
EUROPEAN ANTIBIOTICS **AWARENESS DAY 2012** **EVALUATION**

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EXECUTIVE SUMMARY

European Antibiotic Awareness Day (EAAD) takes place on 18th November each year, when Europe-wide activities are undertaken to emphasize the critical importance of responsible antibiotic prescribing. The main aims and objectives of the 2012 activities were to educate and inform patients, healthcare professionals and the general public about the appropriate use of antibiotics and the importance of preventing resistance, and to motivate healthcare professionals to prescribe antibiotics more appropriately with a particular focus on the optimal management of infections in primary and secondary care.

Main Activities were:

- Central provision of educational materials to support local campaigns.
- Promotion of TARGET antibiotic toolkit of educational materials for GPs.
- Continued promotion of Start Smart Then Focus (SSTF) guidance
- Screening of animated antibiotic videos via life channel in GP surgeries.
- Commissioning of editorials in professional journals
- Production of press releases.

Outcomes:

To raise and maintain professional awareness, EAAD featured in 18 editorials in national professional journals, bulletins and magazines (a 31% increase on last year). EAAD also received extensive regional and local media coverage compared to previous years. It appeared for the first time as the 'headline' televised news item across the BBC network (radio, TV and online), and had extensive coverage by ITV news on the morning of EAAD and BBC News interviews with Chief Medical Officer Dame Sally Davies and HPA¹ acting Chief Executive Paul Cosford. Twitter activity was enhanced compared to its use in 2010 and 2011, and the NHS Choices website conveyed a 13% increase in page views compared to the previous year.

A small survey of the respondents in December found that more than 95% of bodies had promoted EAAD locally within their organisations. Many modes of promotion were used with the most popular being the use of DH, materials for displays (78%), key messages (65.2%) and articles in organisation newsletters or websites (65%). Respondents provided feedback on the educational materials that will be used to improve them for 2013.

Plans for EAAD 2013 will use recommendations from this report and aim to build on the most successful aspects of previous years and extend its reach outside the healthcare setting. Our focus will include showcasing case studies of good work and to embed further, the use of SSTF and TARGET as part of our drive to improve antimicrobial stewardship, improve clinical practice and change behaviours.

The evaluation has found that EAAD continues to offer an excellent platform to raise professional and public awareness about antibiotic overuse and resistance development and use of these materials increased. Feedback showed that EAAD and tools such as Start Smart Then Focus can make a real difference to practice and patient outcomes, for example, reducing inappropriate prescribing. Promotion of the case studies in 2013 will encourage others and offer opportunities for increased regional media activities.

Conclusion:

EAAD achieved good media coverage and has had a positive impact.

¹ On 1st April, the Health Protection Agency became Public Health England.

RECOMMENDATIONS

The recommendations for EAAD 2013 are based on the evaluation of the 2012 activities:

- Continue to work with key stakeholders and use the central/national approach to provide materials that can be adapted for local campaigns.
- Streamline the educational materials available, selecting those that were most commonly used and found to be most useful in 2012, and consider re-designing the posters to have a new look for 2013. The proposed resources for 2013 are highlighted in **Annex 13**.
- Build on the media coverage received last year with a focus on the use of local and regional press. Identify and collate list of spokes people for regional and local media. Collate case studies regionally as part of the media pack. Consider developing and delivering a key slogan (single statement) which can be added to all materials.
- Extend the promotion of EAAD to engage our veterinary colleagues and feature EAAD editorials in veterinary journals and magazines with focus on animal keepers.
- The importance of educating the general public was highlighted. Consideration will be given to producing a bank of crosswords/quizzes for use with patients and the general public. Quizzes and crosswords specifically for healthcare professionals will also be considered. In addition to these, consideration of ways to help promote E-bug.

1 INTRODUCTION

1.1 ANTIBIOTIC RESISTANCE

Antibiotic resistance is a global public health issue driven by the over-use of antibiotics and inappropriate prescribing, making available antibiotics less effective and contributing to infections which are hard to treat. The number of infections due to antibiotic-resistant bacteria is growing, and the number of new antibiotics in the pipeline is at an all-time low.

Effective antibiotics have revolutionised many treatments for diseases such as cancer, allowing more aggressive therapy to be used and consequently leading to higher survival rates. Nevertheless, an increase in infections that cannot be treated with antibiotics affects everyone, not just vulnerable groups. Bacterial resistance potentially complicates the management of every infection, no matter how mild they may be at the time of first presentation.

New challenges are emerging especially with the Gram-negative bacteria Enterobacteriaceae (including *Escherichia coli*, *Klebsiella* spp. and related species)^{2,3}.

Antimicrobial Stewardship is organisational healthcare-system-wide approach to promoting and monitoring judicious use of antimicrobials^{4,5}, is essential in both primary and secondary care.

