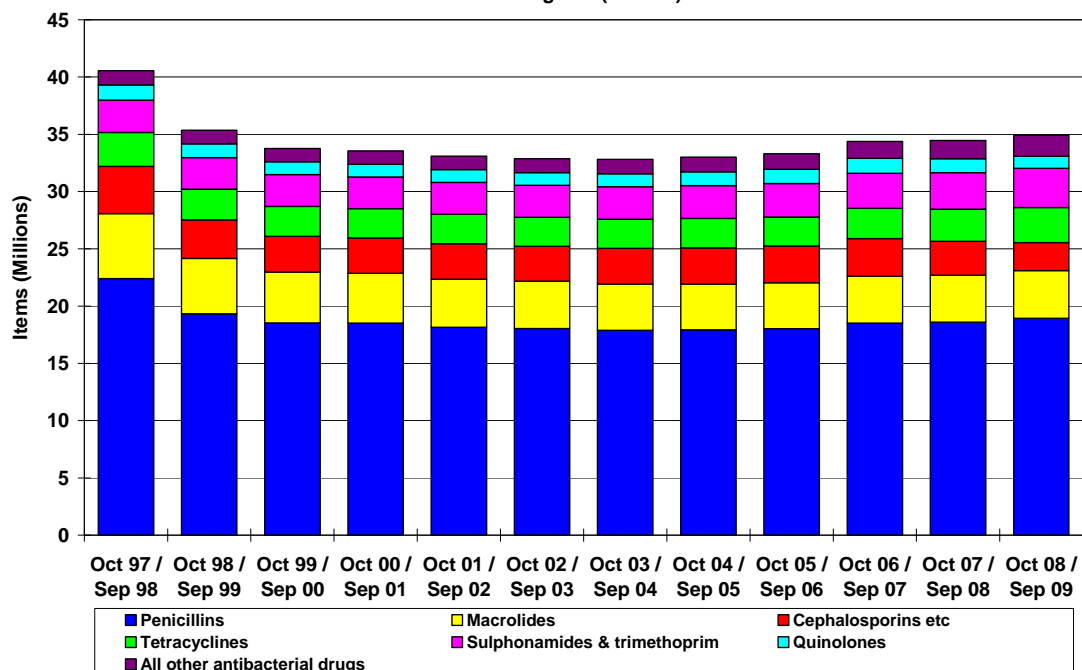


Antibiotic prescribing excluding topical antibiotic preparations

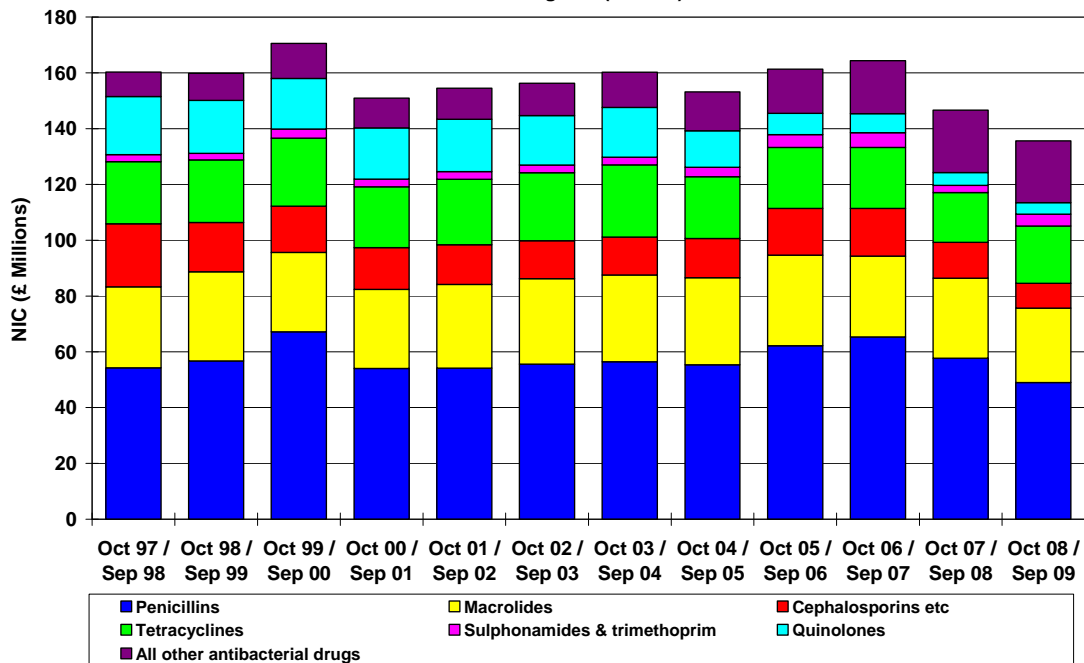
The incidence of antimicrobial resistance is continuing to rise, providing a constant challenge for public health bodies and health professionals alike. Of particular concern is emerging resistance against currently used antibiotics, and the increase in the number of infections that were previously well-controlled.¹ The key factors in controlling the development of resistance to antibiotics lies in reserving their use for serious infections, or where there is a favourable balance between benefit and risk. The strategies that can be used to reduce the likelihood of issuing a questionable prescription for an antibiotic include educating the patient during the consultation itself; providing the patient with information leaflets (e.g. those available through the Clinical Knowledge Summaries Service); and using a delayed prescription.¹

