

EAAD CASE STUDIES:

For the first time case studies are included in EAAD (European Antibiotic Awareness Day) 2013 resources. EAAD is a good way of prompting changes in practice and some of the following may help you persuade colleagues of the benefits of good practice. The examples below show where good practice has improved health care and/or patient outcomes and can be used to inspire and encourage colleagues or generate local media interest.

We are very grateful to all our colleagues who provided the case studies. Brief details are given below but please contact Diane Ashiru-Oredope if you would like more details (diane.ashiru-oredope@phe.gov.uk)

1. Leeds Teaching Hospitals NHS Trust

Leeds Teaching Hospitals NHS Trust has gone from being one of the worst Teaching Hospitals for MRSA (avg 12/mth) and CDI (avg 80/mth) [2008-2009] in England to one of the best performing hospitals [MRSA (avg 1/mth) and CDI (avg 12/mth) since 2011] by implementing good practice such as principles from the Antimicrobial Self-Assessment Toolkit and Start Smart then Focus guidance. Changes included:

- Establishing a Antimicrobial Stewardship Committee including primary and secondary care with medical, nursing and pharmacy input,
- Acceleration of guideline development using an evidence-based, peer-review system,
- A robust audit programme with regular feedback to clinical teams on AMS performance and activity,
- Use of a stamp in all notes that includes the acronym (STACO) that encourages daily review of antimicrobials and other key areas. STACO (S = Staph aureus screening, T = thromboembolic prophylaxis, A = antimicrobials, C - chest Xray and O= oxygen),
- Rationalisation of antimicrobial use, e.g. use of flucloxacillin monotherapy for cellulitis (instead of combined with benzylpenicillin) without an increase in length of stay.

2. Leeds North CCG (LNCCG)

NHS Leeds (PCT) had the highest incidence of CDI in England (Oct 2008) and 3rd highest quinolone and cephalosporin prescribing within SHA. Implementation of antimicrobial stewardship principles have led to:

- 33% decrease in quinolone prescribing volume,
- 66% decrease Cephalosporin prescribing volume ,
- Increase in quinolone & cephalosporin prescribing given within guidance,
- Reduction of *C difficile* cases attributed to NHS Leeds PCT.

Some of the antimicrobial stewardship principles implemented are:

- Robust, web-based antimicrobial guidance developed to enable easy, user friendly access,
- Several promotional events,
- Sensitivity reporting was changed to follow recommendations in the PHE primary care antimicrobial guidance,
- GPs undertook reflective audits as part of QOF.

3. Darent Valley Hospital - Dartford & Gravesham NHS Trust

Darent Valley a district general hospital has focused its antimicrobial stewardship activities on rapid treatment of sepsis. Following the launch of surviving sepsis campaign (SSC) in 2008, the Trust implemented a robust multi-disciplinary SSC led by the antimicrobial stewardship team. Regular audits focussing on 'door to needle time' for sepsis were undertaken. Results have shown significant improvements in compliance within the Trust guidelines. In the most recent audit (2012), 56% of patients were treated within 1 hour (2009 results, 18%) and 96% received antimicrobials within 2 hours. Since 2010, as part of the SSC they have also run a 'JUST GIVE IT' campaign working alongside the acute oncology service to ensure that 'door to needle time' for administration of IV antimicrobials in neutropenic sepsis is appropriate. Antimicrobial administration within 1 hour currently is 70-80% (2010 results, 11%) and 90% within 2 hours (2010 results, 33%). As well as changes to antimicrobial guidelines, other strategies that have led to these significant improvements are:

- Improvement in training and dissemination of the SSC within the Trust, supported by the Trust board,
- Incorporation of SSC in induction for all healthcare professionals,
- A dedicated sepsis trolley now available in A&E.

4. North & South Derbyshire CCGs

South Derbyshire CCG (previously Derbyshire PCT) aimed to reduce the prescribing of antibiotic items, particularly quinolones and cephalosporins and to also increase public awareness on the appropriate treatment for common illnesses, such as coughs and colds, without using antibiotics.