Antimicrobial resistance is now a real threat to global public health. Attention and action is required in both primary and secondary care settings.

Promoting the responsible use of antibiotics is particularly important in primary care; 80-90% of antibiotics are prescribed within primary care settings. Approximately half of these are prescribed for respiratory tract infections. There is documented evidence that the use of antibiotics has limited value for these conditions, potentially leading instead to adverse effects, increased consultations with doctors, increased cost, and risk of resistance.^{6,7}

Controlling antibiotic prescribing in secondary care is also instrumental to reducing antibiotic consumption and healthcare-associated infections (HCAIs). The emergence, spread and selection of antibiotic-resistant bacteria is a threat to patient safety in hospitals because infections with antibiotic-resistant bacteria result in increased patient morbidity and mortality, increased hospital length of stay and cost of care. Patients who are hospitalised have a high probability of receiving an antibiotic (overall prevalence of antimicrobial prescribing from national Point Prevalence Survey in 2011 was 34.7%) and more than 30% of antibiotics prescribed especially for surgical prophylaxis may be inappropriate⁸.

² Livermore DM. Fourteen years in resistance. *Int J Antimicrob Agents* 2012; 39(4): 283–94.

³ Health Protection Agency. HCAI and Antimicrobial Point Prevalence Survey – England. Available from: www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HCAI/HCAIPointPrevalenceSurvey/

⁴ Ridge KW, Hand K, Sharland M, Abubakar I, Livermore DM. Antimicrobial Resistance In Annual Report of the Chief Medical Officer. Volume Two, 2011. Infections and the rise of antimicrobial resistance CMO Report <http://www.dh.gov.uk/health/2013/03/cmo-vol2/>

⁵ Doron S, Davidson LE. Antimicrobial stewardship. *Mayo Clin Proc* 2011; 86(11): 1113–23

⁶ NHS Prescription Services. Antibiotics National Charts 2011.

http://www.nhsbsa.nhs.uk/PrescriptionServices/Documents/PPDPrescribingAnalysisCharts/Antibiotics_National_June_2012.pdf (Last accessed 08 April 2013)

⁷ Cals JWL, Butler CC, Hopstaken RM, Hood K, Dinant GJ. Effect of point of care testing for C reactive protein and training in communication skills on antibiotic use in lower respiratory tract infections: cluster randomised trial. *BMJ* 2009;338:b1374

⁸ English National Point Prevalence Survey on Healthcare-associated Infections and Antimicrobial Use, 2011 <http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/AntimicrobialResistance/HCAIPointPrevalenceSurvey/>

1.2 EUROPEAN ANTIBIOTIC AWARENESS DAY (EAAD)

In recognition of the need for increased public awareness about antibiotic use (and misuse) and to highlight the global dilemmas surrounding antibiotic use, EAAD was introduced in 2008, led by the European Centre for Disease Prevention and Control (ECDC) in close collaboration with the World Health Organization (WHO). EAAD aims to establish significant public awareness across Europe on the need to use antibiotics responsibly with a view to controlling the increase in antibiotic resistance. November 18th is the annual designated day for this initiative.

EAAD is a part of the Department of Health's (DH) strategy to tackle antibiotic resistance⁹, as well as part of the implementation plan for EU Recommendation 2002/77/EC¹⁰, on the prudent use of antimicrobial agents in human medicine. This links directly to Ministerial commitment to reduce HCAs overall. This commitment is further demonstrated by the Chief Medical Officers annual report¹¹ and the new UK Antimicrobial Resistance (AMR) Strategy expected during the summer 2013.

A Eurobarometer report⁷ showed that GPs were best placed to convey messages to ensure appropriate use of antibiotics by patients. More than a third of patients who had received information on antibiotics said they changed their views after being advised not to take antibiotics unnecessarily and the majority (90%) said that their most trustworthy source of information was their doctor.

The annual activities run in the UK are one of the reasons why UK public understanding of antibiotics is better than the European average¹². However understanding is not universal and sustained initiatives are required to educate new generations, reinforce messaging and remind the public of this especially as the scale of the problem is growing.

2 AIMS AND OBJECTIVES

Tackling AMR and the associated HCAs remains a key priority for the Department of Health and requires action at central, local and individual levels. To ensure better health outcomes for all, we provide materials centrally, for professionals and the public; to increase awareness and support, and motivate behaviour change.

The main objectives were to:

- Educate and inform patients and healthcare professionals about the appropriate use of antibiotics and reduce expectation of antibiotics for colds and most coughs and sore throats.
- Motivate healthcare professionals to prescribe antibiotics more appropriately.
- Educate and inform patients and healthcare professionals about the importance of preventing resistance to antibiotics.
- Reinforce awareness of this problem as a wider international issue by promoting EAAD.