The continuing widespread use of broad spectrum antibiotics such as quinolones, cephalosporins or clindamycin has caused particular concern with regard to the control of *Clostridium difficile* in primary and secondary care. The exact incidence of truly primary care acquired *C. difficile* is unclear but has been suggested to be in the region of 10%. Healthcare-associated *C. difficile* is defined as that occurring up to four weeks after discharge from a hospital. It is recommended that all cases of diarrhoea among people in the community aged two years and above should be investigated for *C. difficile* unless there are good clinical or epidemiological reasons not to. There is evidence to show that restricting use of broad spectrum antibiotics can reduce *C. difficile* in the community. There has been a small reduction (by 8%) in the prescribing of quinolones over the past five years and a larger reduction (by 21%) in the prescribing of cephalosporins. Other strategies to reduce the incidence of *C. difficile* infection include isolation of the infected individual(s); efficient cleaning and disinfection of clinical areas; and hand hygiene with alcohol rub or disinfectants.²

Trends in Prescribing of Antibiotics excluding Topical Preparations in General Practice in England (Chart 1)



Trends in Spending on Antibiotics excluding Topical Preparations in General Practice in England (Chart 2)



Charts 1 and 2 show the pattern of antibiotic use since October 1997 in terms of items and cost. In the UK, antibiotic use declined, with the sharpest reduction in 1998 following the publication of the Standing Medical Advisory Committee, Sub-Group on Antimicrobial Resistance in that year. After declining for some years the number of items has increased from October 2004, and the prescribing rate of antibiotics in the UK continues to exceed that in other northern European countries.³

Antibiotic prescribing in respiratory tract infections

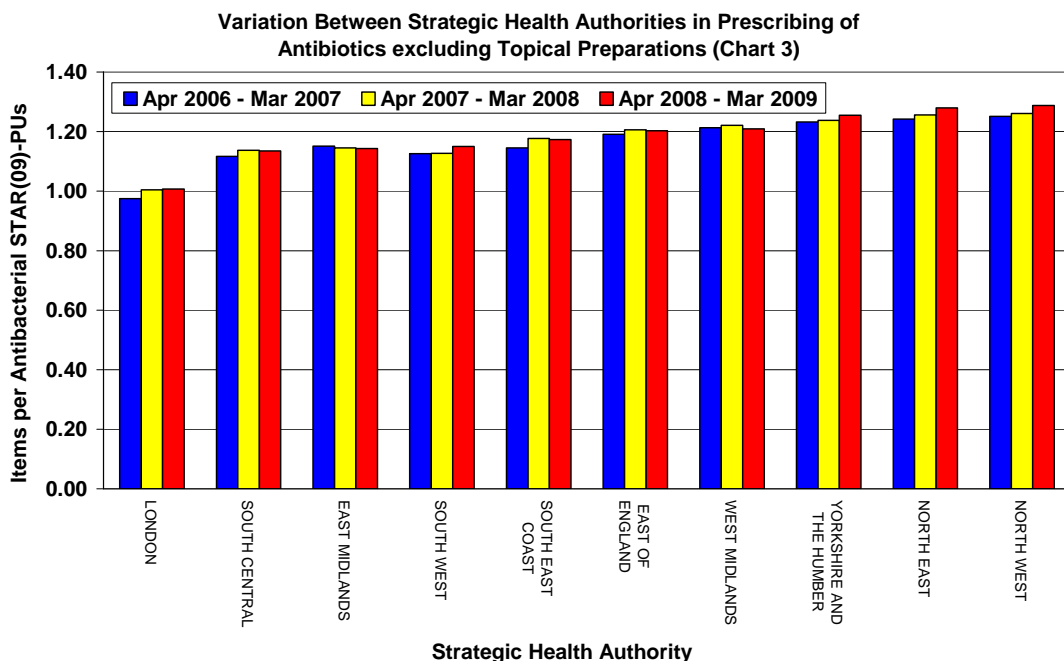
Respiratory tract infections (RTIs) are the most common acute problem dealt with in primary care. In modern developed countries, rates of major complications are low and there is no convincing evidence that reduced rates of antibiotic prescribing are associated with higher rates of complications.³ The National Institute for Health and Clinical Excellence (NICE) guideline on Respiratory Tract Infections – antibiotic prescribing, recommends that, provided certain exclusion criteria are met (e.g. the patient is systemically very unwell or has symptoms and signs of serious illness or complications), the healthcare professional should agree with the patient either a ‘no antibiotic’ or a ‘delayed antibiotic’ prescribing strategy. The difficulty for prescribers lies in identifying the small number of patients who will suffer severe and/or prolonged illness or go on to develop complications. There is also the possibility that antibiotics themselves could cause a risk to the patient, for example by causing side effects. The NICE guideline aims to reduce this dilemma to the lowest level of uncertainty that the current data allows.