A multifactorial approach was initiated in Derbyshire in 2009 and included a range of interventions:

- Education and support for GP practices,
- Treatment Guidelines,
- Education on antibiotics in schools,
- Four GPs who are Antibiotic Prescribing Lead GPs (champions),
- A message is included on all urine sensitivity reports reminding prescribers that co-amoxiclav, cephalosporins and ciprofloxacin may be associated with an increased risk of *C difficile*,
- CQUINs (Commissioning for Quality and Innovation) were developed, with guidance, for prescribing by staff providing primary health care out of hours,
- Education session for dentists on appropriate prescribing of antibiotics.

These strategies have led to reduced inappropriate prescribing and produced a 34% reduction (from April 09 to March 12) in community acquired *Clostridium difficile* infections.

In addition to antimicrobial stewardship activities with prescribers, there is also ongoing work educating school children. In 2010, school health assistants received training before delivering education on antibiotics, as part of the Hand Hygiene lesson for children, aged 7-9 years, across 180 schools in North Derbyshire. As part of the education programme, children complete a quiz on antibiotics and take home a certificate of attendance, a book mark (both of which included key antibiotic messages) and a leaflet (Get Well Soon without Antibiotics) for their parents – also a route of educating parents. The education on antibiotics in schools was initiated a pilot during 2010-11 and has continued since. It is now a regular feature in

primary schools across North Derbyshire and roll out in Southern Derbyshire commences in September 2013.

5. Guy's & St Thomas's NHS Foundation Trust

Guy's & St. Thomas' NHS Foundation Trust, a 1097-bedded teaching hospital in London implemented novel antimicrobial stewardship strategies to provide optimal patient care and to engage clinicians; hence drive further improvement. The strategies implemented in 2011 include:

1. 4-element "care bundle" approach; measuring four key elements of safe antibiotic prescribing:
 - i. allergy information was documented on the prescription chart,
 - ii. indication for use of the antibiotic was documented,
 - iii. a duration or review date was documented,
 - iv. patient had received all appropriate doses of antibiotics in the 24h preceding data collection.
2. Audits and feedback on the care-bundles on all wards each month,
3. Use of a simple visual prompt by pharmacists to encourage prescribers to review therapy at 48h (as recommended by the Start Smart then Focus guidance) and at 5 days,
4. Increasing ownership of continuing antibiotic prescribing to admitting teams. This was achieved by changing the policy such that emergency doctors could only prescribe a single dose of antibiotics. Admitting teams would have to specifically review patients on antibiotics and determine the need for on-going therapy, before the next dose of antibiotic would be due.

Significant improvements have been noted in antimicrobial stewardship practice across the Trust:

- Overall compliance with the 4 elements of the antimicrobial stewardship care bundle has consistently improved from less than 25% (2011) to over 75% (2013). This improvement is strongly correlated to implementing the visual reminder to review at 48 hours and 5 days as recommended by the Start Smart then Focus guidance,
- The single dose in emergency department policy has provided a keener focus for antibiotic therapy, particularly amongst our acute medical admissions, and has improved their antibiotic usage significantly from prior to the initiative.

6. Milton Keynes Community Health Services part of Central and North West London NHS Foundation Trust

Milton Keynes Community Health Services is part of the Central and North West London NHS Foundation Trust (CNWL) is one of the largest non-acute trusts in the UK. A specific antimicrobial stewardship programme in Milton Keynes to drive improvement in recognising and treating of UTI in an older person in the community setting is shared.

Implementing antimicrobial stewardship strategies aimed at improving the diagnosing and reducing unnecessary treatment of older people with asymptomatic urinary tract infection led to

- Significant reduction (71 to 50%) in Antibiotic prescribing related to UTI symptoms in the community inpatient settings that care for older people, and
- A 28% reduction in overall antibiotic prescribing in these inpatient units was also seen year on year.

Some of the strategies implemented include:

- Simplified and 'easy-to-understand' guidelines specific to older people for use by care staff in nursing and residential care homes who do not have a medical background, and for whom English may not be the first language were implemented. Following pilot, evaluation and testing with these staff, the guidelines were also adopted by in-patient community settings and shared with other key clinicians across the community setting,
- Dissemination of the guidelines via formal and informal educational sessions, to care home staff and District nurses who provide support and nursing care to care or nursing home,
- Dissemination of the guidelines and training for community inpatient settings that care for older people,
- Distributing the hard copy guideline to every nursing and care home in Milton Keynes along with a brief explanation of its usage,
- Identifying individual GP's who have responsibility for local homes and sharing a copy of the guide to promote consistency of care to residents in each home whenever a UTI is suspected.

