antibiotic prescription items (median -7.2%; range: -20.2% to +9.2%), 57/209 CCGs had an indicator value greater than 1.161 at March 2017. Five of the six CCGs whose antibiotic items increased, also had an indicator value greater than the national target of 1.161.

There was a larger 23% reduction (904,881 items) in the number of broad spectrum antibiotics, which reduced to a mean England indicator value of 8.9%, below APRHA ambition. The median CCG growth in items was -21.1% (range: -47.9% to +8.3%) with 204 CCGs reducing items; however 55 CCGs continued to have an indicator value greater than 10% at March 2017. One of the 5 CCGs who increased broad spectrum antibiotic prescribing also had an indicator value greater than 10%.

Cost impact associated with this improvement scheme are reported in Table 1. NHS England publishes details of QP payments made to CCGs. These were £36.4 million lower than the potential full payment (£52.3 million) attached to the combined 2 years of the scheme; this was due to linkage to NHS constitutional gateway performance. NHSBSA calculated the net ingredient cost (NIC) of antibiotic items, which excludes dispensing fees, and estimated the cost of prescription charges avoided. 18% of NHS antibiotic dispensed prescriptions have a charge paid.

| Table 1 | Quality Premium payments made to CCGs in the following financial year following application of gateway performance | Assumed cost of antibiotic prescription items avoided due to reductions in dispensed antibiotics | Estimated cost of antibiotic prescription charges associated with reductions in dispensed antibiotics |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Routinely reported costs associated with the implementation of the AMR Quality Premium scheme | | | |
| Year 1 | £10.8 million | £15.2 million | £4 million |
| Year 2 | £ 5.1 million | £ 0.1 million | £0.02 million |
| Year 1+2 | £15.9 million | £15.3 million | £4 million |

