NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Health and social care directorate

Quality standards and indicators

Briefing paper

**Quality standard topic:** Antimicrobial stewardship

**Output:** Prioritised quality improvement areas for development.

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# Contents

[1 Introduction 2](#_Toc430083075)

[2 Overview 2](#_Toc430083076)

[3 Summary of suggestions 13](#_Toc430083077)

[4 Suggested improvement areas 14](#_Toc430083078)

[Appendix 1: Suggestions from stakeholder engagement exercise – registered stakeholders 33](#_Toc430083079)

1. Introduction

This briefing paper presents a structured overview of potential quality improvement areas for antimicrobial stewardship. It provides the Committee with a basis for discussing and prioritising quality improvement areas for development into draft quality statements and measures for public consultation.

* 1. Structure

This briefing paper includes a brief description of the topic, a summary of each of the suggested quality improvement areas and supporting information.

If relevant, recommendations selected from the key development source below are included to help the Committee in considering potential statements and measures.

* 1. Development source

The key development source referenced in this briefing paper is:

[Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use](https://www.nice.org.uk/guidance/ng15). NICE guideline 15 (2015).

Another guideline that may be used as a development source is: [Antimicrobial stewardship – changing risk related behaviours in the general population](https://www.nice.org.uk/guidance/indevelopment/gid-phg89). This guideline is currently in draft version, expected to be published in March 2016.

1. Overview
	1. Focus of quality standard

This quality standard will cover reducing emergence of antimicrobial resistance through effective antimicrobial stewardship in all publicly funded health and social care settings. This quality standard will cover health and social care practitioners, organisations commissioning, providing or supporting the provision of care as well as people using antimicrobials and their carers.

* 1. Definitions

**Antimicrobials and antimicrobial medicines**

The term 'antimicrobials' and 'antimicrobial medicines' includes all anti‑infective therapies, (antiviral, antifungal, antibacterial and antiparasitic medicines) and all formulations (oral, parenteral and topical agents).

**Antimicrobial resistance**

The term 'antimicrobial resistance' is defined as the 'loss of effectiveness of any anti‑infective medicine, including antiviral, antifungal, antibacterial and antiparasitic medicines'.

**Antimicrobial stewardship**

The term 'antimicrobial stewardship' is defined as 'an organisational or healthcare‑system‑wide approach to promoting and monitoring judicious use of antimicrobials to preserve their future effectiveness'.

* 1. Scale of the problem

Since 1998, when the first World Health Assembly antimicrobial resistance resolution was agreed, there has been increasing national and international awareness of the need to consider the appropriate use of antimicrobials. The balance between using antimicrobials appropriately and reducing use where they are not indicated is difficult. There are concerns about possible harm to people if treatment is not given but there is also an agreement about the need to raise awareness of the increase in antimicrobial resistance associated with prescribing antimicrobials. Antimicrobial stewardship requires a system-wide approach with individuals and organisations promoting and monitoring the judicious use of antimicrobials; by doing this is it hoped that the future effectiveness of antimicrobials can be preserved[[1]](#footnote-1).

In 2014 the [English surveillance programme for antimicrobial utilisation and resistance (ESPAUR)](https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report) published a report reviewing prescribing patterns for antimicrobials in different care settings. According to the report between 2010 and 2013, the combined community and hospital prescriptions increased by 6%, from 25.9 to 27.4 defined daily dose (DDD) per 1,000 inhabitants per day. This increase in prescribing predominantly took place between 2011 and 2012, where there was a 7.8% increase in consumption; 2012 to 2013 reversed this trend with a 1.4% decline in total consumption (Figure 1).

General practice consumption increased by 4.1% between 2010 and 2013, from 20.6 to 21.5 DDD per 1000 inhabitants per day. There was a 7.8% increase from 2011 to 2012 and subsequently a 3.5% decline from 2012 to 2013 in GP prescribing. Prescribing to hospital inpatients increased year-on-year by an average of 3.5%, with a total increase of 11.9% from 2010 to 2013 (2.3 to 2.5 DDD per 1000 inhabitants per day). Prescribing to hospital outpatients remained stable from 2010 to 2013 at 1.7 DDD per 1000 inhabitants per day. The largest percentage increase occurred in other community prescribing with consumption increasing by 32% from 1.3 to 1.7 DDD per 1000 inhabitants per day.

Throughout the four years, the vast majority of prescribing occurred in general practices. In 2013, 78.5% of prescribing was from general practice, with 9.1% and 6.2% for hospital inpatients and outpatients respectively, and 6.2% related to other community prescribers (predominantly dentists).

Figure 1. Consumption of total antibiotics, expressed as DDD per 1000 inhabitants per day, England, 2010-2013



From 2010 to 2013, the predominant antibiotics in use in England were penicillins, tetracyclines and macrolides (Figure 2). Penicillin and macrolide consumption increased in 2012 but subsequently decreased in 2013; overall increases in penicillin and macrolide consumption between 2010 and 2013 were 3.4% and 6%, respectively. Nitrofurantoin consumption increased the most, a 41% rise, between 2010 and 2013.

In terms of the totality of prescribing in 2013, 66 different antibiotics were prescribed, with the top 15 agents accounting for 98% and 88% of general practice and hospital consumption, respectively. The proportions of total consumption accounted for by penicillins, tetracyclines and macrolides were 49.8%, 18% and 14.9%, respectively.

Figure 2 Total antibiotic consumption by antimicrobial group, expressed as DDD per 1000 inhabitants per day, across England, 2010-2013



In 2013, 66 different antibiotics were prescribed in both general practice and hospital. The top 15 antibiotics in general practice and hospitals accounted for 98% and 88% of consumption respectively. These antibiotics are summarised in Table 1.

Table 1 Ranks and relative consumption of the top 15 consumed agents in general practice and hospitals in England, 2013.



There was significant variability with respect to the consumption of agents utilised by hospitals across the Area Teams (ATs). A detailed breakdown of each antibiotic group which can be used to further explore individual hospital inpatient consumption is presented in Table 2.

Table 2 Antibiotic consumption by group for hospital inpatients at the level of area teams (ATs), expressed as DDD per 100 admissions per day, England, 2013



European Surveillance of Antimicrobial Consumption Network (ESAC-Net) published a report on antimicrobial consumption from the community (primary care sector) and the hospital sector for the year 2011 by 27 EU Member States and two EEA non-EU countries. England, Northern Ireland, Scotland and Wales were reported together - the UK was mid-range in the use of antibiotics in the community compared with other EU countries. However, all four countries in the UK were higher than the majority of other EU countries for antibiotic use in hospitals. This may relate, at least in part, to the different practices for prescribing and recording of prescriptions in UK hospitals, where prescriptions of antibiotics are dispensed by hospital pharmacies rather than community pharmacies. The Northern European countries (Denmark, Sweden), who have had surveillance programmes such as ESPAUR for nearly 20 years, have the lowest use of antibiotics[[2]](#footnote-2).

* 1. Management

In 2011, the Chief Medical Officer stated in the [annual report](https://www.gov.uk/government/publications/chief-medical-officer-annual-report-volume-2) that 1 of the 3 major goals identified for antimicrobial stewardship is to ‘minimise the development of antimicrobial resistance at patient and community levels’. The Chief Medical Officer further stated that ‘firstly we need to preserve the effectiveness of our existing antimicrobial agents and secondly we need to encourage the development of new agents in the future. The key to preserving the effectiveness of our existing antimicrobial agents in England is better stewardship’.

In 2013, in response to this report, the Department of Health published a [5-year strategy for antimicrobial resistance](https://www.gov.uk/government/publications/uk-5-year-antimicrobial-resistance-strategy-2013-to-2018), which aims to slow the development and spread of antimicrobial resistance. The strategy states that antimicrobial resistance cannot be eradicated, but by using a multidisciplinary approach, the risk of antimicrobial resistance can be limited and its impact on health now and in the future can be reduced. An [impact assessment](https://www.gov.uk/government/publications/uk-5-year-antimicrobial-resistance-strategy-2013-to-2018) has been carried out by the Department of Health alongside the 5-year strategy. This supports the introduction of the strategy and highlights issues such as the importance of preserving current effective therapies and focusing on the appropriate use of antimicrobials (including using the correct antimicrobial, dose and duration of treatment for every prescription, and using them wisely and sparingly). To further support the implementation of the 5-year strategy, the Department of Health and Public Health England have published a [competency framework for prescribers](https://www.gov.uk/government/publications/antimicrobial-prescribing-and-stewardship-competencies). The aim of this is to ‘improve the quality of antimicrobial treatment and stewardship and so reduce the risks of inadequate, inappropriate and ill-effects of treatment’.

[The Start smart - then focus (Department of Health 2015) guidance](https://www.gov.uk/government/publications/antimicrobial-stewardship-start-smart-then-focus) was published ‘to provide an outline of evidence-based antimicrobial stewardship in the secondary healthcare setting’. It covers the starting and reviewing of antimicrobial therapy in secondary care. Similarly the [TARGET antibiotics toolkit](http://www.rcgp.org.uk/clinical-and-research/toolkits/target-antibiotics-toolkit.aspx) (Treat Antibiotics Responsibly, Guidance, Education, Tools) gives guidance, educational material and tools for multidisciplinary primary care teams on the issues of when and what antimicrobials to prescribe.

* 1. National Outcome Frameworks

Tables 3 and 4 show the outcomes, overarching indicators and improvement areas from the frameworks that the quality standard could contribute to achieving.

### Table 3 [NHS Outcomes Framework 2015–16](https://www.gov.uk/government/publications/nhs-outcomes-framework-2015-to-2016)

|  |  |
| --- | --- |
| **Domain** | **Overarching indicators and improvement areas** |
| 1 Preventing people from dying prematurely | ***Overarching indicators***1a Potential Years of Life Lost (PYLL) from causes considered amenable to healthcarei Adults ii Children and young people1b Life expectancy at 75i Males ii Females1c Neonatal mortality and stillbirths***Improvement areas*****Reducing premature mortality from the major causes of death**1.1 Under 75 mortality rate from cardiovascular disease\*1.2 Under 75 mortality rate from respiratory disease\*1.3 Under 75 mortality rate from liver disease\*1.4 Under 75 mortality rate from cancer\*i One- and ii Five-year survival from all cancersiii One- and iv Five-year survival from breast, lung and colorectal cancer*v One- and vi Five-year survival from cancers diagnosed at stage 1 & 2\*\****Reducing mortality in children**1.6 i Infant mortality\*ii Neonatal mortality and stillbirthsiii Five-year survival from all cancers in children |
| 2 Enhancing quality of life for people with long‑term conditions | ***Overarching indicator***2 Health‑related quality of life for people with long‑term conditions\*\* **Reducing time spent in hospital by people with long‑term conditions**2.3 i Unplanned hospitalisation for chronic ambulatory care sensitive conditionsii Unplanned hospitalisation for asthma, diabetes and epilepsy in under 19s |
| 3 Helping people to recover from episodes of ill health or following injury | ***Overarching indicators***3a Emergency admissions for acute conditions that should not usually require hospital admission3b Emergency readmissions within 30 days of discharge from hospital\****Improvement areas*****Improving outcomes from planned treatments**3.1 Total health gain as assessed by patients for elective procedures*i Physical health-related procedures***Preventing lower respiratory tract infections (LRTI) in children from becoming serious**3.2 Emergency admissions for children with LRTI**Improving recovery from injuries and trauma***3.3 Survival from major trauma***Improving recovery from fragility fractures**3.5 Proportion of patients recovering to their previous levels of mobility/walking ability at i 30 and ii 120 days**Helping older people to recover their independence after illness or injury**3.6 i Proportion of older people (65 and over) who were still at home 91 days after discharge from hospital into reablement/rehabilitation service\* |
| 5 Treating and caring for people in a safe environment and protecting them from avoidable harm | ***Overarching indicators****5a Deaths attributable to problems in healthcare**5b Severe harm attributable to problems in healthcare****Improvement areas*****Reducing the incidence of avoidable harm**5.2 Incidence of healthcare associated infection (HCAI)i MRSAii C. difficile**Improving the culture of safety reporting**5.6 Patient safety incidents reported  |
| **Alignment with Adult Social Care Outcomes Framework and/or Public Health Outcomes Framework**\* Indicator is shared\*\* Indicator is complementary |

### Table 4 [Public health outcomes framework for England, 2013–2016](https://www.gov.uk/government/publications/healthy-lives-healthy-people-improving-outcomes-and-supporting-transparency)

|  |  |
| --- | --- |
| **Domain** | **Objectives and indicators** |
| 3 Health protection | ***Objective***The population’s health is protected from major incidents and other threats, whilst reducing health inequalities***Indicators***3.5 Treatment completion for TB |
| 4 Healthcare public health and preventing premature mortality | ***Objective***Reduced numbers of people living with preventable ill health and people dying prematurely, whilst reducing the gap between communities***Indicators***4.1 Infant mortality\*4.3 Mortality rate from causes considered preventable\*\*4.4 Under 75 mortality rate from all cardiovascular diseases (including heart disease and stroke)\*4.5 Under 75 mortality rate from cancer\*4.6 Under 75 mortality rate from liver disease\*4.7 Under 75 mortality rate from respiratory diseases\*4.8 Mortality rate from communicable diseases4.11 Emergency readmissions within 30 days of discharge from hospital\* |
| ***Alignment with Adult Social Care Outcomes Framework and/or NHS Outcomes Framework***\* Indicator is shared\*\* Indicator is complementary |

1. Summary of suggestions
	1. Responses

In total 21 stakeholders responded to the 2-week engagement exercise 29/07/15 – 12/08/15.

Stakeholders were asked to suggest up to 5 areas for quality improvement. Specialist committee members were also invited to provide suggestions. The responses have been merged and summarised in table 5 for further consideration by the Committee.

Full details of all the suggestions provided are given in appendix 1 for information.