A recent study in 3402 adults with new or worsening cough, or symptoms suggestive of lower RTI were followed from 14 primary care networks across Europe. The choice of antibiotic and the prescribing threshold varied greatly

but did not translate into clinically important differences in patient recovery. Taking clinical presentation into account, the rate of recovery was statistically significant between patients who did and did not receive antibiotics but this was not considered to be clinically significant.⁴ There is also the possibility that antibiotics themselves could cause a risk to the patient. A recent observational follow-up study to a randomized controlled trial, in which children aged six months to two years with a diagnosis of acute otitis media (AOM) were randomized to receive either amoxicillin or placebo, found that after three years the children who received amoxicillin were more likely to have a recurrence of AOM compared with the children who received placebo (63% vs. 43%; numbers needed to harm 5, 95% CI 3 to 22).⁵

The Department of Health issued guidelines on Pandemic Influenza in October 2009.⁶ During this period use of antibiotics was recommended in selected cases: signs of bacterial or RTI such as influenza-related pneumonia, failure to respond to antiviral therapy, underlying diagnoses, or severe H1N1 disease. Antibiotics could be used empirically in adults and children who had influenza complicated by lower respiratory tract signs, severe pustular tonsillitis/sore throat, severe painful cervical lymphadenopathy and significant otitis media. When antibiotics were indicated, the DH recommended that children should receive co-amoxiclav (or clarithromycin if penicillin/amoxicillin allergic), and adults should receive doxycycline or co-amoxiclav.⁷

Achieving a steady reduction in antibiotic usage will challenge all strategic health authorities (SHAs) over the coming years. As can be seen in Chart 3 progress has been slow in reducing antibiotic usage and some SHAs are achieving more success than others but the threat of increasing antibiotic resistance to public health should not be treated with complacency.



Prescribing Data (Reporting year = Year to September 2009, Index year = Year to September 2004)

Penicillins are the most commonly prescribed antibiotics (18.9 million items, £49 million year to September 2009). Over the past five years prescribing of penicillins has increased by 6% and cost decreased by 13%. Of all penicillin prescribing in the year to September 2009, amoxicillin accounted for 56% of items (10.7 million) and 32% of cost (£15.7 million); flucloxacillin 20% (3.7 million items) and 31% (£15.2 million); phenoxymethylpenicillin 13% (2.4 million items) and 11% (£5.5 million); and co-amoxiclav 10% (1.9 million items) and 19% (£9.5 million).

Macrolides are the second most commonly prescribed group of antibiotics at 4.2 million items, £26.7 million year to September 2009. Erythromycin accounted for 2.8 million items (£12.5 million); clarithromycin for 1.2 million items (£8.1 million) and azithromycin more than doubled to 211,000 items and cost nearly tripled to £6.1 million. Prescribing of macrolides has increased by 3% while cost has decreased by 14% in the last five years.