7. Milton Keynes Community Health Services has also been able to reduce the *Clostridium difficile* infections associated with Co-amoxiclav prescriptions.

- Prescriptions for co-amoxiclav have decreased significantly without an associated increase in the prescribing of other broad spectrum antibiotics, and
- Community acquired *C difficile*, attributable to Co-amoxiclav prescribed in the community has reduced from 7/15 cases (April to September 2011) to 1/17 cases in the 6 month period October 2012 to March 2013.

These have been as a result of implementing antimicrobial stewardship principles:

- Negotiating a change in sensitivity reporting by the microbiology laboratory and inclusion of a specific new drug (pivmecillinam) for urinary tract infections resistant to Trimethoprim and Nitrofurantoin. (July 2011),
- Implementing a new guideline for cellulitis (based on CREST) across primary care and other community based settings. (July 2011),
- The CCG setting a target of 5% or less Co-amoxiclav prescribing of total antibiotic prescribing per practice as part of the Pharmacy Incentive Scheme for GPs (April 2012 to March 2013).

8. Barking, Havering and Redbridge Hospitals NHS Trust

Barking Havering and Redbridge University Hospitals NHS Trust has been able to significantly improve antimicrobial stewardship practices and patients outcomes by following the principles highlighted in

1. Department of Health guidance; *Clostridium difficile*: How to deal with the problem,
2. Health and Social Care Act 2008,
3. Antimicrobial Self-Assessment Toolkit,
4. Start Smart then Focus.

The results for the Antimicrobial Point Prevalence Survey (2012) in comparison with previous years (pre and post implementation of an antimicrobial stewardship programme) have shown that audit, sharing of results and a robust strategy of change plan that includes education and training can have a significant effect on quality improvement. The proactive antimicrobial stewardship programme has also significantly improved engagement of prescribers on antibiotic issues and raised the profile of prudent antimicrobial prescribing within the Trust.

Key improvements include:

- 59% reduction in *Clostridium difficile* infections in the Trust [2009/2010 (82); 2010/2011 (110) and in 2011/2012 (45)],
- Maintaining excellence in allergy documentation (>98%),
- Significant year on year improvements in documentation of indication and duration now 73% and 64% (2012) respectively compared to 7% and 32% in 2010,
- More than 70% of the prescriptions audited were prescribed in line with Trust Antimicrobial guidelines,
- Only a 7.3% of all prescriptions were on day 8 or more.

Antimicrobial Stewardship actions implemented were:

- Change in the review and development processes of antimicrobial guidelines to include a multidisciplinary team of specialist clinicians and a robust cascade of change to all prescribers,
- Producing a pocket guide for Common Acute Infections,
- Developing and implementing a Trust Antimicrobial Management Code,
- Designing a new drug chart have dedicated antimicrobial prescribing sections to facilitate documentation of indication and duration at the point of prescribing,
- Trust wide promulgation of information through the computer desktops and also laminated posters on the wards,
- Trust-wide regular monthly audit and feedback on Antimicrobial Management Code adherence,
- Robust Trust-wide Antimicrobial Education and Training including Antimicrobial Prescribing competency assessment for junior doctors and since 2013 mandatory antimicrobial prescribing competency assessment (via e-learning) for all levels of prescribers,
- Yearly participation in National Antibiotics Awareness Day (EAAD).

9. West Hertfordshire Hospitals NHS Trust

West Hertfordshire Hospitals NHS Trust is a 650 bed district general hospital in East of England. The Trust implemented a 5 element care bundle to include

- Documentation of indication (1),
- Documentation of stop/review date on the drug chart (2),
- Compliance to antibiotic, probiotics and PPI guidelines (3-5).

By implementing daily antimicrobial stewardship ward rounds (from weekly), launching a review notice sticker (which is attached to drug charts by ward pharmacists where this is non-compliance by prescribers); Monthly audits have shown a significant improvement in compliance:

- Indication documentation on drug chart increased from 27% (May 13) to 88% (July 13), and
- Stop/review date documentation on drug charts increased from 43% (May 13) to 71% (July 13),

- Increased evidence of a review of PPIs; 73% of patients on antimicrobials and PPIs had had their PPIs switched to Ranitidine according to guidelines.