Table 5 Summary of suggested quality improvement areas

| Suggested area for improvement | Stakeholders  |
| --- | --- |
| **Antimicrobial teams*** Responsibilities
* Roles
 | RCP, MRSA, SCM |
| **Appropriate prescribing - facilitators*** Correct prescribing
* Electronic prescribing
* Delayed prescribing
* Remote prescribing follow up
 | Astellas, Baxter, BDA, BSAC, BTS, RCGP,SCM |
| **Microbiological samples** | BaxterSCM, MRSA |
| **Review and audit*** Clinical decision recording
* Data collection and feedback
 | SCM, MRSA, MSDBSAC, Baxter, SAPG, BDA, RCP |
| **Continuity of care** | Astellas, SCM |
| **Additional areas*** Training and education
* Infection control
* Flu vaccine uptake
* Over the counter antimicrobials
* TB management
* Conflicting guidance
 | Baxter, SCM, BDA,MRSA,BTS, RCGP |
| BDA, British Dental AssociationBSAC, British Society for Antimicrobial ChemotherapyBTS, British Thoracic SocietyMRSA, MRSA Action UKMSD, Merck Sharp & Dohme LimitedRCGP, Royal College of GPsRCP, The Royal College of PathologistsSAPG, Scottish Antimicrobial Prescribing GroupSCM, Specialist Committee Member |

1. Suggested improvement areas
	1. Antimicrobial stewardship teams
		1. Summary of suggestions

**Responsibilities**

Stakeholders highlighted that antimicrobial stewardship teams should deliver continuous quality improvement in the use of antimicrobial agents. They also highlighted a need for an antimicrobial local decision-making group which would be responsible for introducing and reviewing new antimicrobials.

**Roles**

Stakeholders highlighted that multidisciplinary approach to antimicrobial stewardship and tackling antimicrobial resistance was needed for effective antimicrobial stewardship programmes. They suggested that the antimicrobial stewardship teams should be led by a consultant in medical microbiology or infectious diseases, include antimicrobial pharmacist and involve nursing staff

* + 1. Selected recommendations from development source

Table 6 below highlights recommendations that have been provisionally selected from the development source that may support potential statement development. These are presented in full after table 6 to help inform the Committee’s discussion.

Table 6 Specific areas for quality improvement

|  |  |
| --- | --- |
| Suggested quality improvement area | Suggested source guidance recommendations |
| Responsibilities | **Antimicrobial stewardship teams**NICE NG15 Recommendation 1.1.9 |
| Roles | **Antimicrobial stewardship teams**NICE NG15 Recommendation 1.1.8 |

**Antimicrobial stewardship teams**

NICE NG15 Recommendation 1.1.9

Support antimicrobial stewardship teams, by developing processes that promote antimicrobial stewardship or by allocating resources, to:

* review prescribing and resistance data and identify ways of feeding this information back to prescribers in all care settings
* promote education for prescribers in all care settings
* assist the local formulary decision-making group with recommendations about new antimicrobials
* update local formulary and prescribing guidance
* work with prescribers to explore the reasons for very high, increasing or very low volumes of antimicrobial prescribing, or use of antimicrobials not recommended in local (where available) or national guidelines
* provide feedback and advice to prescribers who prescribe antimicrobials outside of local guidelines when it is not justified.

NICE NG15 - Recommendation 1.1.8

Organisations establishing antimicrobial stewardship teams should ensure that the team has core members (including an antimicrobial pharmacist and a medical microbiologist) and can co-opt additional members depending on the care setting and the antimicrobial issue being considered.

### 4.1.3 Current UK practice

**Responsibilities**

In 2014 the ESPAUR carried out a survey which was distributed nationally to 91% of acute trusts in England. 99 trusts responded to the survey (68% response rate) and the responses demonstrated that the antimicrobial pharmacist had an extensive role which included:

* writing antimicrobial guidelines and policies - 97%
* making anti-infective formulary decisions (choosing which antimicrobials should be available on the trust formulary) - 94%
* being available by phone or pager for referrals - 93%
* performing multi-disciplinary antibiotic review rounds - 88%
* attending trust infection prevention and control committee meetings - 90%
* maintaining awareness of local resistance patterns - 56%
* horizon scanning - 71%
* attending ward rounds on specialities with high antibiotic use - 65%[[3]](#footnote-3).

A large survey was carried out in 2012 with 226 hospitals in the UK and 51 Irish hospitals looking at the activities and roles of the Antimicrobial Management Teams (AMTs) found that 82% of the hospitals in the UK had a team in place. The majority of the AMTs promoted the appropriate prescribing of antimicrobials, the use of narrow spectrum rather than broad spectrum antimicrobials, and encouraged microbiological investigation and rationalisation, as well as reducing multidrug resistant infections[[4]](#footnote-4).

A large audit of 120 acute hospitals (out of 153 contacted - a response rate of 78%) was carried out in 2011. The audit found that antibiotic specialists were involved in:

* writing antibiotic guidance or policies – 98%
* involved in antibiotic formulary decision-making – 95%
* supporting complex referrals - 94% (available by telephone or pager to help)
* ward rounds on specialities of high antibiotic use - 59%
* representation on the Infection Prevention and Control Committee - 92%
* representation on the Antibiotic Review/Steering Group - 75%
* providing horizon-scanning on new antimicrobials - 69%
* conducting specific antibiotic review rounds – 70%[[5]](#footnote-5).

**Roles**

In 2014 the ESPAUR carried out a survey which was distributed nationally to 91% of acute trusts in England. Of the responding 99 trusts (68% response rate):

* 96% had at least one substantial antimicrobial specialist in post (average 1.5 specialist antimicrobial pharmacist/pharmacy technician per trust)
* 90% had a specialist pharmacist at band 8a and above as the main post holder (five trusts had a consultant antimicrobial/infectious diseases pharmacist in post and only one trust had a pharmacy technician (band 5) as the main post holder)[[6]](#footnote-6).

In 2012 a large survey was carried out with 226 hospitals in the UK looking at the roles and activities in the antimicrobial stewardship teams. Following roles were present within the teams

* Specialist antimicrobial pharmacist – 95%
* Consultant in infectious diseases – 67%
* Infection control manager - 60.2%
* Consultant surgeon - 45%
* Consultant microbiologist - 97%
* AMT & microbiology department in the hospital - 71%[[7]](#footnote-7)
	1. Appropriate prescribing - facilitators
		1. Summary of suggestions

**Correct prescribing**

Stakeholders highlighted that despite readily available guidelines (national and local), prescribing is often inappropriate and excessive. Specificexamples were highlighted around course duration, appropriate combinations, switching to oral antibiotics when improvement occurs, surgical prophylaxis and use of narrow spectrum antimicrobials and antivirals.

**Electronic prescribing**

Stakeholders suggested that electronic prescribing should be used for all antibiotics (including a unique prescriber ID). They highlighted that it would facilitate feedback and peer review of accurate prescribing data to all NHS antibiotic prescribers.

**Delayed prescribing**

Stakeholders suggested that strategies of no prescription or delayed antibiotic prescription result in substantially fewer patients using antibiotics. They suggested that this practice can be used as a safety net in situations when diagnosis is unclear and patient may deteriorate.

**Remote prescribing follow up**

Stakeholders highlighted that on occasions in general practice and in the "out of hours" service prescribers may consider it necessary to prescribe antimicrobials via telephone. They suggested that it is important that treatment is followed-up within 48 – 72 hours by either a face to face visit or telephone consultation to ensure patients symptoms are resolving.

* + 1. Selected recommendations from development source

Table 7 below highlights recommendations that have been provisionally selected from the development source that may support potential statement development. These are presented in full after table 7 to help inform the Committee’s discussion.

Table 7 Specific areas for quality improvement

|  |  |
| --- | --- |
| Suggested quality improvement area  | Selected source guidance recommendations |
| Correct prescribing | **Antimicrobial guidelines**NICE NG15 Recommendation 1.1.24 |
| Electronic prescribing | **Antimicrobial stewardship interventions**NICE NG15 Recommendation 1.1.11**Antimicrobial prescribing**NICE NG15 Recommendation 1.1.32 |
| Delayed prescribing | **Antimicrobial stewardship interventions**NICE NG15 Recommendation 1.1.11, 1.1.34 |
| Remote prescribing follow up | Not directly covered in NICE NG15 and no recommendations are presented |

**Antimicrobial guidelines**

NICE NG15 - Recommendation 1.1.24

When prescribing antimicrobials, prescribers should follow local (where available) or national guidelines on:

* prescribing the shortest effective course
* the most appropriate dose

route of administration.

**Antimicrobial stewardship interventions**

NICE NG15 - Recommendation 1.1.11

Consider providing IT or decision support systems that prescribers can use to decide:

* whether to prescribe an antimicrobial or not, particularly when antimicrobials are frequently prescribed for a condition but may not be the best option
* whether alternatives to immediate antimicrobial prescribing may be appropriate (for example, back-up [delayed] prescribing or early review if concerns arise).

**Antimicrobial prescribing**

NICE NG15 - Recommendation 1.1.32

When an antimicrobial is a treatment option, document in the patient's records (electronically wherever possible):

* the reason for prescribing, or not prescribing, an antimicrobial

the plan of care as discussed with the patient, their family member or carer (as appropriate), including the planned duration of any treatment.

**Antimicrobial stewardship interventions**

NICE NG15 - Recommendation 1.1.34

If immediate antimicrobial prescribing is not the most appropriate option, discuss with the patient and/or their family members or carers (as appropriate) other options such as:

* self-care with over-the-counter preparations
* back-up (delayed) prescribing
* other non-pharmacological interventions, for example, draining the site of infection.
	+ 1. Current UK practice

**Correct prescribing**

Numerous reviews and audits focusing on compliance of prescribing practices with local and national guidelines have been identified. Issues highlighted by the audits illustrate lack of clinical indication, inappropriate duration, inappropriate dosage and failure to discontinue the treatment.

An audit of antimicrobial stewardship compliance with national and local recommendations for antimicrobial prescribing was carried out in Heatherwood and Wexham Park Hospitals NHS Foundation Trust. A total of 2,273 antimicrobial prescriptions were reviewed across 17 wards. From this analysis clinical indication and duration/review date were documented on 49.2% and 80.6% drug charts, respectively, with only one ward scoring above 85% in both. A total of 558 patients were reviewed across the 17 wards by the AMT. Overall compliance with local guidelines to the appropriate choice of antibiotic was adhered to in 91% of cases. However, 62% of the antimicrobial prescriptions were considered appropriate. The remainder were considered inappropriate due to unnecessary prolongation of duration, lack of compliance with local guidance and no clinical need for antimicrobials[[8]](#footnote-8)

An audit of adherence to general surgery prophylaxis guidelines at Alder Hey Children’s Hospital was carried out in 2013. 59 patients were included in the audit. In 24 cases, the patient did not receive prophylaxis. 11 of these cases (46%) should have received prophylaxis according to the Trust’s guideline. Forty-two (49%) of the prescribed doses of antibiotics were not in accordance with doses recommended in the BNFc or the Trust care pathways, and the majority of these doses were lower doses than recommended. For those patients prescribed antibiotics, duration was documented in 13(62%) case notes and on 5(24%) drug charts. In 8(38%) cases the prescribed duration was in accordance with the Trust’s guideline. None of the 10 cases that lasted >3 h received a second dose of antibiotic during surgery[[9]](#footnote-9).

An observation study of antimicrobial prescribing in general paediatric patients at Birmingham Children’s Hospital found that whilst hospital empiric antibiotic prescribing guidelines were followed in all cases, treatment was inappropriate in some way in 26/50 (52%) patients:

* treatment not indicated (n = 1);
* treatment could have been discontinued within 48 hour on the basis of laboratory results (n = 13);
* treatment could have been de-escalated based upon susceptibility testing (n = 8);
* treatment duration inadequate (n = 4).
* In 15/50 (30%) patients the instruction to await culture results prior to stopping antibiotics was documented; This includes 7/13 (54%) patients whose therapy could potentially have been discontinued earlier[[10]](#footnote-10).

An audit of chloramphenicol eye drops prescribing carried out in Moorfields Eye Hospital NHS Foundation Trust in 2011 showed that only 60.5% prescriptions stated the eye drops should be used four times a day for 7 to 10 days as per guidelines. However, on examination of medical records, 69% (n = 79) of these chloramphenicol prescriptions were for either viral conjunc-tivitis or for ‘suspected or possible conjunctivitis’ and one record actually documented ‘no bacteria but adenovirus’ after cultures were processed. Additionally, olopatadine antihista-mine eye drops were prescribed in conjunction with chlo-ramphenicol in 10.4% (n = 12) cases for either viral or allergic conjunctivitis during the summer period. Cultures were carried out on only 8 severe cases of red eye and 5 of these were found to be of bacterial in origin. The A&E clinics were found to be the highest prescribers of chloram-phenicol in all cases of red watery eyes regardless of the actual cause of the symptoms[[11]](#footnote-11).

An audit of compliance with the Oxford University Hospital antibacterial guidelines for surgery prophylaxis (vascular surgery) found that of the 38 patients only 20 (53%) were considered fully compliant, the remaining 18 (47%) patients were considered non-compliant for various reasons. These include incorrect doses of gentamicin (n = 11), unclear documentation of antibiotic administration time (n = 5), no documented weight for gentamicin dosing (n = 6) and deviations from the guidelines without documentation (n=4)[[12]](#footnote-12)

**Electronic prescribing**

The ESPAUR survey carried out in 2014 found that only 22.4% trusts had electronic prescribing for at least one in-patient area, only six trusts (7.9%) had electronic prescribing for 90% of all prescriptions in all in inpatient areas. A further 11 trusts stated that electronic prescribing will be in place for all in patient areas by April 2015[[13]](#footnote-13).