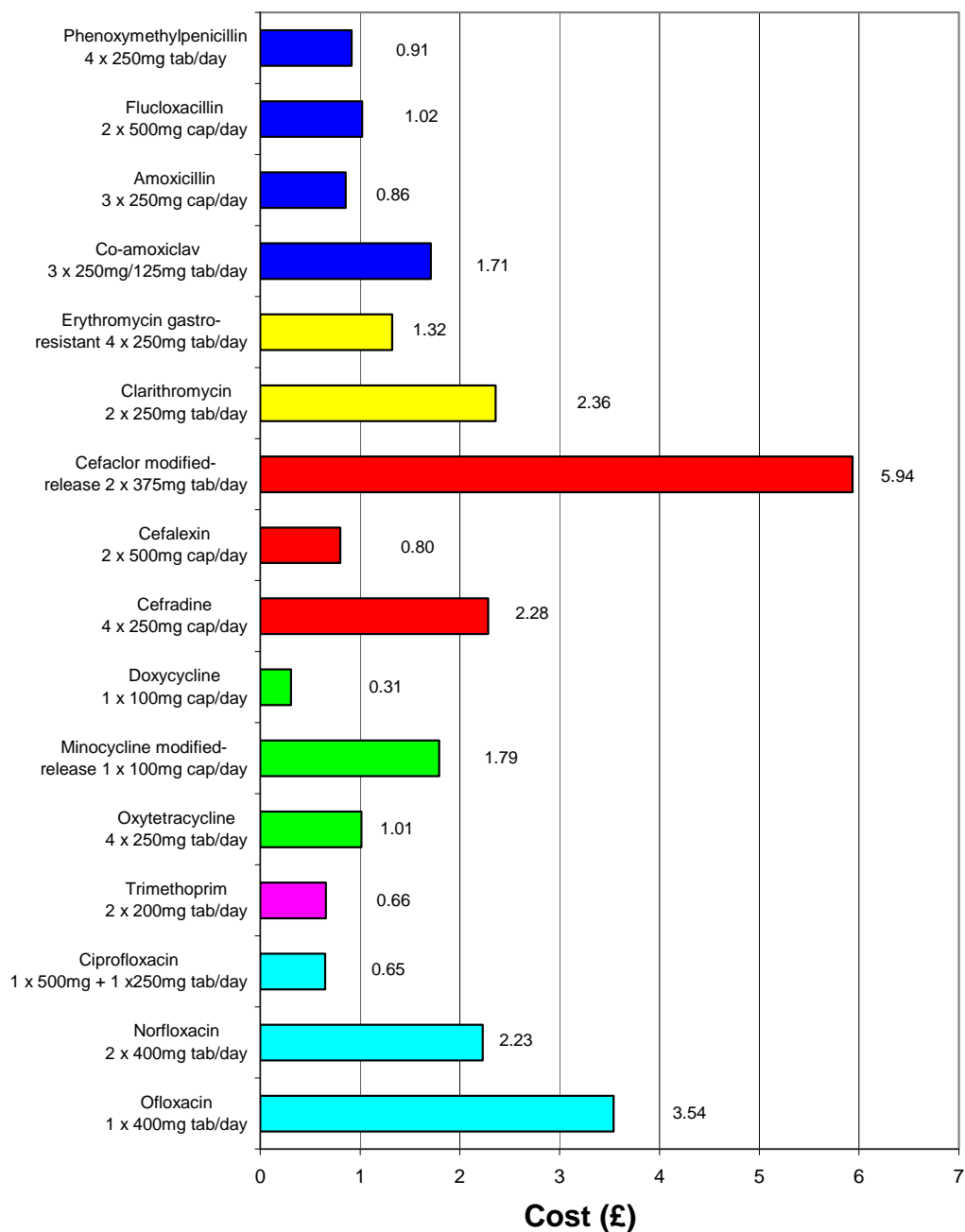
Cephalosporin prescribing and spending has decreased by 21% and 35%, respectively (2.5 million items, £8.8 million) over the last five years. Cefalexin accounts for 1.9 million items and £4.4 million, year to September 2009, showing a decrease of 7% and 26%, respectively over the last five years. Cefaclor accounts for 224,000 items (£1.8 million) year to September 2009 showing a decrease of 57% and 53%, respectively over the last five years.

Tetracycline prescribing has increased by 20% to 3.1 million items with cost decreasing 20% to £20.6 million, year to September 2009. Doxycycline accounts for 1.3 million items (£2.7 million); oxytetracycline for 858,000 items (£3.2 million); lymecycline for 645,000 items (£8.3 million); and minocycline for 234,000 items (£4.4 million). In the last five years prescribing of doxycycline has risen by 58% and costs decreased by 33%; oxytetracycline prescribing fell by 16%, costs rose by 10%; lymecycline prescribing and costs more than trebled; and minocycline items and cost decreased by 48% and 73%, respectively.