⁹ UK Antimicrobial Resistance Strategy and Action Plan Department of Health 2000 – http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4007783

¹⁰ http://ec.europa.eu/health/antimicrobial_resistance/docs/amr_report2_en.pdf

¹¹ Annual Report of the Chief Medical Officer. Volume Two, 2011. Infections and the rise of antimicrobial resistance CMO Report <http://www.dh.gov.uk/health/2013/03/cmo-vol2/>

¹² Antimicrobial Resistance Report – Special Eurobarometer 338/Wave 72.5 – TNS Opinion and social

3 METHODS AND ACTIVITIES

3.1 TARGET AUDIENCE

The target audience for this activity were:

- Front line prescribing healthcare professionals including GPs, hospital doctors, pharmacists and nurses.
- Patients – in particular parents of young children as they are most likely to press for antibiotics.

3.2 KEY ACTIVITIES

A programme of activities took place between September 2012 and November 2012 (see **Annex 1**). Previously developed educational materials were made available centrally for use in local campaigns. Health professionals, partner organizations and professional bodies were alerted through an electronic letter from DH and signposted to where information was available to download and where to request hard copies (see **Annex 2** for full distribution list).

In addition to the educational materials. For EAAD 2012, a primary care educational toolkit (TARGET) was developed by the Health Protection Agency in collaboration with several other professional bodies (the Antimicrobial Stewardship in Primary Care (ASPIC) Collaboration). It is hosted on the Royal College of General Practitioners website. The Start Smart Then Focus guidance published in 2011 was further promoted, editorials were commissioned, animated videos were shown through life channel and press releases issued.

3.3 COST

The final Department of Health budget for EAAD 2012 activities was £13, 000 (a 50% reduction from 2011). This was mainly used for the reprinting, storage and distribution of materials. All other publicity and awareness raising was achieved without cost to the Department of Health. The cost of hosting the TARGET antibiotic toolkit on the RCGP website is £10,000 (paid by the Health Protection Agency)

3.4 KEY OUTPUTS AND OUTCOMES

Examples of press releases, appearance of EAAD in hospital bulletins/staff pages/websites, public awareness displays, twitter pages, press cuttings etc. are summarized in **Annex 7** - Review of EAAD 2012.

3.4.1 Educational Materials

EAAD educational materials that had been positively evaluated previously were hosted centrally on the DH's website. Having the materials centrally available helped to make the messages more recognisable and consistent. These included a hard copy of the posters and a leaflet used in previous campaigns and were available to order from DH publications. All other materials were downloadable. (see **Annex 3** for the full list of all materials available on the website).

➤ **Leaflet and Posters**

A variety of hard copy materials (posters and leaflet) used in previous campaigns were reused. Materials had been positively evaluated and were widely used the preceding year.

A total of 86,420 leaflets and 9,258 posters were disseminated via DH publications between September and December 2012. Of these, 183 GP surgeries ordered a total quantity of 16,712 materials, 52 PCTs ordered 55,244 materials and 37 acute NHS trusts and organisations ordered 4,857 materials. This represents a higher demand (8%) for orders of printed leaflets, but lower demand for posters (28%) in comparison to 2011.

➤ **Videos**

The animated video promoting responsible antibiotics to patients and the public were made available via Life Channel for 4 weeks around EAAD. They were also available on YouTube, DH website and NHS Choices. The uptake/use of these videos are discussed in the relevant sections.

➤ **TARGET antibiotic toolkit**

The TARGET antibiotic toolkit was produced by the Health Protection Agency (Public Health England [PHE] as of 1st April 2013) and the Antimicrobial Stewardship in Primary Care (ASPIC) Collaboration of professional societies including BSAC and BIA. It is hosted on the Royal College of General Practitioners (RCGP) website

The TARGET antibiotic toolkit comprises:

- Clinical resources - including presentation template, clinical courses and links to useful web pages
- Patient resources - including self-management antibiotic information leaflets and posters; a set of information leaflets for parents including the 'When should I worry' booklet
- Audit templates for throat infection and UTI
- A GP self-assessment checklist on antimicrobial stewardship

Between 1st November 2012 and 7th April 2013, there have been 18,588 unique page views of the TARGET website. A full web log graph for the TARGET website is shown in **Annex 4**.

3.4.2 Editorials

Editorials were used to raise and maintain professional awareness. Eighteen articles were published in a variety of journals that reached out to wide range of professionals in the healthcare field (see **Annex 5** for list of the 18 published editorials). The number of articles published is more than 30% increase in number compared to 2011.

3.4.3 Promotion via National and Local Organisations

At least eighteen professional bodies, hospitals, PCTs and other organisations promoted EAAD (see **Annex 6** for list of professional bodies who participated in EAAD activities). In 2013, we will aim to build and increase coverage of EAAD on professional body websites.

See **Annex 6** for list and **Annex 7** for examples of the news items of the websites.