10. Hertfordshire and Bedfordshire Antimicrobial Network consisting of Luton and Dunstable Hospital NHS Foundation Trust, Bedford Hospital NHS Trust, East and North Hertfordshire NHS Trust and West Hertfordshire Hospitals NHS Trust. Shared for group

Regional benchmarking of antimicrobial consumption data in East of England has led to significant reduction in co-amoxiclav consumption 58% (95% CI 50 – 65%, $P < 0.005$) across four acute NHS Trusts.

A network of pharmacists from 4 NHS Trusts (East and North Herts, West Herts, Luton & Dunstable and Bedford Hospital) established a working group to compare antibiotic consumption. The aim was to identifying prescribing anomalies and share best practice. On a monthly basis, the antimicrobial management team (AMT) at each trust, would review benchmarked antimicrobial consumption data.

Over a 20 month period over 1.3 million occupied bed days were analysed across the 4 Trusts. Of note, the process of benchmarking revealed relatively high co-amoxiclav consumption in 2 Trusts at different time points during the process. In light of this, a decision was made by the respective AMT to recommend amoxicillin in place of co-amoxiclav for the management of community acquired pneumonia (CAP). Attention was paid to ensuring a balance was struck between managing CAP effectively and minimising selection pressure for *Clostridium difficile* and the development of resistant bacteria. The overall effect of this change was a 58% (95% CI 50 – 65%, $P < 0.005$) decrease in co-amoxiclav consumption.

The collaborative approach provided the individual AMTs with an additional context to look at their antimicrobial consumption data. By benchmarking consumption in this way other measures for stewardship interventions have been identified.

11. Imperial college Healthcare NHS Trust

Antibiotic Stewardship at Imperial is considered a key aspect of patient safety and is high on the quality agenda and discussed regularly at the Management and Trust Boards.

The Trust has in place a number of strategies to ensure there is prudent anti-infective prescribing led by a dedicated infection teams. Below are some examples of practice:

- The Trust audit programme includes the six monthly pharmacist point prevalence study which examines the standards of anti-infective prescribing. Pharmacists collect data once on any inpatient prescribed at least one systemic anti-infective (anti-bacterial, anti-fungal or anti-viral) on the day of the study providing the drug chart was available. The results of key indicators are fed back to clinical and managerial structures within the Trust¹ and are used to inform the Trust anti-infective quality indicator within Quality Accounts. The standards of anti-infective prescribing continued to improve across all specialties within 2012 as demonstrated by the **average** indicator values below.

Indicator 1: 91% compliant with prescribing anti-infectives within policy,

Indicator 2: 91% of prescriptions had an indication documented on the drug chart or in notes,

Indicator 3: 74% of anti-infectives had a stop/ review date/duration,

Overall Compliance: 85%.

The results for June & November 2012 prevalence are very encouraging for the Trust. Indicator 1 & 2 are the highest they have ever been. Indicator 3 within the last 12 months has risen from ~ 30% to over 60% to now 84%. This is a great improvement for the organisation within a short period of time.

12. Taunton and Somerset NHS Foundation Trust

Enhanced antimicrobial stewardship activities at Musgrove Park Hospital (a 650 bedded DGH) has included:

- The launch of an antimicrobial prescribing bundle with monthly point prevalence studies and feedback,
- Four weekly antimicrobial ward rounds reviewing 150-200 patients per month,
- Bold changes to local antimicrobial prescribing guidelines.

Subsequently the Trust has seen:

- improved compliance with antimicrobial prescribing guidelines/ justified prescribing (> 90% Trust wide),
- Improved documentation of antibiotic prescribing from approx 40% to >70% (2013),
- Huge reductions in *Clostridium difficile* infection (CDI) rates.

The key outcomes relating to CDIs are:

- CDIs for 2011/2012 reduced to 37 compared with 73 for 2010/2011 with an even further reduction to 19 for 2012/2013, representing a 49% and 48% reduction respectively,
- Reduction in CDI related deaths from 10 to 4 between 2010/2011 and 2011/2012,
- Reduction in the number of confirmed CDI recurrences from 3 in 2011/12 to none in 2012/13.

The effect is still evident in the latest available data from Public Health England. The rate of Trust-apportioned cases of CDI for Taunton and Somerset NHS Foundation Trust was 4.4 cases per 100,000 bed days compared with 15.9 in the Southwest and a national rate of 12.4.