Quinolone prescribing has decreased by 8% (to 1 million items) and cost by 77% (to £4.1 million) year to September 2009. Ciprofloxacin accounts for 89% of all quinolone items and 59% of cost (925,000 items, £2.4 million). Over the past five years ciprofloxacin items decreased by 3% and cost fell by 84%. Prescribing of and spending on ofloxacin, levofloxacin and norfloxacin have all fallen over the past five years.

Trimethoprim items and cost increased by 20% and 37% respectively over the past five years (to 3.4 million items, £3.2 million year to September 2009). Co-trimoxazole items increased by 39%, and cost increased by over 160% (to 69,000 items, £890,000).

Cost for 5 Days Treatment



Prices based on Drug Tariff February 2010 and the NHS Dictionary of Medicines and Devices. Dose based on average daily quantities (ADQs). The ADQ is a unit of measurement based on the assumed average maintenance dose in adults. It may not necessarily reflect the actual dose used.

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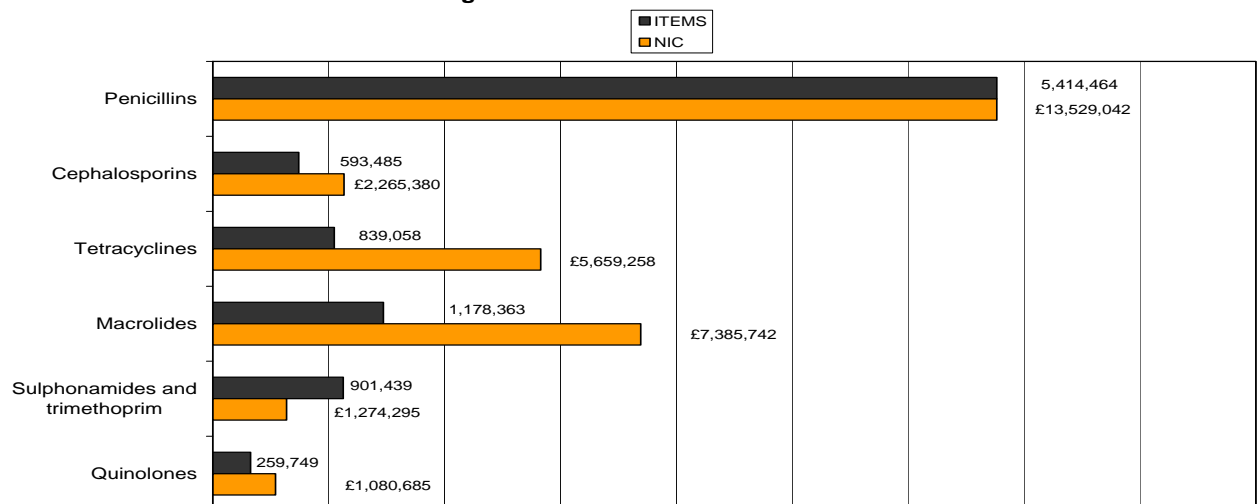
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www.dh.gov.uk/en/Publichealth/Flu/Swineflu/InformationandGuidance/Generalguidance/DH_107926
7. British Infection Society, British Thoracic Society and Health Protection Agency in collaboration with the Department of Health. Pandemic flu: clinical management of patients with an influenza-like illness during an influenza pandemic. *Thorax*. 62 (suppl.1)

SUMMARY

- The prescribing rate of antibiotics in the UK is higher than the rates of prescribing in other northern European countries.
- There is evidence to show that restricting use of broad spectrum antibiotics can reduce *C. difficile* in the community.
- Antibiotics should not be routinely prescribed for respiratory tract infections provided certain exclusion criteria are met.
- During the period of H1N1 pandemic influenza, the DH recommended that antibiotics should be used in selective cases and could be used empirically in those with certain complications.

Prescribing and Spending on Antibiotics excluding Topical Preparations in England for Quarter to December 2009



	Quarter to December 09	
	National	
	ITEMS/1000 PUs	NIC/1000 PUs
Amoxicillin	46.35	£71.06
Co-amoxiclav	7.27	£39.67
Phenoxymethylpenicillin	8.14	£20.23
Flucloxacillin	12.34	£44.76
Erythromycin	10.17	£46.49
Trimethoprim	12.17	£13.51