In 2011 a survey was sent out to chief pharmacists in all acute English NHS hospital trusts to assess prevalence of electronic prescribing (EP) use in acute NHS hospitals. Out of the 101 trusts that responded (61% response rate) seventy (69%) respondent hospitals had at least one form of EP in use. More than half (56%) of hospitals with EP had more than one system in use, representing 60 different systems. The most common were systems used only for discharge prescribing, used in (48% of respondent hospitals). Specialist chemotherapy EP systems were second most common (34%). Sixteen specialist inpatient systems were used across 15 hospitals, most commonly in adult critical care. Only 13%respondents used inpatient electronic prescribing across all adult medical and surgical wards. Overall, 40% systems were developed ‘in-house’. Decision support functionality varied widely[[14]](#footnote-14).

**Delayed prescribing**

Service evaluation carried out in primary care in 2010 received 110 responses to questionnaires (79% response rate) and found that all responding PCTs had peer-reviewed, evidence-based guidelines giving the antimicrobial choice and duration for common infections in primary care and 73% of responding PCTs reported that the guidance included delayed prescribing strategies[[15]](#footnote-15).

**Remote prescribing follow up**

No published studies on current practice were highlighted for this suggested area for quality improvement. This area is based on stakeholder’s knowledge and experience.

* 1. Microbiological samples
		1. Summary of suggestions

**Microbiological samples**

Stakeholders suggested the need for taking microbiology samples prior to initiating antibiotic therapy. They highlighted that point-of-care testing in particular would allow more targeted use of antibiotics, reduce the reliance on broad spectrum antimicrobials and would result in an overall reduction in misdiagnosis and prescribing.

* + 1. Selected recommendations from development source

Table 8 below highlights recommendations that have been provisionally selected from the development source that may support potential statement development. These are presented in full after table 8 to help inform the Committee’s discussion.

Table 8 Specific areas for quality improvement

|  |  |
| --- | --- |
| Suggested quality improvement area  | Selected source guidance recommendations |
| Microbiological samples | **Antimicrobial prescribing**NICE NG15 Recommendation 1.1.27, 1.1.28, 1.1.29, 1.1.30 |

**Antimicrobial prescribing**

NICE NG15 - Recommendation 1.1.27

For patients in hospital who have suspected infections, take microbiological samples before prescribing an antimicrobial and review the prescription when the results are available.

NICE NG15 - Recommendation 1.1.28

For patients in primary care who have recurrent or persistent infections, consider taking microbiological samples when prescribing an antimicrobial and review the prescription when the results are available.

NICE NG15 - Recommendation 1.1.29

For patients who have non-severe infections, consider taking microbiological samples before making a decision about prescribing an antimicrobial, providing it is safe to withhold treatment until the results are available.

NICE NG15 - Recommendation 1.1.30

Consider point-of-care testing in primary care for patients with suspected lower respiratory tract infections as described in the NICE guideline on pneumonia.

* + 1. Current UK practice

No published studies on current practice were highlighted for this suggested area for quality improvement. This area is based on stakeholder’s knowledge and experience.

* 1. Review and audit
		1. Summary of suggestions

**Clinical decision recording**

Stakeholders suggested that for all antimicrobial prescriptions, clinical assessment should be carried out and the clinical diagnosis and rationale for prescribing recorded. The records should include the choice of drug, dose and duration.

**Data collection and feedback**

Stakeholders highlighted the need to collect data that would allow benchmarking, direct comparisons and performance monitoring. They also highlighted the importance of feedback and sharing the results in order to allow personal and peer review and influence behaviours. Publishing results and producing annual report were suggested examples of providing feedback.

* + 1. Selected recommendations from development source

Table 9 below highlights recommendations that have been provisionally selected from the development source that may support potential statement development. These are presented in full after table 9 to help inform the Committee’s discussion.

Table 9 Specific areas for quality improvement

|  |  |
| --- | --- |
| Suggested quality improvement area  | Selected source guidance recommendations |
| Clinical decision recording | **Antimicrobial stewardship programmes**NICE NG15 Recommendation 1.1.26, 1.1.32,  |
| Review & feedback | **Antimicrobial stewardship programmes**NICE NG15 Recommendation 1.1.3, 1.1.6, 1.1.9, 1.1.10, 1.1.19 |

**Antimicrobial stewardship programmes**

NICE NG15 - Recommendation 1.1.3

Consider including the following in an antimicrobial stewardship programme:

* monitoring and evaluating antimicrobial prescribing and how this relates to local resistance patterns
* providing regular feedback to individual prescribers in all care settings about:
* their antimicrobial prescribing, for example, by using professional regulatory numbers for prescribing as well as prescriber (cost centre) codes
* patient safety incidents related to antimicrobial use, including hospital admissions for potentially avoidable life-threatening infections, infections with Clostridium difficile or adverse drug reactions such as anaphylaxis
* providing education and training to health and social care practitioners about antimicrobial stewardship and antimicrobial resistance
* integrating audit into existing quality improvement programmes.

NICE NG15 - Recommendation 1.1.6

Consider developing systems and processes for providing regular updates (at least every year) to individual prescribers and prescribing leads on:

* individual prescribing benchmarked against local and national antimicrobial prescribing rates and trends
* local and national antimicrobial resistance rates and trends
* patient safety incidents related to antimicrobial use, including hospital admissions for potentially avoidable life-threatening infections, infections with C. difficile or adverse drug reactions such as anaphylaxis.

NICE NG15 - Recommendation 1.1.9

Support antimicrobial stewardship teams, by developing processes that promote antimicrobial stewardship or by allocating resources, to:

* review prescribing and resistance data and identify ways of feeding this information back to prescribers in all care settings
* promote education for prescribers in all care settings
* assist the local formulary decision-making group with recommendations about new antimicrobials
* update local formulary and prescribing guidance
* work with prescribers to explore the reasons for very high, increasing or very low volumes of antimicrobial prescribing, or use of antimicrobials not recommended in local (where available) or national guidelines
* provide feedback and advice to prescribers who prescribe antimicrobials outside of local guidelines when it is not justified.

NICE NG15 - Recommendation 1.1.10

Consider using the following antimicrobial stewardship interventions:

* review of prescribing by antimicrobial stewardship teams to explore the reasons for increasing, very high or very low volumes of antimicrobial prescribing, or use of antimicrobials not recommended in local (where available) or national guidelines
* promotion of antimicrobials recommended in local (where available) or national guidelines
* IT or decision support systems
* education-based programmes for health and social care practitioners, (for example, academic detailing, clinical education or educational outreach).

NICE NG15 - Recommendation 1.1.19

Consider developing local systems and processes for peer review of prescribing. Encourage an open and transparent culture that allows health professionals to question antimicrobial prescribing practices of colleagues when these are not in line with local (where available) or national guidelines and no reason is documented.

**Antimicrobial prescribing**

NICE NG15 - Recommendation 1.1.26

When prescribing any antimicrobial, undertake a clinical assessment and document the clinical diagnosis (including symptoms) in the patient's record and clinical management plan.

NICE NG15 - Recommendation 1.1.32.

When an antimicrobial is a treatment option, document in the patient's records (electronically wherever possible):

* the reason for prescribing, or not prescribing, an antimicrobial
* the plan of care as discussed with the patient, their family member or carer (as appropriate), including the planned duration of any treatment.
	+ 1. Current UK practice

**Clinical decision recording**

An audit carried out in the oral surgery acute dental department of Guy's Hospital in London looked at how appropriately antimicrobials were prescribed when compared to the standards set within the Faculty of General Dental Practice (UK) and Scottish Dental Clinical Effectiveness guidelines on antimicrobial prescribing in dentistry. Cycle 1 showed that only 30% of prescriptions were appropriate and only 62% of practitioners were recording a diagnosis. After two months of intervention, cycle 2 was carried out; this showed a significant improvement, with 80% of prescriptions being appropriate and 100% of practitioners recording a diagnosis. The majority of inappropriate prescriptions in both cycles were for acute pulpitis without evidence of systemic involvement[[16]](#footnote-16).

An audit of antimicrobial stewardship compliance with national and local recommendations for antimicrobial prescribing carried out in Heatherwood and Wexham Park Hospitals NHS Foundation Trust found that out of 2273 antimicrobial prescriptions only 49% had a record of clinical indication[[17]](#footnote-17)

**Data collection and feedback**

[The English Surveillance Programme for Antimicrobial Utilisation and Resistance (ESPAUR)](https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report) is developing and improving surveillance systems to measure antibiotic use and antibiotic resistance as well as measuring the impact of resistance of the safety of patients and the general public. The data provides, for national and regional surveillance of antibiotic resistance and antibiotic use trends from (first report covers data 2010 to 2013). This will enable general practices and hospitals to compare their data with regional and national trends. It will provide a baseline measure from which we can track changes in both prescribing and resistance in England.

Service evaluation carried out in primary care in 2010 received 110 responses to questionnaires (79% response rate). The results showed that antimicrobial consumption was reported back to practices by 95.5%, an antimicrobial audit strategy was present in 61% and 32% reported that general practices took part in annual antimicrobial audits. 91% compared practices’ antimicrobial prescribing data with national data and 77% compared both prescribing in similar local general practices to each other and prescribing of different antimicrobial groups. Six PCTs reported that they had local antimicrobial incentive schemes or targets[[18]](#footnote-18).

A large audit of 120 acute hospitals (response rate of 78%) was carried out in 2011. The audit found that of 117 respondents who answered the question, 102 (87.1%) stated that they would be interested in submitting overall antimicrobial dispensing data to a national database hosted securely for the purposes of benchmarking between NHS hospital organizations[[19]](#footnote-19).

16 North London hospitals undertook self-assessment of practice against seven aspects of stewardship. The mean scores for the assessed elements were: risk assessment (90.1%), operational delivery of strategy (86.7%), structure and lines of responsibilities (82.7%), antibiotic pharmacist post (82.3%), clinical governance (63.7%), education and training (50.2%), and information for public, patients and carers (43.7%)[[20]](#footnote-20).

Feedback on antimicrobial resistance patterns was provided to prescribers in 29 % (66/226) of UK hospitals. 62 % (138/222) of UK hospitals reported providing feedback to ward teams about antimicrobial prescribing Feedback to individual doctors on their antimicrobial prescribing was not conducted extensively by either group of respondents (UK 33 % 74/222). The survey also found that:

* 73% - monitor volume of antimicrobial prescribing
* 73% - audit all antimicrobial prescribing against policy
* 65% - audit restricted antimicrobial prescribing[[21]](#footnote-21).
	1. Continuity of care
		1. Summary of suggestions

**Continuity of care**

Stakeholders suggested that better collaboration and communication between primary and secondary care is needed to improve patient outcomes. This is particularly important when patient’s care is transferred to another care setting and during post-operative care. Stakeholders highlighted communication at handover as a particular area of risk of miscommunication and unintended changes to medicines.

* + 1. Selected recommendations from development source

Table 9 below highlights recommendations that have been provisionally selected from the development sources that may support potential statement development. These are presented in full after table 9 to help inform the Committee’s discussion.

Table 9 Specific areas for quality improvement

|  |  |
| --- | --- |
| Suggested quality improvement area  | Selected source guidance recommendations |
| **Continuity of care** | **Antimicrobial stewardship interventions**NICE NG15 - Recommendation 1.1.12**Medicines-related communication systems when patients move from one care setting to another**NICE NG5 – Recommendation 1.2.2 and 1.2.3 |

**Antimicrobial stewardship interventions**

NICE NG15 - Recommendation 1.1.12

Consider developing systems and processes to ensure that the following information is provided when a patient's care is transferred to another care setting:

* information about current or recent antimicrobial use
* information about when a current antimicrobial course should be reviewed
* information about who a patient should contact, and when, if they have concerns about infection.

**Medicines-related communication systems when patients move from one care setting to another**

NICE NG5 – recommendation 1.2.2

For all care settings, health and social care practitioners should proactively share complete and accurate information about medicines:

* ideally within 24 hours of the person being transferred, to ensure that patient safety is not compromised and
* in the most effective and secure way, such as by secure electronic communication, recognising that more than one approach may be needed.

NICE NG5 – recommendation 1.2.3

Health and social care practitioners should share relevant information about the person and their medicines when a person transfers from one care setting to another. This should include, but is not limited to, all of the following:

* contact details of the person and their GP
* details of other relevant contacts identified by the person and their family members or carers where appropriate – for example, their nominated community pharmacy
* known drug allergies and reactions to medicines or their ingredients, and the type of reaction experienced (see the NICE guideline on drug allergy)
* details of the medicines the person is currently taking (including prescribed, over-the-counter and complementary medicines) – name, strength, form, dose, timing, frequency and duration, how the medicines are taken and what they are being taken for
* changes to medicines, including medicines started or stopped, or dosage changes, and reason for the change
* date and time of the last dose, such as for weekly or monthly medicines, including injections
* what information has been given to the person, and their family members or carers where appropriate
* any other information needed – for example, when the medicines should be reviewed, ongoing monitoring needs and any support the person needs to carry on taking the medicines. Additional information may be needed for specific groups of people, such as children.
	+ 1. Current UK practice

According to a [report produced by Royal Pharmaceutical Society (2012)](http://www.rpharms.com/getting-the-medicines-right/keeping-patients-safe-report.asp) there is a substantial body of evidence that shows when patients move between care providers the risk of miscommunication and unintended changes to medicines remain a significant problem. In 2010 an audit across 50 acute trusts involving over 8600 patients found that when medicines were checked after admission most patients had at least one omitted drug or wrong dose. Earlier estimates suggest that between 30 and 70% of patients have either an error or an unintentional change to their medicines when their care is transferred[[22]](#footnote-22).

* 1. Additional areas

**Summary of suggestions**

The improvement areas below were suggested as part of the stakeholder engagement exercise. However they were felt to be either unsuitable for development as quality statements, outside the remit of this particular quality standard referral or require further discussion by the Committee to establish potential for statement development.

There will be an opportunity for the QSAC to discuss these areas at the end of the session on 23 September 2015.

**Infection control**

Stakeholders highlighted that maintaining good hand hygiene, oral hygiene, fluoride use, diet and other lifestyle factors can prevent infections hence contribute to reduced antimicrobial use. While infection control is closely linked with antimicrobial stewardship, it is a separate issue outside the scope if this QS and covered within the [infection control QS (QS61).](https://www.nice.org.uk/Guidance/QS61)

**Flu vaccine uptake**

Stakeholders suggested that there needs to be further consideration of nudges to increase flu vaccination uptake in at risk groups under 65 years old, pregnant women and health and social care workers. Vaccination uptake is outside the scope of this quality standard.