DH Website

The antibiotic stories on www.dh.gov.uk generated an average of 350 page views per day from 10th November 2012 to 24th December 2012, with the highest page view on 16th November – 1,886 page views. These represent a significant increase (71%) from 2011. See **Annex 8** for further details.

NHS Choices

The NHS Choices website, which is aimed at patient education, showed that between 4th November and 31st December 2012 there had been 13,421 views of EAAD pages. In comparison, the total page views for the same period in 2011 was 9,178, representing a 46% increase in 2012. See **Annex 2** for more information.

3.4.4 Media

Press Releases

The following organisations produced press releases:

- Department of Health
- Health Protection Agency
- European Centre for Disease Prevention and Control
- Royal College of General Practitioners
- National Pharmacy Association
- Local hospitals, PCTs, NHS authorities and trusts

The HPA provided four specific press releases to promote EAAD to both professionals and the public between 14th and 16th November 2012¹³.

National Media

For the first time ever EAAD received televised promotion on national news channels. Many national newspapers and websites ran articles related to the topic on the day, although not directly promoting EAAD, they raise awareness of the issue to the public eye (see **Annex 7** for examples):

- *Newspapers:* Daily Mail, The Paper for Today, Metro, The Daily Telegraph, The Independent
- *Websites:* BBC news website, National papers websites – Guardian, Express; ITV news (eight news items)
- *News Channels:* televised items on EAAD: BBC News and Sky News– leading news with Chief Medical Officer (Sally Davies)^{14,15}, ITV News – three televised items – Daybreak Nick Dixon, Daybreak's health editor Dr Hilary Jones and Dr Paul Cosford (acting Chief Executive of the HPA)¹⁶;

¹³ <http://www.hpa.org.uk/NewsCentre/NationalPressReleases/2012PressReleases/>

¹⁴ <http://www.bbc.co.uk/news/health-20353684>

¹⁵ <http://news.sky.com/story/1012134/antibiotics-resistance-a-growing-health-threat>

¹⁶ <http://www.itv.com/news/story/2012-11-16/antibiotics-nhs-cough-cold-flu-routine-infections-resistance/>

The story was prominent on the BBC news and website throughout the day and it was the leading 'health story' for the whole day. It also appeared on the health pages for a few days afterwards. Links to watch the televised interviews are available in **Annex 9**.

Regional Media

Information on EAAD also reached the media on a regional level, mainly due to a press release about TARGET. In 2013, local/regional level coverage could be improved by coordinating spokespeople early and identifying case examples: (*also see Annex 7*).

Social Media

○ Twitter

The Department of Health, HPA, several NHS trusts, organisations, companies and professionals promoted EAAD through twitter, generating discussions amongst both professionals and the general public. It was noted that tweets generated through social media channels such as BBC news and Euronews raised much awareness and discussion with the public (*see Annex 7 for examples of tweets*). Twitter activity was enhanced in 2012 in comparison to the previous years.

○ YouTube

There was a significant increase in the number of views of the animated antibiotic videos compared to the same period last year. The total number of views for the various videos until 31st December 2012 (compared to the same period in 2011) are as follows:

- Video: When you're ill you'll do anything to feel better – 643 (50) views
- Video: Sick as a parrot? – 710 (99) views
- Video: Looking for a purrfect remedy for your cough - 565 (50) views
- Video: Don't get prickly if your doctor won't prescribe you antibiotics – 1,159 views
- Video: Feel like a lame duck? – 729 (65) views

The higher view of the video 'Don't get prickly if your doctor won't prescribe you antibiotics', is likely to be due to the fact that the DH tweeted this video, this shows the importance of social media in getting the message across.

3.4.5 Meetings for Professionals

The National Centre for Infection Prevention and Management at Imperial College London hosts a study day each year to coincide with EAAD. Now in its third year, this study day focused on the important role nurses have to play in antimicrobial management as a core aspect of patient safety and quality improvement. The study day this year continued to focus on the approaches and importance of multidisciplinary work.

3.4.6 Educating Children – E-bug

The e-Bug project is led by the HPA's Primary Care Unit in England and involves a consortium of 28 international partner countries. It is available from <http://www.e-bug.eu/>

Every year, a competition is run by the E-bug team as part of awareness raising for EAAD. In 2012, the competition was for school children to draft a storyboard for a short film. Students at the Ideas Foundation summer media camp for young people drafted and produced a film which was added to the website. A competition will be held in 2013, probably on a teaching plan about antibiotics.

3.4.7. Educating patients and adults - Life Channel videos

Life Channel is a screen-based communication network in GP practices. According to the company, it reaches over 9.9 million viewers each month through 1, 881 screens (21%) in England. The previously developed and evaluated animated video adverts promoting responsible use of antibiotics were screened through television screens in GP surgeries for a period of four weeks straddling EAAD. A small patient evaluation survey showed that this was not an effective approach. (see **Annex 10**).