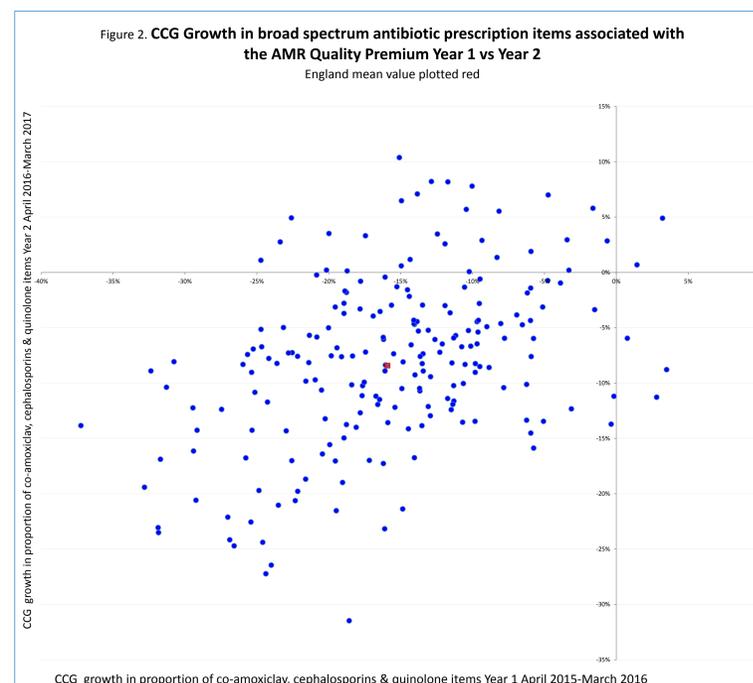
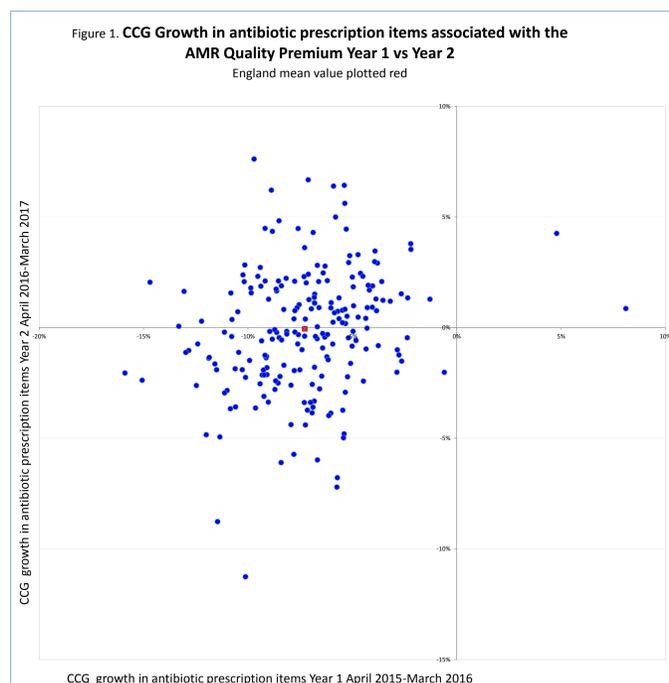
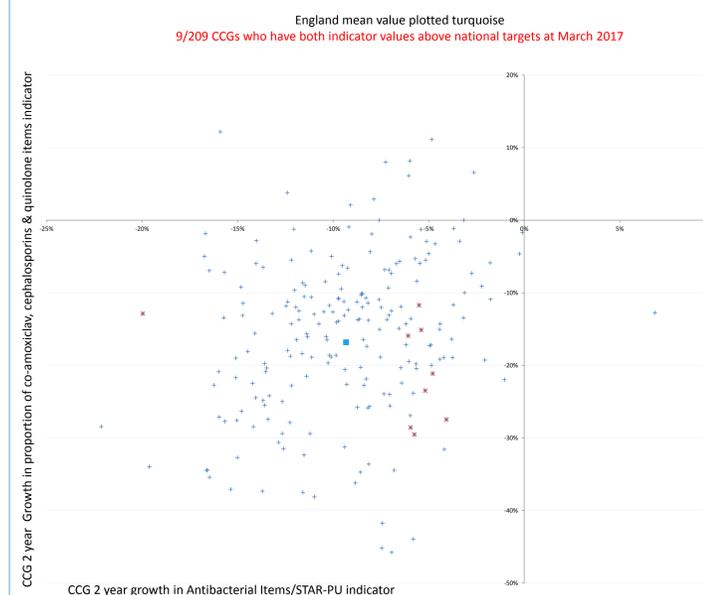


Figure 3. CCG Growth in antibiotic prescribing indicators associated with the AMR Quality Premium 2 year period April 2015 – March 2017



CONCLUSION

Engagement with the NHS England Quality Premium scheme, which exceeded expected performance, was excellent with 96% of CCGs meeting or exceeding their individual 1% reduction target to reduce antibacterial items in Year 1. This delivered a 2.7million reduction in prescription items. In Year 2 some CCGs had only to remain 'at or below' the national target of 1.161, and this explains the variation in antibiotic growth reported in Year 2 and shown in Figure 1. However many CCGs who exceeded their reduction targets continued to reduce antibiotic use in Year 2. In contrast most CCGs reduced broad spectrum antibiotics prescribing in Year 1 and continued to do so in Year 2, despite use of a similar target setting approach, and this is clearly seen in Figure 2. It seems combining use of individual CCG stretch reduction targets with use of 'at or below' national targets has proved to be an effective improvement approach, and has retained CCG engagement over 2 years despite large variations in performance.

The 2 year 23% reduction of nearly 1 million broad spectrum antibiotic items is particularly welcomed. Broad spectrum antibiotic use is associated with greater risk of antibacterial resistance, and patient harm from healthcare associated infection. This reduction is likely to have contributed to the 9.2% reduction in cases of *Clostridium difficile* infection in England in 2017⁸, and this contributes to the benefits associated with this scheme.

The use of a national incentive scheme that rewards Clinical Commissioning Groups to improve appropriate antibiotic use in primary care has been very effective, and consequentially has continued to be used to support implementation of the UK Antimicrobial Resistance Strategy.

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