**Over the counter antimicrobials**

Stakeholders suggested that over the counter antimicrobials are available in several European countries and that one pharmaceutical company is aiming to introduce a new 1 day antibiotic treatment in the UK this year. Licensing issues are outside the scope of NICE quality standards.

**TB management**

Stakeholders suggested the need for multidisciplinary team meetings for all cases of drug resistant Tuberculosis (TB) as well as a cohort review of all TB cases. Specific TB management is outside the scope of this quality standard and would be better addressed in a TB quality standard which has been referred to NICE.

**Conflicting guidance**

Stakeholders highlighted conflicting messages coming from currently revised guidance (draft) on Prophylaxis against Infective Endocarditis and a vocal body of 'experts' across secondary care and the academic sector in England and the US. Stakeholders suggested that this issue is causing confusion among the dental profession and some alarm among at risk patients. It is beyond the scope of quality standards to address this kind of issue as Quality standards are developed using NICE accredited sources and do not review or challenge these sources.

# Appendix 1: Suggestions from stakeholder engagement exercise – registered stakeholders

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Section number** | **Name** | **Stakeholder** | **Key area for quality improvement** | **Why is this important?** | **Why is this a key area for quality improvement?** | **Supporting information** |
| 1 | 4.1 | Maria Cann |  MRSA Action UK |   | Antibiotic pharmacists’ role is to monitor antibiotic use, advise clinicians, educate all grades of healthcare workers and help to develop policy. Antibiotic pharmacists have been shown to be effective in many situations. As these practitioners become more accomplished it will be possible to expand their role to include direct intervention in patient treatment. Simple measures, such as modification of intravenous treatment to oral and automatic stop orders, could greatly enhance patient care. | Widespread inappropriate prescribing of antibiotics has led to the introduction of specialist antibiotic pharmacists. | The expanding role of the antibiotic pharmacist1. T. M. A. Weller\* and 2. C. E. Jamieson59 |
| 2 | 4.1 | Maria Cann |  MRSA Action UK | Training and education for healthcare practitioners in the use of antimicrobials (include in curriculum, with refresher training) | Linking with statement 3 above. |   |   |
| 3 | 4.1 | Dr David Jenkins |  The Royal College of Pathologists | Antimicrobial stewardship team composition: Each acute trust should have an antibacterial prescribing and stewardship policy which sets out the competencies required for all antibacterial prescribers, medical and non-medical, and the frequency of review of these competencies. The policy should also describe a process for developing antibacterial prescribing guidelines and the list of clinical areas covered by these guidelines. The policy should also describe the approach of the trust to antibacterial stewardship including restrictive (e.g any requirement to seek prior approval before prescribing restricted antibacterials), persuasive (e.g. audits of antibacterial prescribing) or structural (e.g. availability of guidelines on a smart phone app) interventions. This policy should be made publically available.  | Antibacterial resistance is a leading global health problem, threatening the ability to provide effective treatment of serious infections and the ability to protect against the possibility of infection complicating surgery and immunosuppressing interventions such as cancer treatments. Antimicrobial stewardship delivers improvements in antibacterial prescribing both in terms of improved patient outcomes and reductions in resistance, thereby prolonging the effectiveness of currently available antibacterial agents. | Antibacterial prescribing and stewardship policies set out the approach adopted by the healthcare organisation. They describe the extent of control of antibacterial prescribing which the trust feels is appropriate for their context and which underpins their local guidance. Trusts vary in the extent to which they currently control antibacterial prescribing and this may account for differences in measures such as antibacterial consumption data, resistance rates and number of Clostridium difficile cases. Readily available knowledge of how trusts implement stewardship would allow providers, commissioners and patients to judge the quality of antibacterial prescribing practice in these organisations. Public Health England has begun a project to collect data on volumes of antibacterial prescriptions in acute trusts. Numbers of C difficile infections attributed to acute trusts is available from PHE and shows wide variation in rates of infection. Resistance data is available to a limited extent from PHE. | Davey P1, Brown E, Charani E, Fenelon L, Gould IM, Holmes A, Ramsay CR, Wiffen PJ, Wilcox M. Interventions to improve antibiotic prescribing practices for hospital inpatients.Cochrane Database Syst Rev. 2013 Apr 30;4:CD003543. doi: 10.1002/14651858.CD003543.pub3https://www.gov.uk/government/collections/clostridium-difficile-guidance-data-and-analysis#epidemiology |
| 4 | 4.1 | Peter Jenks | SCM | Key area for quality improvement 5 | Antimicrobial stewardship teams should be appropriately resourced and competent to deliver continuous quality improvement in the use of antimicrobial agents |   | Tricky. Possibly PH36 |
| 5 | 4.1 | John Morris  | SCM | Antimicrobial local decision-making group, including the conduct of a new antimicrobial use review | There is a recent history of underdevelopment of new antimicrobials by the pharmaceutical industry. | The introduction and review of a new antimicrobial needs to be properly conducted or else the new drug could be underused – missing an opportunity – or overused – potentially encouraging the emergence of resistance to it. | NICE AMS guideline July 2015 |
| 6 | 4.1 | Dr David Jenkins | The Royal College of Pathologists | Antimicrobial stewardship team composition:Each acute trust should have a pharmacist who has expertise in antimicrobials, as evidenced by engagement in the Royal Pharmaceutical Society expert professional curriculum for antimicrobial pharmacists and who is a member of the trust’s antimicrobial stewardship team  | Antibacterial resistance is a leading global health problem, threatening the ability to provide effective treatment of serious infections and the ability to protect against the possibility of infection complicating surgery and immunosuppressing interventions such as cancer treatments. Antimicrobial stewardship delivers improvements in antibacterial prescribing both in terms of improved patient outcomes and reductions in resistance, thereby prolonging the effectiveness of currently available antibacterial agents. | Antimicrobial pharmacists have a key role to play in developing policies and guidelines in the use of antibacterials and in the measurement of antibacterial prescribing and use. Antimicrobial stewardship is dependent on the availability of prescribing policies, guidelines and measure of adherence to these documents. Accordingly, stewardship programmes are unlikely to be effective in the absence of pharmacists with advanced knowledge of this area. The RPS expert professional curriculum for antimicrobial pharmacists is a structured training programme for pharmacists who wish to become, or who are acting as, antimicrobial pharmacists. Currently, few pharmacists acting as antimicrobial pharmacists have undertaken or are undertaking formal training in this discipline. An MSc programme in antimicrobial pharmacy offered by Imperial College has been withdrawn. I am not aware of any alternative programme. | Jacqueline Sneddon, Mark Gilchrist, and Hayley WickensDevelopment of an expert professional curriculum for antimicrobial pharmacists in the UK J. Antimicrob. Chemother. (2015) 70 (5): 1277-1280 |
| 7 | 4.1 | Dr David Jenkins | The Royal College of Pathologists  | Antimicrobial stewardship team composition:Each acute trust should have a consultant in medical microbiology or infectious diseases consultant who has dedicated sessions in their job plan set aside for antimicrobial stewardship  | Antibacterial resistance is a leading global health problem, threatening the ability to provide effective treatment of serious infections and the ability to protect against the possibility of infection complicating surgery and immunosuppressing interventions such as cancer treatments. Antimicrobial stewardship delivers improvements in antibacterial prescribing both in terms of improved patient outcomes and reductions in resistance, thereby prolonging the effectiveness of currently available antibacterial agents. | Stewardship programmes need to be led by clinicians who have expertise in infectious organisms, the management of infections caused by these pathogens, antibacterial use, antibacterial resistance mechanisms and their detection. These clinicians need to have the time to organise and deliver stewardship programmes. In most acute trusts, these clinicians will be consultants in medical microbiology or infectious diseases. Without dedicated time in job plans, there is a real danger that stewardship programmes will not be appropriately developed or implemented. Currently there is no national data on the amount of time that trusts reserve for this function. It would probably be reasonable to state that this varies widely across acute providers.  | Davey P1, Brown E, Charani E, Fenelon L, Gould IM, Holmes A, Ramsay CR, Wiffen PJ, Wilcox M. Interventions to improve antibiotic prescribing practices for hospital inpatients.Cochrane Database Syst Rev. 2013 Apr 30;4:CD003543. doi: 10.1002/14651858.CD003543.pub3. |
| 8 | 4.2 | Alastair Hay |  SCM | Use of electronic prescribing for all antibiotics (including a unique prescriber ID) | To facilitate feedback of accurate prescribing data to all NHS antibiotic prescribers | To provide prescribers with accurate information regarding their prescribing in relation to their peers |   |
| 9 | 4.2 | Sachin Patel | Astellas | Implementation of new narrow spectrum antimicrobials. | Anti-microbial resistance has emerged as a global threat and needs to be addressed through avoiding inappropriate prescribing of broad spectrum antimicrobials and the introduction of narrow spectrum antibiotics where appropriate. | Narrow spectrum antibiotics should be preferred over broad spectrum agents, particularly when there is a clear diagnostic test available. There is currently limited adoption of narrow spectrum antibiotics in specific hospital acquired infections with significant variability across the country. This has a significant impact on lowering the unintended reverse in resistant organisms. National guidelines should reflect the need to use narrow spectrum antimicrobials over broad spectrum ones. | Public Health England. Start Smart - Then Focus. Antimicrobial Stewardship Toolkit for English HospitalsPublic Health England. English surveillance programme for antimicrobial utilisation and resistance (ESPAUR). Report 2014.Public Health England. CDI: guidance on management and treatment |
| 10 | 4.2 | Ipek Gunduz  | Baxter | Additional developmental areas of emergent practice:Multidisciplinary approach to antimicrobial stewardship and tackling antimicrobial resistance. Ensuring nursing staff are involved in antimicrobial stewardship. |   |   |   |
| 11 | 4.2 | Ipek Gunduz  | Baxter | Utilizing advances in technology for enhanced clinical surveillance | Overuse of antibiotics can contribute to the development of Clostridium difficile infection (CDI). Clinical surveillance that links antibiotic usage with infection prevention and control can contribute to optimising antimicrobial stewardship. | The ARHAI annual report 2014 mentioned that enhanced surveillance was among the multiple interventions that contributed to the reduction of CDI in England. | ARHAI annual report 2014 |
| 12 | 4.2 | Dr Arianne Matlin | British Dental Association | Reduction of inappropriate antimicrobial prescribing | Inappropriate and excessive prescribing of antimicrobials has been identified as a key driver of the emergence of resistance; ESPAUR has demonstrated a correlation between areas of high use and resistance. | Determinants of inappropriate prescribing by clinicians include both intrinsic (clinician knowledge and attitudes) and extrinsic (patient behaviours and expectations, plus system-related factors) components, both of which must be tackled.In dentistry, a lack of sufficient and appropriately funded clinical time to treat emergency cases has been identified as a significant contributor to inappropriate antimicrobial prescribing. The BDA continues to press for the reformed dental contract to address this problem. We have also called for greater emphasis on diagnosis and clinical management of emergencies in dental education and training, underpinned by existing sources of guidance.Patient expectations or refusal of operative treatment can also contribute to inappropriate prescribing in dentistry. The BDA supports co-ordinated measures to improve public understanding of AMR and address attitudes and compliance. | Dental prescribing guidance:- British National Formulary dental list- Palmer, N.O.A., Longman, L., Randall, C. and Pankhurst, C.L. (2012) Antimicrobial prescribing for general dental practitioners. FGDP(UK), London.- SDCEP Drug prescribing for dentistry: http://www.sdcep.org.uk/?o=2334- FDS National Clinical Guidelines, 1997: http://www.rcseng.ac.uk/fds/publications-clinical-guidelines/clinical\_guidelines/documents/ncg97.pdfNICE guidance on prophylaxis for infective endocarditis.Prescribing in dentistry:- Cope, A.L. and Chestnutt, I.G. (2014) Inappropriate prescribing of antibiotics in primary dental care: reasons and resolutions.Prim. Dent. J., 3, 33-37.- Cope, A.L. (2015) Understanding the use of antibiotics in the management of dental problems in primary care. Cardiff University |
| 13 | 4.2 | Kate Gould | British Society for Antimicrobial Chemotherapy | Need for a simple way of checking BNF 5.1 drugs, ie.DDD doses for all agents | Easy quick reference and review of agents | Quick reference does not exist |   |
| 14 | 4.2 | Dr Martin Allen | British Thoracic Society  | Antibiotic duration for bronchiectasis | Although there is no direct evidence base, expert consensus is that antibiotics for a bronchiectasis exacerbation should be given for 10 to 14 days. This is documented in the BTS Bronchiectasis guidelines. | Antibiotic courses are regularly given for less than the recommended duration. | BTS Bronchiectasis Guidelineshttps://www.brit-thoracic.org.uk/document-library/clinical-information/bronchiectasis/bts-guideline-for-non-cf-bronchiectasis/ |
| 15 | 4.2 | Dr Martin Allen | British Thoracic Society  | Appropriate antibiotics for pneumonia severity | There is good evidence that the use of appropriate antibiotics (dual combination antibiotics) for patients with moderate to high severity pneumonia is associated with improved clinical outcomes (decreased mortality).There is no good evidence that combination broad-spectrum antibiotics for patients with low severity CAP is associated with clinical benefit. There is good evidence that antibiotic overuse promotes drug resistance.The use of antibiotics appropriate to the severity of CAP is recommended by NICE.  | Data from the national BTS CAP audit programme found that only about 50% of patients received antibiotics that were concordant with existing BTS CAP Guidelines – these guidelines make the same antibiotic recommendations as the NICE Pneumonia Guideline.Both under-treatment of patients with moderate to high severity CAP, and over-treatment of patients with low severity CAP was noted. | Please see reports of the BTS National Audit and BTS CAP Care Bundle Project for details.https://www.brit-thoracic.org.uk/audit-and-quality-improvement/bts-audit-programme-reports/ https://www.brit-thoracic.org.uk/audit-and-quality-improvement/bts-care-bundles-for-cap-and-copd/Lim WS et al. British Thoracic Society adult community acquired pneumonia audit 2009/10. Thorax. 2011 Jun;66(6):548-9.Rodrigo C et al. Single versus combination antibiotic therapy in adults hospitalised with community acquired pneumonia. Thorax. 2013 May;68(5):493-5.  |
| 16 | 4.2 | Dr Martin Allen | British Thoracic Society  | Antibiotic duration and iv to oral switch in pneumonia | There is some evidence that for lower severity CAP, shorter antibiotic courses may have the same clinical outcomes as longer courses. As such, NICE recommend 5 days of antibiotics for low severity CAP. Patients treated initially with parenteral antibiotics should be transferred to an oral regimen as soon as clinical improvement occurs and the temperature has been normal for 24 h, providing there is no contraindication to the oral route.  | Intravenous antibiotics are commonly overused as demonstrated in the BTS CAP audit. | [https://www.brit-thoracic.org.uk/audit-and-quality-improvement/bts-audit-programme-reports/ BTS Pneumonia Guidelineshttps://www.brit-thoracic.org.uk/guidelines-and-quality-standards/community-acquired-pneumonia-in-adults-guideline/NICE Pneumonia Guidelineshttp://www.nice.org.uk/guidance/cg191](https://www.brit-thoracic.org.uk/audit-and-quality-improvement/bts-audit-programme-reports/) |
| 17 | 4.2 | Dr Matt Hoghton | RCGP | GPs are under increasing pressure by PHE and DoH to use antivirals in the flu session at an early stage. | This may appear as a confusing message with GPs advised to use these drugs but avoid using antibiotics. This may encourage patients to seek medical advice early in the future in order to get an antiviral. The lack of patient group directives for outbreaks in residential and nursing homes has lead to tensions between Public health doctors trying to persuade GPs on duty to prescribe for each individual patient. |   |   |
| 18 | 4.2 | Peter Jenks | SCM | Key area for quality improvement 4 | People with infections are offered treatment with an antibiotic that covers the likely causative organisms and is selected and reviewed based on local resistance patterns and the results of microbiological investigations. |   | PH 36, QS 61, CG 149, CG 54 CG 149 CG 191 |