3.4.8 Educating the General Public

Although EAAD materials were also made available on public facing websites and EAAD received widespread national television coverage in 2013; there was no specific activity to focussing the general public who did not access the healthcare system around EAAD 2012. We will aim to consider ways to achieve this.

3.5 SURVEYS

3.5.1. Start Smart - then Focus (SSTF) Guidance - Evaluation of implementation across the NHS

The Start Smart then Focus (SSTF) antimicrobial stewardship guidance published in November 2011 <https://www.gov.uk/government/publications/antimicrobial-stewardship-start-smart-then-focus> has been well received.

A recent survey has shown that implementation of SSTF has helped improve antimicrobial stewardship practice in hospitals¹⁷. Having effective leadership from hospital antibiotic pharmacists and microbiologists to champion. Seventy-five Acute Hospital Trusts responded to a survey on the implementation of the SSTF. Of those who had formally or informally assessed the programme, 65-75% said it had led to a reduction in the use of broad spectrum agents and a 77- 85 % reduction in inappropriate prescribing.

3.5.2. Survey of Professional bodies and NHS on EAAD Activities and Planning

A survey to capture EAAD 2012 feedback was sent out in December 2012 post EAAD activities, to the ARHAI antimicrobial pharmacist network and professional bodies/organisations. This revealed the following results:

- More than 95% of hospitals and PCT's that responded (n=46) promoted antibiotics awareness day locally within their organisations/trusts.
- The majority focused on public and healthcare awareness using DH materials for displays (65.2%).
- 76.1% published articles in their organisation's newsletter or website.
- 50% of the pharmacists sent emails to prescribers to encourage and inform them about the importance of responsible antibiotics awareness using the materials provided (see **Annex 11, Chart 2**).
- **Secondary Care** - The most common materials utilized were DH Key Messages (65.2%); posters (52.2%), Start Smart the Focus Antimicrobial Stewardship Guidance

¹⁷ Howard et al 2012. Global Antimicrobial Stewardship Survey – Interim analysis of UK results
<http://www.hisconference.org.uk/documents/FISHIS2012AbstractContents.pdf>

(50%); secondary care prescriber's checklist (47.8%) and ECDC secondary care factsheet (41.3%). The posters and secondary care prescriber's checklist were also thought to be the *most useful materials* (see **Annex 11, Charts 3 and 4**)

- **Primary care** - The posters, leaflet "Get well soon without antibiotics", ECDC primary care factsheet and DH key messages were reported to be the most useful materials.
- **Professional bodies and organisations** - The most common modes of promotion used were the publication of articles in organisation websites (The DH key message document appeared to be the most common material used alongside leaflets and web based materials which were published on the websites allowing the message to get across nationally).

Feedback

Positive feedback was obtained on the value of the EAAD materials.

For example:

- Availability of EAAD materials and letters earlier than previous years helped with plans locally.
- Several Trusts were able to adapt the resources provided for other uses such as antibiotic quizzes for healthcare professionals and local schools.

(also see **Annex 11** for more comments):

There were also suggestions on how EAAD could be improved for 2013. These included:

- Having a key slogan (single statement) to be added to all the materials
- A word document template for each Trust to insert own antibiotic standards but also linking into EAAD
- Provision of videos that get the message across without audio
- Crosswords and quizzes
- Better lay press coverage for the general public (not patients) is needed. Suggested Press Release template that can be used locally
- More reminder mechanisms in run up to the day
- A bank of ideas and photos of initiatives from other organisations
- Increased engagement with Mental Health Trusts, Private Healthcare and Community Pharmacies.

EAAD activities contributed to positive outcomes in the NHS as these case studies illustrate:

- *"Due to improved antimicrobial stewardship we have seen improved compliance with antimicrobial prescribing guidelines/ justified prescribing to > 90% Trust wide. Improved documentation of antibiotic prescribing from approx 40% to 70% or more. Although multifactorial we have seen marked reductions in CDI rates within the Trust. I have run charts of the above. Includes data from monthly point prevalence studies from June 2010 onward which can be split by ward or speciality. (Approx 100 to 150 prescriptions per month audited)" (South West Region, England)*
- *"We have an active antimicrobial stewardship programme, mainly run by my antibiotic pharmacist and me. With number of antibiotic awareness promotion events in recent past in my trust we managed to get a high awareness on the anti microbial management group which oversee the overall antimicrobial usage in the trust. Compared with 2006, when I joined the trust, now we see a big overall decrease in antibiotics usage specially on the restricted antibiotics (4th gen fluoroquinolones and 3rd gen cephalosporines). We have very good progress on the cquin on antimicrobial stewardship in the trust". (West Midlands Region, England).*

4 DISCUSSION

EAAD continued to receive strong support by both professional bodies and NHS trusts and was promoted effectively locally, increasing public awareness and professional understanding.

Wide coverage was achieved especially good media coverage occurred in 2012. Editorials were published in professional journals.