| 19 | 4.2 | Carole Fry | SCM | Key area for quality improvement 1 | Surgical prophylaxis is important in minimising the risk of surgical site infection (SSI) one of the most common causes of healthcare associated infection (HCAI). | To be most efficacious a single dose of an intravenous antibiotics with a long enough half-life to achieve activity throughout the operation should be given within 60 minutes before the skin is incised and as close to time of incision as practically possible. The antibiotics selected for prophylaxis must cover the expected pathogens for that operative site and take into account local resistance patterns.Redosing may be required for long surgical procedures.This a measurable quality standard. | Start Smart, Then Focus (2015) -Antimicrobial Stewardship Toolkit for English Hospitals.https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/417032/Start\_Smart\_Then\_Focus\_FINAL.PDFScottish Intercollegiate Guidelines Network - Antibiotic prophylaxis in surgery (2014)http://www.sign.ac.uk/guidelines/fulltext/104/Surgical site infection: Prevention and treatment of surgical site infection (CG 74).http://www.nice.org.uk/guidance/cg74/chapter/1-recommendations |
| 20 | 4.2 | John Morris  | SCM | Local and NICE antimicrobial guidelines | NICE guideline has considered evidence and the promotion of local guidelines both improves awareness of good AMS and promotes best care in a local context. | A lack of agreement of what best care looks like can reduce AMS to a diverse melting pot of ungrounded medical opinions and outdated practice. | NICE AMS guideline July 2015 |
| 21 | 4.2 | Tessa Lewis  | SCM | Follow guidelines | Guidelines for antimicrobial prescribing are readily available. However prescribing can be inconsistent with guidance. Antimicrobial stewardship (2015) NICE guideline NG14: 24. When prescribing antimicrobials, prescribers should follow local (where available) or national guidelines on: • prescribing the shortest effective course • the most appropriate dose • route of administration. 36. When prescribing is outside local (where available) or national guidelines, document in the patient's records the reasons for the decision. | [Point prevalence survey secondary care Wales 2013http://www2.nphs.wales.nhs.uk:8080/WARPDocs.nsf/85c50756737f79ac80256f2700534ea3/14298ec482e7b46a80257d040035413f/$FILE/All-Wales%20Antimicrobial%20PPS%202013%20report%20FINAL.pdfRegarding duration of therapy:o 19% of systemic antibacterials used for treatment of infections had been prescribed for >7 days.o 19% of antibacterials used for treatment of C. difficile-associated disease had been prescribed for >10 days.o 30% of surgical prophylaxis was prescribed for > 1 day (general guidance is for a single pre-operative dose).• The proportion of surgical prophylaxis prescribed for >1 day decreasedfrom 42% in 2012 to 30% in 2013; with a notable decrease in surgical prophylaxis for >1 day in cardiovascular surgery from 92% to 13%.](http://www2.nphs.wales.nhs.uk:8080/WARPDocs.nsf/85c50756737f79ac80256f2700534ea3/14298ec482e7b46a80257d040035413f/%24FILE/All-Wales%20Antimicrobial%20PPS%202013%20report%20FINAL.pdf) | [English surveillance programme for antimicrobial utilisation and resistance (ESPAUR) Report 2014https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/362374/ESPAUR\_Report\_2014\_\_3\_.pdfPoint prevalence survey secondary care (Wales) 2013http://www2.nphs.wales.nhs.uk:8080/WARPDocs.nsf/85c50756737f79ac80256f2700534ea3/14298ec482e7b46a80257d040035413f/$FILE/All-Wales%20Antimicrobial%20PPS%202013%20report%20FINAL.pdfTitle: Review of the AWMSG National Audit Focus on Antibiotic Prescribing 2013-2015](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/362374/ESPAUR_Report_2014__3_.pdf) |
| 22 | 4.2 | Carole Fry | SCM | Key area for quality improvement 4 | Promote the use of delayed (or no) prescribing and robust safety netting in primary care.A recent study demonstrated that strategies of no prescription or delayed antibiotic prescription result in fewer than 40% of patients using antibiotics.If a delayed (or no prescribing) strategy is utilised, it is important that robust safety netting is in place for patients who should be provided with information about when to seek medical advice, for example.Treating your infection http://www.rcgp.org.uk/clinical-and-research/toolkits/~/~/media/2E1292605D174B318A5302223B04C175.ashxWhen should I worry?http://www.whenshouldiworry.com/resources/When%20should%20I%20worry-Booklet\_England-with%20111%20service.pdf | 79% of antibiotics are prescribed in primary care and between 2010 – 2013, prescribing in this sector increased by 4% so this is a key area for improving appropriate prescribing. Half of antibiotics prescribed in primary care are for respiratory tract infections, many of which will be viral infections.The RCGP TARGET toolkit provides a range of tools to support GPs.TARGET stands for: Treat Antibiotics Responsibly, Guidance, Education, Tools The TARGET Antibiotics Toolkit aims to help influence prescribers’ and patients’ personal attitudes, social norms and perceived barriers to optimal antibiotic prescribing. It includes a range of resources that can each be used to support prescribers’ and patients’ responsible antibiotic use, helping to fulfil CPD and revalidation requirements | English surveillance programme for antimicrobial utilisation and resistance report 2014.https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/362374/ESPAUR\_Report\_2014\_\_3\_.pdfRespiratory tract infections – antibiotic prescribing: Prescribing of antibiotics for self-limiting respiratory tract infections in adults and children in primary care. (NICE 2008).https://www.nice.org.uk/guidance/cg69/ifp/chapter/delayed-antibioticsDelayed antibiotic prescribing strategies for respiratory tract infections in primary care: pragmatic, factorial randomised controlled trial.Little, P et alBMJ 2014;348:g1606 doi: 10.1136/bmj.g1606http://eprints.soton.ac.uk/363424/1/bmj.g1606.full.pdf |
| 23 | 4.2 | Heather Edmonds | SCM | Consider offering delayed/back-up scripts.  | This is recommended in the RCGP antimicrobial target toolkit and the NICE AMS guidance but is not routinely implemented by all GPs, A&E or minor injuries departments. It's a useful tool to use as a safety net in some situations, when diagnosis is unclear and patient may deteriorate. | This is a useful safety net for when prescribers are not totally sure that the infection does not require treatment. Also can offer reassurance to the patient too. But is is important that the script is posted dated so that patient cannot pick the script up immediately. Suggest post date script for the following day. Not all prescribers are aware that this is an option.  | This tool is recommended in a number of guidances such at the RCGP antimicrobial target toolkit and the NICE AMS guidance.  |
| 24 | 4.2 | Peter Jenks | SCM | Key area for quality improvement 1 | Trusts regularly review evidence-based assessments of new technology and other innovations to minimise harm from antimicrobial resistance. | Use of e-Prescribing and prescribing Apps can revolutionise antimicrobial stewardship. | PH 36 |
| 25 | 4.2 | Heather Edmonds | SCM | When remote prescribing such as telephone consultations for antimicrobial prescribing is considered necessary, patients should be followed up within 48 to 72 hours.  | Even though this is not routinely recommended, but on occasions in general practice and in the "out of hours" service, when patients are unable to attend urgently for a number of reasons, then the prescribers may consider it necessary to prescribe antimicrobials via telephone. The GMC has produced guidance on remote prescribing which includes telephone and online prescribing, which sets out what the prescribers responsibilities are before they prescribe, but the follow-up recommendations are not specific for antimicrobial. As these patients have not had an initial face to face assessment it is important that treatment is followed-up by either a face to face visit or telephone consultation to ensure patients symptoms are resolving, this currently does not routinely happen in practice. | Remote prescribing is increasing with the use of on-line prescribing. The GMC guidance goes a little way to improve he quality in this area, but is not specific enough for antimicrobial prescribing. The "start smart then focus" toolkit for hospitals suggests reviewing in 48-72 hours after initiation, this should also apply in primary care when an initial face to face assessment cannot be undertaken. this will allow antibiotic to be stopped sooner if not required or switched to an alternative if patient is failing to respond. | [GMC Prescribing guidance for remote prescribing, including telephone, on-line and video link. http://www.gmc-uk.org/guidance/ethical\_guidance/14326.aspStart smart then focus toolkit](http://www.gmc-uk.org/guidance/ethical_guidance/14326.asp) |
| 26 | 4.3 | Ipek Gunduz  | Baxter | Taking microbiology samples prior to initiating antibiotic therapy | It is important in order to obtain an accurate diagnosis of the infectious agent when treating patients | Targeted treatment of infections with the right antibiotic for the right organism will contribute to judicious use of antibiotic therapy  | ARHAI prescribing competencies, Start Smart then Focus Guidelines |
| 27 | 4.3 | Maria Cann | MRSA Action UK | Improve rapid diagnostics to reduce the use of broad spectrum antibiotics  | Point-of-care test kits could allow more targeted use of antibiotics, and an overall reduction in misdiagnosis and prescription. Effective and accurate point of care tests will form a vital part of the toolkit for stewardship of antibiotics in the future. This will ensure that the antibiotics we have now will be effective for longer and we can continue to control infections during routine and major procedures.  | One of the problems contributing to antimicrobial resistance is the lack of a simple test to tell doctors when an infection is caused by bacteria and should be treated by antibiotics.  | [Longitude Prize 2014https://longitudeprize.org/challenge/antibiotics](https://longitudeprize.org/challenge/antibiotics) |
| 28 | 4.3 | Heather Edmonds | SCM | Samples such as msu, sputum etc should be routinely taken to ensure the correct antimicrobial is prescribed. | The NICE AMS guidance recommends that antibiotic treatment should be prescribed in line with microbial sensitivities. Due to growing resistance pattern it is important to ensure that the antibiotic prescribed will treat the infection. | In primary care not all prescribers routinely take samples such as msu, before initiating treatment. As microbials in UTI become increasingly resistant to more antibiotics this is important that this is undertaken. Even for simple / uncomplicated UTIs. This should reduce treatment failures and multiple courses of antibiotics leading to increased resistance and HCAI's.  | NICE AMS guidance, UK 5 year antimicrobial resistance strategy 213-2018. In Leeds we do root cause analysis on each of our primary care C.diff / MRSA cases. Many of the contributing factors are due to inappropriate or no sampling, which has led to the causative microbe not being detected, resulting in the incorrect antibiotic being prescribed, leading to multiple courses of antibiotics being used. |
| 29 | 4.3 | Heather Edmonds | SCM | Additional developmental areas of emergent practicePoint of care testing,Rapid microbiology testing and IT solutions to convey results quicker to primary care | Ensuring the use of new diagnostics such as point of care testing, to improve the diagnosis of infections and improve treatments. also increase the use of IT solutions such as primary care access to lab results | Ensure that diagnosis is improved to allow treatment of causative microbes as early as possible, to minimise treatment failures and reduce treatment courses and inappropriate antimicrobial prescribing. If information can be sent to primary care within a few hours, then prescribers may be more willing to wait for the results before initiating treatment. | The DH have recently run a couple of workshops looking at using diagnostics to improve antimicrobial resistance. |
| 30 | 4.3 | John Morris  | SCM | Additional developmental areas of emergent practice | Rapid point-of-care testing to reduce the reliance on broad spectrum antimicrobials seems to be a silver bullet. |   | Personal opinion |
| 31 | 4.4 | Alastair Hay |  SCM | Use of clinical indications for all prescribing (coded electronically) | To facilitate feedback of accurate prescribing data against clinical indications to all NHS antibiotic prescribers | Because prescribers often insist they see a difference spectrum of patients and this is why their prescribing differs from that of their peers |   |
| 32 | 4.4 | Ipek Gunduz  | Baxter | Using local susceptibility patterns to guide antibiotic prescribing | Knowledge of local susceptibility patterns are necessary to guide empiric prescribing. Antibiotic resistance is enhanced by the overuse of antibiotics and lack of knowledge of local susceptibilities can contribute to inappropriate prescribing and hence overuse. | The ESPAUR report 2014, showed that there were an increased number of bloodstream infections where antibiotic resistance was identified hence measures that will curb the development of resistance (such as reducing overuse) should be put in place to prevent the development of bloodstream infections. | ARHAI prescribing competencies, ESPAUR Report 2014 |
| 33 | 4.4 | Ipek Gunduz  | Baxter | Audit and timely feedback to inform prescribing practices and relate to patient outcomes | Timely feedback will highlight to prescribers areas for improvement around antibiotic prescribing. Reporting back in a timely manner will ensure that the information that is delivered is meaningful to the recipients. | The Start Smart then Focus guide recommends that there should be an ongoing programme of audit, revision and update. ESPAUR report 2014 also revealed that whilst 79% of Acute Trusts collate data on at least one of the recommended audits in SSTF, there is a low uptake of audits that can be correlated to patient outcomes | Start Smart then Focus, ESPAUR Report 2014 |
| 34 | 4.4 | Dr Arianne Matlin | British Dental Association | Data collection and use | Good evidence is emerging that audit-feedback interventions, in dentistry as well as in general medical practice, can significantly modify behaviour. Individual prescribing data provided alongside a local comparator are effective in triggering a reduction in antimicrobial prescribing, particularly among the highest-prescribing groups of clinicians. | Audit-feedback interventions require the consistent collection of prescribing data, but this is currently highly variable in dentistry and information is particularly difficult to obtain for private practice. Within the NHS, funding for audit is currently included in a general dental practitioner’s contract only if they carried out an audit in the year preceding the introduction of the 2006 contract.Universal collection of dental prescribing data is not currently feasible and a transition to electronic prescribing would be required to enable efficient audit in NHS dentistry; this must be appropriately funded and supported with IT infrastructure. Capture of data from private practice would be facilitated by the use of a unique professional regulatory number as an identifier (Information Standard in development by the Department of Health). | Audit/feedback in general medical practice:Simpson, S.A., Butler, C.C. et al. (2009) Stemming the tide of antibiotic resistance (STAR): a protocol for a trial of a complex intervention addressing the “why” and “how” of appropriate antibiotic prescribing in general practice. BMC Fam. Pract., 10:20.RAPiD audit-feedback trial in Scottish general dental practice:Prior, M. et al. (2014) Evaluating an audit and feedback intervention for reducing antibiotic prescribing behaviour in general dental practice (the RAPiD trial): a partial factorial cluster randomised trial protocol. Implement. Sci., 24: 9:50. |
| 35 | 4.4 | Kate Gould | British Society for Antimicrobial Chemotherapy | Use of primary and secondary care antibacterial prescribing indicators | To support improvement in the quality of antimicrobial prescribing | To support Antimicrobial Management Teams to monitor the impact of local and national interventions which aim to enhance the quality of antimicrobial prescribing in primary/secondary care settings | [Please see the Scottish Antimicrobial Prescribing Group Primary Care Prescribing Indicators Annual Report](http://www.scottishmedicines.org.uk/SAPG/News/2014-10-14-SAPG-Primary-Care-PI-2013-14-Report.pdfng) |
| 36 | 4.4 | Kate Gould | British Society for Antimicrobial Chemotherapy | Using Point Prevalence Surveys to apply measures for improvement in antibiotic prescribing | This informed the development of two quality prescribing indicators | Baseline PPS identified priorities for quality improvement. SAPG has demonstrated that implementation of regularly reviewed national prescribing indicators can drive improvement in quality of antibiotic use in key clinical areas.  | [Please see published data in the journal Antimicrobial Resistance & Infection Control](http://www.ncbi.nlm.nih.gov/pubmed/23320479)  |
| 37 | 4.4 | Kate Gould | British Society for Antimicrobial Chemotherapy | To build upon recently developed structural and process indicators, such as TATFAR (Transatlantic Taskforce on Antimicrobial Resistance) | To develop a common structure and process indicators for antimicrobial stewardship programs (ASPs). These indicators should characterise programmes and allow for comparisons among healthcare systems in both the EU and USA | Implementation of TATFAR-developed core indicators in multiple nations would contribute to a comprehensive, comparative description of infrastructure, policies, and practices of ASPs internationally. These findings could, in turn, lead to an understanding of best practices of ASPs through further investigation into the relation of different ASP approaches to antimicrobial use and resistance. Current public health surveillance systems or special studies may be candidates for the addition of ASP questions to baseline surveys. Furthermore these indicators are envisaged as drivers for improvement and alignment of best practices | [Please refer to: TATFAR Recommendations](http://www.cdc.gov/drugresistance/tatfar/tatfar_recomendations.html) |
| 38 | 4.4 | Maria Cann | MRSA Action UK | Additional developmental areas of emergent practice: CCG performance indicators. Whilst a quality premium is not desirable from our perspective (fear of not prescribing when a patient needs abx), the performance indicators, we believe are needed | These measures speak for themselves, b) will help to reduce the burden of C.diff, having a huge impact on patient outcomes:a) Reduction in the number antibacterial items/STAR-PU by 1% (or greater) from 2013-14 baseline valueb) Reduction in the proportion of cephalosporins, quinolones & co-amoxiclav by 10% from 2013-14 baseline value OR to stay below England median value = 11.3% | Reduce the considerable antibiotic prescribing variability between GP practices | Introduction to the proposed AntibioticPrescribing Quality Premium - Elizabeth BeechHealthcare Acquired Infection and Antimicrobial Resistance Project Lead NHS England, March 2015 |
| 39 | 4.4 | Ryan Dillon | MSD | Development of registries and metrics to assess and maintain comprehensive AMS | It is important to monitor and adapt AMS strategies to avoid increased antimicrobial resistance in all publically funded health and social care settings. Data show that selective prescribing to decrease prominent infections rates, can drive alternative prescribing, which goes hand-in-hand with increased resistance1. | Variation undoubtedly exists between the primary care settings and those patients treated within the health and social care settings, i.e. nursing homes, or an individual’s own home care.The use of a registry and or audit tool would encourage understanding of local epidemiology, which as a result would promote good AMS and effective management of patients2. There implications of such registries include, but are not limited to: • Optimal care/practice informed by effective AMS at a local level, and reduced inappropriate prescribing.• Effective and adaptive AMS (dependant on the data collected within the registry to inform practice based on resistance etc.)• Reduced burden for carers and health and social care prescribers• Reduced cost/ resource use for both primary and secondary care, in the form of appointments, and hospitalisation.  | 1 Report on Antimicrobial Use and Resistance in Humans in 2013, Health Protection Scotland and Information Services Division; January 2015; Accessed, 07/08/20152 PHE, English surveillance programme forantimicrobial utilisation andresistance (ESPAUR), Report 2014; Accessed 07/08/2015https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/362374/ESPAUR\_Report\_2014\_\_3\_.pdf  |
| 40 | 4.4 | Ryan Dillon | MSD | Specific targets for the primary care, and health and social care setting to drive successful AMS  | To fully appreciate the benefits of effective AMS, measures and targets need to be agreed to drive optimal patient care. This will ensure that patients benefit from existing and novel antibiotics when needed. Data show that the use of targets and measures to drive effective antimicrobial use have been effective; i.e. the rates of MRSA and CDif’ infections in the secondary care setting1; this concept should be applied to antibiotic use in general.  | Recent data show the number of infections associated with MRSA and CDif, which carry penalties, have decreased2. However, this may have led to a shift in antimicrobial prescribing, which runs counterintuitive to good AMS. In reality the targets and measures needed to drive effective AMS will vary according to the primary or health and social care setting; i.e. nursing homes and hospices. In particular, nursing homes and hospices should be supported to understand local epidemiology and effective antimicrobial prescribing. It would be logical to assume that these patients are more likely (compared with primary care) to have a hospital admission, which could introduce resistant pathogens into the secondary care setting.Rates of resistance, inappropriate prescribing, and antibiotic usage should be published and assessed nationally.  | 1CCG Outcomes Indicator Set 2014/15 Technical guidancehttp://www.england.nhs.uk/wp-content/uploads/2013/12/ccg-ois-1415-tech-guid.pdf 2 PHE, English surveillance programme forantimicrobial utilisation andresistance (ESPAUR), Report 2014; Accessed 07/08/2015https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/362374/ESPAUR\_Report\_2014\_\_3\_.pdf  |
| 41 | 4.4 | Carole Fry | SCM | Key area for quality improvement 3 | All prescribers (medical and non-medical) to assess themselves against the antimicrobial prescribing competences to identify their development needs in area.The competence framework includes five overarching area of competence:• Infection prevention and control, • Antimicrobial resistance and antimicrobials,• Prescribing antimicrobials• Antimicrobial stewardship • Monitoring and learning. | In a survey undertaken of acute Trusts for the ESPAUR report only 22% of responding Trust performed competency assessments for prescribers.There is good evidence to show that over prescription of antimicrobials increases antimicrobial resistance. | English surveillance programme for antimicrobial utilisation and resistance report (2014).https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/362374/ESPAUR\_Report\_2014\_\_3\_.pdfAntimicrobial prescribing and stewardship competencies (2013)https://www.gov.uk/government/publications/antimicrobial-prescribing-and-stewardship-competenciesAnnual Report of the Chief Medical Officer. Volume Two, 2011. Infections and the rise of antimicrobial resistance.https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/138331/CMO\_Annual\_Report\_Volume\_2\_2011.pdf |
| 42 | 4.4 | Carole Fry | SCM | Key area for quality improvement 2 | Antibiotics should only be prescribed where there is clear clinical indication for their use. Prescribers should clearly document their rationale for prescribing antibiotics and then review their prescribing decision after 48/72 hours and decide to• Stop antibiotics if there is no evidence of infection• Switch antibiotics from intravenous to oral• Change antibiotics – ideally to a narrower spectrum – or broader if required• Continue and document next review date or stop date• Commence Outpatient Parenteral Antibiotic TherapyRecording the prescribing decision and subsequent review decisions are a pillar of antimicrobial stewardship programmes. The Code of Practice on the prevention and control of infections and related guidance expects healthcare providers to ensure appropriate antimicrobial use to optimise patient outcomes and to reduce the risk of adverse events and antimicrobial resistance. | Antimicrobial stewardship programmes aim to: • optimise therapy for individual patients• prevent overuse, misuse and abuse of antimicrobials• minimise development of resistance at patient and community levelsDocumentation of prescribing decisions is not universally practised and there is evidence that antibiotics are prescribed inappropriately.Clear documentation of prescribing decisions enables robust monitoring of this. | Start Smart, Then Focus (2015) -Antimicrobial Stewardship Toolkit for English Hospitals.https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/417032/Start\_Smart\_Then\_Focus\_FINAL.PDFThe Health and Social Care Act 2008 -Code of Practice on the prevention and control of infections and related guidance (2015)https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/449049/Code\_of\_practice\_280715\_acc.pdfEnglish surveillance programme for antimicrobial utilisation and resistance report 2014.https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/362374/ESPAUR\_Report\_2014\_\_3\_.pdf |
| 43 | 4.4 | Heather Edmonds | SCM | Documenting clearly the diagnosis and rationale for prescribing antimicrobials, including the choice of drug dose and duration. | It is important that the diagnosis and rationale for all antimicrobial prescribing is clearly recorded in the patients notes, and also to include any deviation from local antimicrobial guidance, so that the prescriber can clearly demonstrate the need to go outside of guidance, including the patient factors that were considered in reaching this decision.  | In general practice this is not universally done. The consultation notes are frequently brief and don't always document the reasons for going outside of guidance. Therefore when undertaking reflective reviews it is hard to ascertain where the prescribing was or was not intentionally off guidance. This is important when assessing whether antibiotic prescribing is appropriate. This is one of the recommendations in the AMS nice guidance. | [GPs within the Leeds area have been undertaking reflective review audits for the last 5 years. From the findings of these audits it is clear that the level of detail recorded in patients notes is not universal and there is variation in the level of detail recorded. This is also supported by the recommendations in the RCGP antimicrobial target toolkit.http://www.rcgp.org.uk/clinical-and-research/target-antibiotics-toolkit.aspx](http://www.rcgp.org.uk/clinical-and-research/target-antibiotics-toolkit.aspx) |
| 44 | 4.4 | Tessa Lewis  | SCM | Clinical assessment | *Antimicrobial stewardship (2015) NICE guideline NG14: 26. When prescribing any antimicrobial, undertake a clinical assessment and document the clinical diagnosis (including symptoms) in the patient's record and clinical management plan. 32. When an antimicrobial is a treatment option, document in the patient's records (electronically wherever possible): • the reason for prescribing, or not prescribing, an antimicrobial* | Current audit activity in the hospital setting focuses on documented indication and this has improved. However in all settings it is important to document a rationale (clinical assessment).All GP practices within one Welsh Health Board undertook all ‘conditions’ sections of the AWMSG National audit during 2013/14. Findings suggest considerable variation in documentation of clinical assessment for cough. 10-100% of audited consultations met the criteria ‘Documented clinical features, both temperature and chest examination?’Point prevalence survey secondary care Wales The reason for an antimicrobial prescription was recorded in the patient record on 87% of occasions, a small improvement on the 2012 figure of 85%.http://www2.nphs.wales.nhs.uk:8080/WARPDocs.nsf/85c50756737f79ac80256f2700534ea3/14298ec482e7b46a80257d040035413f/$FILE/All-Wales%20Antimicrobial%20PPS%202013%20report%20FINAL.pdfESPAUR: The most frequent recommended SSTF [Start Smart Then Focus] audits included: adherence to guidelines of dose, route and duration (84%), indication and duration documented on drug chart (82%) and IV to oral switch at 48 hours (51%).  | [English surveillance programme for antimicrobial utilisation and resistance (ESPAUR) Report 2014https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/362374/ESPAUR\_Report\_2014\_\_3\_.pdfFigure 4.7 Proportion of Trusts who have implemented audits recommended by SSTF, 2014](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/362374/ESPAUR_Report_2014__3_.pdf) |
| 45 | 4.4 | Heather Edmonds | SCM | All practitioners who prescribe antimicrobials should undertake a reflective review audit, which is peer reviewed on an annual basis. | Many national documents recommend that practitioners who prescribe antibiotics should demonstrate the necessary competencies. One way to show this is to undertake reflective review to assess compliance against local and national guidance and to highlight any areas for improvement and update. Currently there does not appear to be a standard process for assessing competencies and quality of prescribing in this area. | Currently there is no formal assessment for undertaking these reviews. Revalidation for GP do not include specifics for antimicrobial prescribing. Recent studies have identified that a high proportion of GP antibiotic prescribing is inappropriate. | The antimicrobial prescribing and stewardship competencies, produced by the DH, are not widely used and prescribers are not formally assessed against them. In Leeds we have been using reflective reviews audit for a number of years and this has been one of our main contributing factors in reducing our antibiotic prescribing. |
| 46 | 4.4 | Tessa Lewis  | SCM | Individual prescribing rates | *Antimicrobial stewardship (2015) NICE guideline NG14: 6. Consider developing systems and processes for providing regular updates (at least every year) to individual prescribers and prescribing leads on: • individual prescribing benchmarked against local and national antimicrobial prescribing rates and trends • local and national antimicrobial resistance rates and trends • patient safety incidents related to antimicrobial use, including hospital admissions for potentially avoidable life-threatening infections, infections with C. difficile or adverse drug reactions such as anaphylaxis.* | Individualised bench-marked data can be very persuasive. There is variation in availability of data for different healthcare professionals. Currently antimicrobial prescribing data for GPs is provided at practice level. Other prescribers may not have ready access to their data, for example dentists. |   |
| 47 | 4.4 | Wendy Thompson | SCM |   | Issue number 1 - NICE AMS Guidance (p25) recommends 'providing regular feedback to individual prescribers in all care settings about......their antimicrobial prescribing... ' However, there is currently no mechanism for providing regular feedback to dental prescribers in England on their antimicrobial prescribing. As set out on p91 of the AMS guidance, data relating to dental prescribing patterns in England can only be analysed at a national (rather than local) level.  This is not the case in Scotland and Wales, where different systems and processes are in place which allow feedback to individual prescribers. |   |   |
| 48 | 4.4 | John Morris  | SCM | Communication | To effect culture change. | Communication of key messages, training and experience-sharing, and the promotion of open peer-review and challenge of incorrect preconceptions. | NICE AMS guideline July 2015 |
| 49 | 4.4 | Tessa Lewis  | SCM |   | *Antimicrobial stewardship (2015) NICE guideline NG14: 18. Consider developing local networks across all care settings to communicate information and share learning on: • antimicrobial prescribing • antimicrobial resistance • patient safety incidents.* | Provision of data is informative if seen by the prescriber. Peer discussions which challenge views and demonstrate how an issue has worked in practice can be very persuasive. Opportunity for this level of GP discussion on a quality (vs cost) prescribing issue has reduced locally.  |   |
| 50 | 4.4 | Dr Jacqueline Sneddon  | Scottish Antimicrobial Prescribing Group  |   | On behalf of the Scottish Antimicrobial Prescribing Group, which has registered as a stakeholder for this guidance consultation I would like to apologise for not submitting a detailed Comments form but have been unable to engage sufficiently with group members due to the short timescale for response and the timing being when many people are on holiday.Our group is naturally interested in this area of practice since it is our core business and would be happy to submit detailed comments once the Quality Standard has been drafted.In the meantime we would commend utilising some of the work our group has done on developing prescribing indicators for hospital and primary care as well as the structural indicators developed by Buyle et al ( Buyle F, Metz-Gercek S, Mechtler R et al. Development and validation of potential structure indicators for evaluation antimicrobial stewardship programmes in European hospitals. Eur J Clin Microbiol Infect Dis. 2013; 32: 1161-70) in addition to the Start Smart Then Focus and TARGET resources. |   |   |
| 51 | 4.4 | Dr David Jenkins | The Royal College of Pathologists | Public reporting of antibacterial prescribing and antibacterial resistance data:Each acute trust should publish and make publicly available every year a report on the consumption of antibacterials in the trust, using measures such as defined daily doses per 1000 bed days which allow ready comparison between trusts. The report should also include data on the rate of resistance to key antibacterials in important bacteria/specimen types, including resistance to:Meticillin in Staph aureus, Vancomycin in enterococci, third generation cephalosporins, quinolones and aminoglycosides in Enterobacteriaceae and carbapenemase-mediated resistance in Enterobacteriaceae, Pseudomonas aeruginosa and Acinetobacter baumannii. Adherence to local antibacterial prescribing policies should also be reported. | Antibacterial resistance is a leading global health problem, threatening the ability to provide effective treatment of serious infections and the ability to protect against the possibility of infection complicating surgery and immunosuppressing interventions such as cancer treatments. Antimicrobial stewardship delivers improvements in antibacterial prescribing both in terms of improved patient outcomes and reductions in resistance, thereby prolonging the effectiveness of currently available antibacterial agents. | The emergence and spread of antibiotic resistance is driven by the use of antibacterials. Many antibacterial prescriptions are inappropriate; treatment is started unnecessarily, inappropriate drugs are selected and treatment is prolonged beyond optimum duration. Good local antibacterial prescribing policies provide guidance to clinicians on when to start treatment, which drug to use and for how long. Measures of adherence to prescribing policies provide an indicator of the quality of prescribing within a health care organisation. Antibacterial consumption data and resistance rates, when set out using widely agreed measures, provide additional quality indicators. Ensuring that these quality markers are made publically available will allow healthcare providers, commissioners and patients to compare practice and outcomes. They are not currently readily available | WHO, Antimicrobial resistance, Global report on surveillance. 2014ECDC. Antimicrobial resistance surveillance in Europe 2013.PHE Antimicrobial prescribing and stewardship competencies 2013PHE Start Smart - Then FocusAntimicrobial Stewardship Toolkit for English Hospitals 2015 |
| 52 | 4.5 | Sachin Patel | Astellas | Improvement on continuity of care between primary and secondary care in patient care pathway. | The current prescription in primary care is increasing whilst expertise in treatment of infections resides in the secondary care setting.Heath care acquired infections in England are managed sub-optimally due to lack of communication between primary and secondary care which leads to worse patient outcomes. Therefore a greater collaboration between primary and secondary care is needed. | There are no specific primary care infection roles in many places in England.Lack of communication leads to suboptimal management of infection, worse patient outcomes and infection transmission rates.  | NICE, Infection prevention and controlThe King’s Fund, Continuity of care and the patient experience |