The evidence gathered as part of this evaluation indicates the extent to which the objectives for EAAD 2012 were achieved. The plan to deliver a 10% increase in all outputs from 2011 was exceeded (see **Annex 12**).

Feedback from users including cases studies shared showed that this national initiative was crucial in supporting local campaigns and that implementation of national guidance and carrying local activities for EAAD can make a significant difference. The survey of Start Smart Then Focus (SSTF) national antimicrobial stewardship guidance reduced both the use of broad spectrum antibiotics and inappropriate prescribing.

There was positive feedback from users but some felt that new materials and fewer of a higher quality would be better. Users indicated that information on EAAD was available with sufficient time for them. There was also a higher number of unique downloads 116,078 of the materials hosted on the DH website for EAAD. The need for better engagement with regional and local press was highlighted in the feedback as well as the need for generating antibiotic quiz questions for professionals and the public. Feedback also highlighted the importance of regular reminders about EAAD after the letters and material are published.

Recent research by McNulty *et al.* 2013 suggests that a fifth of the public (1,794 adults surveyed via Ipsos Mori in 2011) will contact their GP for Respiratory Tract Infection (RTI) and 97% of those who ask for antibiotics are likely to be prescribed the antibiotics. This highlights the importance of educating the general public to have better understanding about the lack of benefit of antibiotics for most RTIs and provide education which addresses concerns about illness, duration and severity. This is likely to in turn reduce GP consultations and antibiotic prescriptions for RTI.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

EAAD 2012 achieved good media coverage and had a positive impact. The evaluation has found that EAAD continues to offer an excellent platform to raise professional and public awareness about antibiotic overuse and resistance development. Feedback and case studies reported showed that EAAD and national guidance tools such as SSTF can make a real difference to practice and patient outcomes, for example, reducing inappropriate prescribing. Plans for EAAD 2013 will build on 2012 success. Promotion of the case studies in 2013 will encourage others and offer opportunities for increased regional media activities.

5.2 RECOMMENDATIONS

The recommendations for EAAD 2013 are based on the evaluation of the 2012 activities:

- Continue to work with key stakeholders and use the central/national approach to provide materials that can be adapted for local campaigns.
- Streamline the educational materials available, selecting those that were most commonly used and found to be most useful in 2012, and consider re-designing the

posters to have a new look for 2013. The proposed resources for 2013 are highlighted in **Annex 13**.

- Build on the media coverage received last year with a focus on the use of local and regional press. Identify and collate list of spokes people for regional and local media. Collate case studies regionally as part of the media pack. Consider developing and delivering a key slogan (single statement) which can be added to all materials.
- Extend the promotion of EAAD to engage our veterinary colleagues and feature EAAD editorials in veterinary journals and magazines with focus on animal keepers.
- The importance of educating the general public was highlighted. Consideration will be given to producing a bank of crosswords/quizzes for use with patients and the general public. Quizzes and crosswords specifically for healthcare professionals will also be considered. In addition to this, consideration of ways to help promote E-bug.

EAAD 2012 EVALUATION

ANNEX

ANNEX 1

Summary of Main Activities that Took Place around EAAD 2012

ARHAI led sub-group of professional bodies agreed range of educational materials that could be used for local campaigns. Health professionals, partner organizations and professional bodies were alerted through an electronic letter from DH and signposted to where information was available to download and where hard copies requested.

The main activities and materials made available were:

1. **Letters:** Letters signposting users to EAAD materials were distributed by DH to NHS (primary and secondary care) via Chief Executives and other bulletins. The materials were also available through links on NHS choices.
2. **Videos:** The previously evaluated animated antibiotic resistance videos were available through Life Channel to GP surgeries, YouTube and NHS Choices.
3. **Social Media:** DH Twitter generated discussion amongst professionals and the general public.
4. **TARGET[™]:** The Royal College of General Practitioners in collaboration with several professional bodies launched the TARGET toolkit on antimicrobial stewardship for primary care.
5. Professional bodies alerted members to EAAD and associated materials.
6. **Editorials:** Through personal approaches to journals at least 18 articles were published to raised awareness of EAAD.
7. Press releases issued for EAAD.
8. **E-Bug:** A film designed by school children and their peers was developed.