| 53 | 4.5 | Carole Fry | SCM | Key area for quality improvement 5 | Promote cross sector working across the patient pathway to minimise irresponsible prescribing of antimicrobials.NHS England issued a patient safety alert on communication failure on patient discharge. This stated that between October 2012 and September 2013 there were around 10,000 reportsto the National Reporting and Learning System (NRLS) of patient safety incidents elated to discharge. Communication at handover is identified as a particular area of risk and accounted for approximately 33% of the 10,000 incidents reported to the NRLS.A report from the Royal Pharmaceutical Society stated that there is a substantial body of evidence that shows when patients move between care providers the risk ofmiscommunication and unintended changes to medicines remain a significant problem.In 2010 an audit across 50 acute trusts involving over 8600 patients found that when medicines were checked after admission most patients had at least one omitted drug or wrong.The guidance included in the Code of Practice states ‘A registered provider must ensure that it provides suitable and sufficient information on a service user’s infection status whenever it arranges for that person to be moved from the care of one organisation to another, of from a service user’s home, so that any risks to the service user and others from infection may be minimised’. | Healthcare professionals need to be encouraged to take personal responsibility for the transfer of information about medicines, including antibiotics.The RPS suggest four core principles for improving communication on patient medicines:• Health care professionals transferring a patient should ensure that all necessary information about the patient’s medicines is accurately recorded and transferred with the patient, and that responsibility for ongoing prescribing is clear.• When taking over the care of a patient, the healthcare professional responsible should check that information about the patient’s medicines has been accurately received, recorded and acted upon.• Patients (or their parents, carers or advocates) should be encouraged to be active partners in managing their medicines when they move, and know in plain terms why, when and what medicines they are taking.• Information about patients’ medicines should be communicated in a way which is timely, clear, unambiguous and legible; ideally generated and/or transferred electronically | The Health and Social Care Act 2008 -Code of Practice on the prevention and control of infections and related guidance (2015)https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/449049/Code\_of\_practice\_280715\_acc.pdfNHS England Patient Safety Alert. Risks arising from breakdown and failure to act on communication during handover at the time of discharge from secondary care. (August 2014)http://www.england.nhs.uk/wp-content/uploads/2014/08/psa-imp-saf-of-discharge.pdfKeeping patients safe when they transfer between care providers – getting the medicines right. Royal Pharmaceutical Society (2012).http://www.rpharms.com/current-campaigns-pdfs/rps-transfer-of-care-final-report.pdf |
| 54 | 4.5 | Tessa Lewis  | SCM | CommunicationAntimicrobial stewardship (2015) NICE guideline NG14:12. Consider developing systems and processes to ensure that the following information is provided when a patient's care is transferred to another care setting: • information about current or recent antimicrobial use • information about when a current antimicrobial course should be reviewed • information about who a patient should contact, and when, if they have concerns about infection. | For some infections, such as post-operative orthopaedic, the prescription of an antibiotic in primary care may not the most appropriate action. A specialist assessment may be more appropriate. Joint aspiration/culture or prolonged antimicrobial therapy may be needed.  | Personal experience/anecdotal evidence that advice on the management of post-operative infections to the patient and GP can be variable.  |   |
| 55 | 4.6 | Maria Cann |  MRSA Action UK | Public Education and awareness of not only requesting antimicrobials but understanding the role of hand hygiene in prevention of infectious illness | The public needs to play their part, not sure if this is within scope, but we feel it is important to raise awareness | Links with start smart and focus, helps the public gain an understanding of national policy | [Health Protection Scotlandhttp://www.washyourhandsofthem.com/home.aspx](http://www.washyourhandsofthem.com/home.aspx) |
| 56 | 4.6 |  Ipek Gunduz  | Baxter | Additional developmental areas of emergent practice:Education and training- varying the clinical content for different healthcare professional groups |   |   |   |
| 57 | 4.6 | Dr Arianne Matlin | British Dental Association  | Prevention of infection | Infection prevention/control is identified as one of the seven key action areas in the Government’s five-year strategy on AMR, to reduce the need for antimicrobials. In dentistry, this corresponds mainly to maintaining good oral hygiene, fluoride use, diet and other lifestyle factors (tobacco and alcohol use, etc.), since dental disease is largely preventable. The emergence of links between poor oral health and systemic conditions such as diabetes and coronary disease reinforces the importance of prevention in a dental context. | Despite the improvements seen in oral health over recent decades, substantial inequalities remain in the UK, with certain sectors of society carrying a high burden of dental disease. Tooth decay remains the greatest cause of hospital admissions for five- to nine-year-old children.The BDA has been pressing for a reformed dental contract that facilitates prevention. Prototype testing is currently in progress, and the Quality Standard should recognise that the final model is unlikely to be confirmed and rolled out until 2018. We have responded to the recent consultation on draft NICE guidance on oral health promotion for dental teams, and we continue call for Government action on the causes of poor oral health, including sugar and tobacco. Fluoride – with sources including toothpaste, topical varnish and targeted water fluoridation schemes where appropriate – is also a key factor in oral disease prevention; schemes such as Childsmile in Scotland should be supported. | Adult Dental Health Survey, 2009:http://www.hscic.gov.uk/pubs/dentalsurveyfullreport09Child Dental Health Survey, 2013:http://www.hscic.gov.uk/catalogue/PUB17137PHE oral health survey of three-year-olds:http://www.nwph.net/dentalhealth/reports/DPHEP%20for%20England%20OH%20Survey%203yr%202013%20Report.pdf |
| 58 | 4.6 | Dr Martin Allen | British Thoracic Society | Multidisciplinary Team Meetings for all cases of drug resistant Tuberculosis. | MDT discussion of all complex cases of TB is recommended to allow review and multiple agency input of such cases as adherence to appropriate therapy is multifaceted and not merely related to drug choices | This has been identified in a DoH sponsored audit and the support of an MDT is recognised to be a valuable and desirable element for all TB units | [See NHSE Specialist Commissioning document for bedaquiline and delamanid (http://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/07/f04-p-a.pdf ) - also forthcoming NICE guidance on TB. The network report by the BTS also highlights these issues - Defining a model for a gold standard for a TB MDT Group and Associated Networks (https://www.brit-thoracic.org.uk/document-library/clinical-information/tuberculosis/defining-a-model-for-a-gold-standards-for-a-tb-mdt-group-and-associated-networks/).](http://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/07/f04-p-a.pdf) |
| 59 | 4.6 | Dr Martin Allen | British Thoracic Society | Review of all MDR TB cases using the MDR TB Advisory Service. | These cases are uncommon but highly complex and benefit from expert peer review - the National MDR advisory service offers a multidisciplinary and rapid response. | Individual clinicians in low incidence settings and not within specialist TB centres not experienced in the treatment of such cases may not offer the appropriate treatment/monitoring or support necessary to MDR cases. Even regional MDTs will benefit from peer review in such cases and advocated in international guidance. | [See NHSE Specialist Commissioning document for bedaquiline and delamanid (http://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/07/f04-p-a.pdf) - also forthcoming NICE guidance on TB. Lange C et al. Management of patients with multidrug-resistant/extensively drug-resistantTuberculosis in Europe: a TBNET consensus statement. Eur Respir J. 2014 Jul;44(1):23-63](http://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/07/f04-p-a.pdf) |
| 60 | 4.6 | Dr Martin Allen | British Thoracic Society | Cohort Review of all TB cases | Each case of TB has different aspects in terms of drug resistance/ infectivity and also how contacts are sought and screened/ treated – CR systematically reviews regimes and approaches. | CR allows for peer review/ discussion and also adds the public health aspect of all cases of TB and focuses on contacts of cases with TB as well as screening implications. | [Forthcoming NICE guidance on TB and also Collaborative Strategy for TB  - (https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/403231/Collaborative\_TB\_Strategy\_for\_England\_2015\_2020\_.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/403231/Collaborative_TB_Strategy_for_England_2015_2020_.pdf) |
| 61 | 4.6 | Maria Cann | MRSA Action UK | Promotion of asepsis and hand hygiene interventions to reduce the numbers of antimicrobial resistant infections  | Studies where hand hygiene was used as the main intervention and a significant improvement in hand hygiene compliance and/or increased ABHR consumption were achieved, demonstrated substantial decrease of MDROs’ infections and/or colonization rates, mainly for MRSA.  | To be successful, these interventions need to be multimodal and sustained over time in the context of an improved patient safety climate; in addition, particular attention should be paid to embed hand hygiene in the care flow and within best practices for specific procedures. Finally, combating AMR spread and infections involves the implementation of other specific prevention and control measures too. | ANTIMICROBIAL RESISTANCE Global Report on surveillance 2014 Evidence of hand hygiene to reduce transmission and infections by multidrug resistant organisms in health-care settings WHO http://www.who.int/gpsc/5may/MDRO\_literature-review.pdf  |
| 62 | 4.6 | Dr Matt Hoghton | RCGP | There needs to be further consideration of nudges to increase flu vaccination uptake in at risk groups under 65 years old, pregnant women and health and social care workers. |  |  |  |
| 63 | 4.6 | Dr Matt Hoghton | RCGP | Over the counter antibiotics for cystitis. | In several European countries these are already available. One pharmaceutical company is aiming to introduce a new 1 day antibiotic treatment in the UK this year available through pharmacy. |   |   |
| 64 | 4.6 | Peter Jenks | SCM | Key area for quality improvement 3 | Trusts prioritise the need for training in the appropriate use of antimicrobials. | I know NICE doesn’t like the use of generic training, but it is crucial for antimicrobial stewardship. | PH36 |
| 65 | 4.6 | Tessa Lewis  | SCM | Additional developmental areas of emergent practicePromote education for prescribers in all care settings  |  Antimicrobial stewardship (2015) NICE guideline NG14: 34. If immediate antimicrobial prescribing is not the most appropriate option, discuss with the patient and/or their family members or carers (as appropriate) other options such as: • self-care with over-the-counter preparations • back-up (delayed) prescribing • other non-pharmacological interventions, for example, draining the site of infection. |   |   |
| 66 | 4.6 | Wendy Thompson | SCM |   | Issue number 2 - NICE Prophylaxis against Infective Endocarditis guidance is currently in the process of revision - the draft revised guidance recommended no change to the extant guidance which is antibiotic prophylaxis before dental treatment. There is, however, still a vocal body of 'experts' across secondary care and the academic sector in England who believe that this guidance is putting their patients at risk. Furthermore, this guidance is different to other international guidance - in particular the US where the cardiology experts are strongly for prophylaxis. With over 25% of dentists in England trained abroad and with this vocal body of eminent consultants and academics publicising their work in the trade journals (such as the British Dental Journal), this is an issue which has caused some confusion among the dental profession and some alarm among at risk patients. Whilst the total number of prescriptions for prophylactic antibiotics at its height was only around 100,000 (compared to around 4,000,000 total dental prescriptions for antibiotics by NHS dentists in England at the time), I believe that this issue needs to be clear for dentists and dental patients in the quality standard. |   |   |
| 67 | General | Kate Gould | British Society for Antimicrobial Chemotherapy | To provide professional and clinical leadership in reducing Healthcare Associated Infection (HAI) in hospitals and other settings  | Ensuring safe and effective care and systems as well as maximising healthcare outcomes for patients | To assure that antibiotics with a higher risk of causing Clostridium difficile infections (CDI) are not routinely used, since antimicrobial therapy plays a central role in the pathogenesis of CDI | [Please see AMT National Level Report](https://www.scottishmedicines.org.uk/files/sapg1/Surgical_Prophylaxis_April_2011-_June_2014.pdf)  |
| 68 | General | Dr Martin Allen | British Thoracic Society | Additional developmental areas of emergent practice1.Frequent exacerbations should initiate a review of the patients COPD for coexistent lung disease (e.g. bronchiectasis) as well as medication2. Not all patients are self-managers, able to decide on initiation of antibiotics and steroids – e.g. GUST trial and others. |   |   |   |
| 69 | General | Dr Martin Allen | British Thoracic Society | British Thoracic Society welcomes antibiotic stewardship. Involvement of respiratory medicine is important at hospital level due to the high use of antibiotics |   |   |   |
| 70 | General | Dr Simon Goldenberg | Healthcare Infection Society |   | HIS has received no comments on this consultation |   |   |
| 71 | General |   | NHS England |   | Thank you for the opportunity to comment on the above QS. I wish to confirm that NHS England has no substantive comments to make regarding this consultation. |   |   |
| 72 | General | Dr Matt Hoghton | RCGP |   | The RCGP recognises this important quality standard aiming to reduce emergence of antimicrobial resistance through effective antimicrobial stewardship in all publicly funded health and social care settings. There are several emerging issues that will need consideration. |   |   |
| 73 | General | Sara Haveron | Royal College of Paediatrics and Child Health  | Thank you for inviting the Royal College of Paediatrics and Child Health to comment on the draft guideline of the clinical guideline on Effective antimicrobial stewardship.We have not received any responses for this consultation.  |   |   |   |
| 74 | General | John Morris  | SCM | Antimicrobial stewardship interventions | Without well-described interventions, any programme or set of guidelines could remain an unimplemented academic exercise. | A rich toolkit to promote best AMS. | NICE AMS guideline July 2015 |
| 75 | General | John Morris  | SCM | Antimicrobial stewardship programme | Commitment from commissioners and senior health management is needed to embed a culture of proper antimicrobial use and resistance management. | Without such senior support, new initiatives can easily fall by the wayside and previous, less responsible attitudes can prevail. | NICE AMS guideline July 2015 |
| 76 | General | Peter Jenks | SCM | Key area for quality improvement 2 | Trust boards demonstrate leadership in antimicrobial stewardship to ensure a culture of continuous quality improvement and to minimise risk to patients. | Antimicrobial stewardship teams must be appropriately resourced and competent, and have sufficient profile within an organisation to deliver their programme of work effectively. | PH36 |
| 77 | General | Carole Fry | SCM | Additional developmental areas of emergent practice | Reduce variation in prescribing across health communities. | The ESPAUR report has demonstrated a significant variation in prescribing of antimicrobials. The Public Health England behavioural insights team have work underway to identify the key behaviours and drivers for those behaviours that may be amenable to change in relation to antimicrobial resistance and prescribing that may usefully inform this area. They have published a review of the relevant literature. | English surveillance programme for antimicrobial utilisation and resistance report (2014).https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/362374/ESPAUR\_Report\_2014\_\_3\_.pdfBehaviour change and antibiotic prescribing in healthcare settingsLiterature review and behavioural analysis (2015)https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/405031/Behaviour\_Change\_for\_Antibiotic\_Prescribing\_-\_FINAL.pdf |
| 78 | General | John Morris  | SCM |   | Thank you for the opportunity to input into this exercise. Please see my attached proforma. Since it is derived from the embargoed full AMS guideline, please treat my comments as embargoes until the publication date.I have tried to resist the temptation to cover 'all of it', but I admit to having chosen broad subject areas for prioritisation.I am unable to provide meaningful comment on questions 2 and 3. |   |   |
| 79 | General | Wendy Thompson | SCM |   | There are two issues which I feel are important from a dental perspective. Before I go into them, I thought it might be worth giving you some background to why dental prescribing is relevant. NHS dentists in England prescribe just under 10% of antibiotics prescribed in primary care across England. And as you will know, primary care accounts for around 80% of all prescribing. So in the scheme of things, general practice dentists prescribe many antibiotics. The NICE AMS Full Guidance document sets out the issues in relation to dental prescribing on page 91.   |   |   |
| 80 | General | Marie Matthews | UKCPA |   | ID 10 UKCPA The UKCPA would like to lodge our interest in this topic engagement but we regret that the timeframe to develop and share this has been too short and has also suffered from being during the summer holiday period.We are aware that there are already examples from both PHE (Start Smart then Focus and TARGET), the Scottish stewardship programme, the TATFAR report and published European structural indicators which will be helpful in developing the quality standard.  |   |   |

1. Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use. [NICE guideline 15 (2015) full guideline.](https://www.nice.org.uk/guidance/ng15/chapter/About-this-guideline#other-versions-of-this-guideline) [↑](#footnote-ref-1)
2. [English surveillance programme for antimicrobial utilisation and resistance (ESPAUR) 2014 report](https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report) [↑](#footnote-ref-2)
3. [English surveillance programme antimicrobial utilisation and resistance (ESPAUR) 2014](https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report) [↑](#footnote-ref-3)
4. A. Fleming et al. [Antimicrobial stewardship activities in hospitals in Ireland and the United Kingdom: a comparison of two national surveys](http://www.ncbi.nlm.nih.gov/pubmed/25851503) [↑](#footnote-ref-4)
5. H. J. Wickens et al. [The increasing role of pharmacists in antimicrobial stewardship in English hospitals](http://jac.oxfordjournals.org/content/68/11/2675.long) [↑](#footnote-ref-5)
6. [English surveillance programme antimicrobial utilisation and resistance (ESPAUR) 2014](https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report) [↑](#footnote-ref-6)
7. A. Fleming et al. [Antimicrobial stewardship activities in hospitals in Ireland and the United Kingdom: a comparison of two national surveys](http://www.ncbi.nlm.nih.gov/pubmed/25851503) [↑](#footnote-ref-7)
8. F Khan et al. [An audit of Antimicrobial Stewardship compliance with national and local recommendations for antimicrobial prescribing](http://onlinelibrary.wiley.com/doi/10.1111/ijpp.2014.22.issue-s2/issuetoc) [↑](#footnote-ref-8)
9. C. Todd, D. Sharpe (2013) [Adherence to general surgery prophylaxis guidelines at Alder Hey Children’s Hospital](http://adc.bmj.com/content/98/6/e1.35.full.pdf%2Bhtml) [↑](#footnote-ref-9)
10. J.Aston et al. [An observation study of antimicrobial prescribing in general paediatric patients at Birmingham Children’s Hospital](http://onlinelibrary.wiley.com/doi/10.1111/j.1469-0691.2012.03803.x/epdf) [↑](#footnote-ref-10)
11. G. Hitch, N Shah and Z. Durani [Are chloramphenicol eye drops being prescribed appropriately at a leading eye hospital?](http://www.academia.edu/5762715/Merks_P_Piecuch_A_Wujec_M_Wojtasik_E_Kozlowska-Wojciechowska_M.Comparisons_of_patients_expectations_from_pharmacy_Services_in_Poland_and_England._IJPP._2012_20_S2_35-36) [↑](#footnote-ref-11)
12. S. Rajgor , C. Langran Catherine, D. Grant [An audit of compliance with the Oxford University Hospital antibacterial guidelines for surgery prophylaxis - vascular surgery](http://onlinelibrary.wiley.com/doi/10.1002/pds.v22.6/issuetoc) [↑](#footnote-ref-12)
13. [English surveillance programme antimicrobial utilisation and resistance (ESPAUR) 2014](https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report) [↑](#footnote-ref-13)
14. Z. Ahmed et al. [The Use and Functionality of Electronic Prescribing Systems in English Acute NHS Trusts: A Cross-Sectional Survey](http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0080378) [↑](#footnote-ref-14)
15. Cliodna McNulty (2012) [Antimicrobial stewardship in primary care — what are pharmacists doing?](http://www.pharmaceutical-journal.com/news-and-analysis/news/antimicrobial-stewardship-in-primary-care-what-are-pharmacists-doing/11110859.article) [↑](#footnote-ref-15)
16. R. Chopra et al. [An audit of antimicrobial prescribing in an acute dental care department.](http://www.ncbi.nlm.nih.gov/pubmed/?term=Chopra+An+audit+of+antimicrobial+prescribing+in+an+acute+dental+care+department) [↑](#footnote-ref-16)
17. F Khan et al. [An audit of Antimicrobial Stewardship compliance with national and local recommendations for antimicrobial prescribing](http://onlinelibrary.wiley.com/doi/10.1111/ijpp.2014.22.issue-s2/issuetoc) [↑](#footnote-ref-17)
18. Cliodna McNulty (2012) [Antimicrobial stewardship in primary care — what are pharmacists doing?](http://www.pharmaceutical-journal.com/news-and-analysis/news/antimicrobial-stewardship-in-primary-care-what-are-pharmacists-doing/11110859.article) [↑](#footnote-ref-18)
19. H. J. Wickens et al. [The increasing role of pharmacists in antimicrobial stewardship in English hospitals](http://jac.oxfordjournals.org/content/68/11/2675.long) [↑](#footnote-ref-19)
20. Colley et al. [Antimicrobial stewardship practices in North London hospitals](http://www.clinicalmicrobiologyandinfection.com/article/S1198-743X%2815%2960078-7/fulltext#cesec3940) [↑](#footnote-ref-20)
21. A. Fleming et al. [Antimicrobial stewardship activities in hospitals in Ireland and the United Kingdom: a comparison of two national surveys](http://www.ncbi.nlm.nih.gov/pubmed/25851503) [↑](#footnote-ref-21)
22. Royal Pharmaceutical Society (2012) [Keeping patients safe when they transfer between care providers – getting the medicines right](http://www.rpharms.com/getting-the-medicines-right/keeping-patients-safe-report.asp) [↑](#footnote-ref-22)