ANNEX 2

Professionals Bodies and Stakeholders (non NHS) Distribution List

As well as the NHS (primary and secondary care), the letters signposting to educational materials were circulated via email to healthcare professionals and several professional and regulatory bodies. These included:

1. Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI)
2. ARHAI Antimicrobial Pharmacists Network
3. Association of Anaesthetists of Great Britain and Ireland (AAGBI)
4. British Infection Association (BIA)
5. British Medical Association (BMA)
6. British Medical Journal (BMJ)
7. British Orthopaedic Association (BOA)
8. British Paediatric Allergy Immunology and Infection Group (BPAIIG)
9. British Pharmacological Society (BPS)
10. British Society of Antimicrobial Chemotherapy (BSAC)
11. British Veterinary Association (BVA)
12. Care Quality Commission (CQC)
13. Chartered Society of Physiotherapists (CSP)
14. Company Chemists Association
15. Department for Environment, Food and Rural Affairs (DEFRA)
16. European Antibiotic Awareness Day (EAAD) Subgroup
17. Faculty of General Dental Practice (FGDP)
18. Health Protection Agency (HPA)
19. Healthcare Infection Society (HIS)
20. Infection Prevention Society (IPS)
21. National Institute for Health & Clinical Excellence (NICE)
22. National Pharmacy Association (NPA)
23. Northern Ireland Antimicrobial Pharmacist's Network
24. Patient's Association
25. Royal College of General Practitioners (RCGP)
26. Royal College of Midwives (RCM)
27. Royal College of Nursing (RCN)
28. Royal College of Paediatrics and Child Health (RCPCH)
29. Royal College of Pathologists (RCPATH)
30. Royal College of Physicians (RCP)
31. Royal College of Surgeons of England (RCS(ENG))
32. Royal Pharmaceutical Society (RPS)
33. Scottish Antimicrobial Prescribing Group
34. Scottish Intercollegiate Guidelines Network (SIGN)
35. Society of Chiropodists and Podiatrists (SCPOD)
36. United Kingdom Clinical Pharmacists Association – Infection Management Group (UKCPA-IMG)

ANNEX 3

List of Educational Materials made available centrally on the DH Website

Key messages on antibiotic resistance

Antibiotic resistance Department of Health key messages

Posters and leaflet

There were 3 posters and a leaflet:

- Poster: Antibiotics will not get rid of your cold
- Poster: Antibiotics won't help your defenses
- Poster: If a cold is making you feel under the weather, antibiotics aren't going to help
- Leaflet: Get well soon without antibiotics

Resources for use in primary care

Antibiotic awareness videos

Short video clips providing a light-hearted way of reminding people to take care, not antibiotics for use in GP surgeries and other waiting areas.

- Video: When you're ill you'll do anything to feel better
- Video: Sick as a parrot?
- Video: Download Looking for a purrfect remedy for your cough
- Video: Don't get prickly if your doctor won't prescribe you antibiotics
- Video: Download Feel like a lame duck?

Posters, leaflets and factsheets

- Primary Care factsheet – Antibiotic resistance factsheet for primary care prescribers and managers
- Centre piece poster – GP surgeries and clinics: A centre piece poster (with EAAD logo) that can be used for public awareness display boards in GP surgeries and clinics)

New resources for 2012

The following new resources which were developed in 2012:

- Website banner for primary care – this promotes the 'TARGET antibiotics' website
- The Antimicrobial Stewardship in Primary Care (ASPIC) Collaboration Toolkit
'TARGET Antibiotics' is available on the Royal College of General Practitioners website

Resources for use in secondary care

- Antibiotic awareness videos – the antibiotic awareness videos were also available for download for use within secondary care
- Secondary care factsheet – aimed at hospital prescribers and managers detailing main issues surrounding antibiotic resistance

-
- Secondary care prescribers checklist – A useful reminder for hospital prescribers of the main considerations for responsible prescribing
 - Centre piece poster – hospital staff and patients: A centre piece poster (with logo) that can be used for public awareness display boards in hospitals.
 - Website banner- Photoshop version
 - Website banner- Adobe Illustrator version
 - DH/ARHAI guidance on antimicrobial stewardship: Start smart – then focus

Other useful links were also highlighted:

- Letters to the NHS about European Antibiotic Awareness Day.
- E-Bug – the educational tool about infections for schools
- European Centre for Disease Prevention and Control EAAD website
- NHS Choices website - which provides information for patients and the public
- Patient.co.uk - which provides some useful information on antibiotic

ANNEX 4 – web analytics of TARGET website



[Go to this report](#)

http://www.rcgp.org.uk - http://www.rcgp.org.uk
www.rcgp.org.uk [DEFAULT]

Pages

Pages are grouped by Page

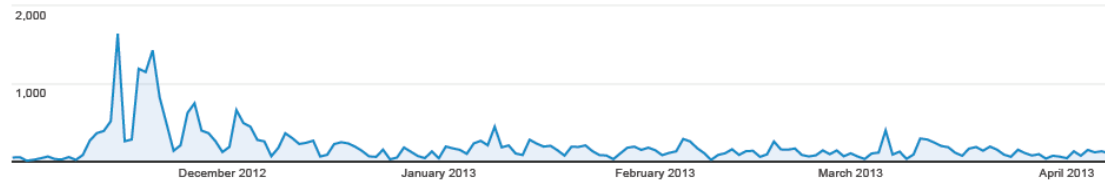
Nov 1, 2012 - Apr 7, 2013

● % of pageviews: 100.00%

Explorer

Site Usage

● Pageviews



Pageviews

31,259

% of Total: 0.94%
(3,321,215)

Unique Pageviews

18,568

% of Total: 0.74%
(2,500,616)

Avg. Time on Page

00:01:00

Site Avg: 00:01:14
(-18.82%)

Entrances

6,002

% of Total: 0.49%
(1,222,750)

Bounce Rate

36.25%

Site Avg: 64.48%
(-43.77%)

% Exit

21.00%

Site Avg: 36.82%
(-42.97%)

Page Value

£0.00

% of Total: 0.00%
(£0.00)

ANNEX 5

List of Editorials Published for EAAD 2012

Editorials were used to raise and maintain professional awareness. Eighteen editorials were written to make professionals aware of EAAD:

1. McNulty CA. European Antibiotic Awareness Day 2012: general practitioners encouraged to TARGET antibiotics through guidance, education and tools. J Antimicrob Chemother. 2012 Nov;67(11):2543-6
2. Stockley JM_European Antibiotic Awareness Day 2012: getting smart about antibiotics, a public-professional partnership. J Infect. 2012 Nov;65(5):377-9
3. Moore, M; McNulty, C European Antibiotic Awareness Day 2012: TARGET antibiotics through guidance, education, and tools British Journal of General Practice, Volume 62, Number 605, December 2012 , pp. 621-622(2)
4. Fleming N and Dhillon H. Resisting resistance. Chemist and Druggist 08 Nov 2012 Available at:http://www.chemistanddruggist.co.uk/feature-content/-/article_display_list/14901055/resisting-resistance
5. Dept of Health Bulletins – This week – <http://www.dh.gov.uk/health/2012/09/the-week-issue-265-14-20-september-2012/>
6. Medical Directors' Bulletin - <http://mdbulletin.dh.gov.uk/2012/10/31/eaad-2012/>
7. GP and Practice Team Bulletin - <http://gp.dh.gov.uk/2012/10/30/european-antibiotic-awareness-day-2/>
8. Allied Health Professionals Bulletin <http://ahp.dh.gov.uk/2012/10/23/european-antibiotic-awareness-day/>
9. Chief Nursing Officer Bulletin <http://cno.dh.gov.uk/2012/10/18/european-antibiotic-awareness-day/>
10. Start Smart – Then Focus. *The CNO bulletin*. Issue 104. February 2012. www.dh.gov.uk/cnobulletin
11. E-LFH. European Antibiotic Awareness Day 18 November 2012-Use Antibiotics Responsibly - <http://www.e-lfh.org.uk/latest-news/>
12. FPH Bulletin – Issue 92 – October 2012 <http://www.forwardpublichealth.org.uk/emails/2012/bulletin/oct2012.html>
13. Fry C. Antimicrobial resistance, responsible prescribing - a call to action for nurses. *Journal of Infection Prevention* 2012 13: 182
14. Gallagher R and Storr J. Nurses can lead drive to minimise antibiotic use. *Nursing Standard*. 2012; 27(11): 26-27 Storr J, Gallagher R Cutting levels of antimicrobial resistance. *NursingTimes.Net* 2012; 108 (46): 22-23
15. Storr J. and Gallagher R Boosting antibiotic awareness. *Independent Nurse* November 2012. Available at: <http://www.independentnurse.co.uk/cgi-bin/go.pl/library/articlehtml.cgi?uid=95296;type=Professional> (last accessed 22 April 2013)
16. McNulty C, Guise T, Hand K, Howard P, Dryden M And Cooke J Antimicrobial stewardship in primary care — what are pharmacists doing? *The Pharmaceutical Journal* 10 Nov 2012;289(7731):535
17. Dhillon H New initiatives to reduce antibiotic use *Pharm J* 2012;289(7731):529-530
18. Dhillon H and McNulty C. How can we improve antibiotic prescribing in primary care? *Prescriber* November 2012 www.prescriber.co.uk pg 9-10

ANNEX 6

Promotion via National and Local Organisations

List of websites/publications through which EAAD was promoted:

- Chemist and Druggist
- European Centre for Disease Prevention and Control
- GP Bulletin
- National Electronic Library of Medicines
- National Prescribing Centre
- National Pharmacy Association
- Pharmaceutical Journal
- British Infection Association
- British Society for Antimicrobial Chemotherapy
- Department of Health
- European Public Health Alliance
- Healthcare Infection Society
- Health Protection Agency
- Infection Prevention Society
- National Resource for Infection Control
- NHS Choices
- NHS Comms Link
- World Health Organisation
- Local hospital websites
- PCT websites



Available to Download via [EAAD 2012 Annex 7](#)

ANNEX 8

NHS Choices Website – Web Stats

Chart 1: Chart to Show EAAD Page Views on NHS Choices Website

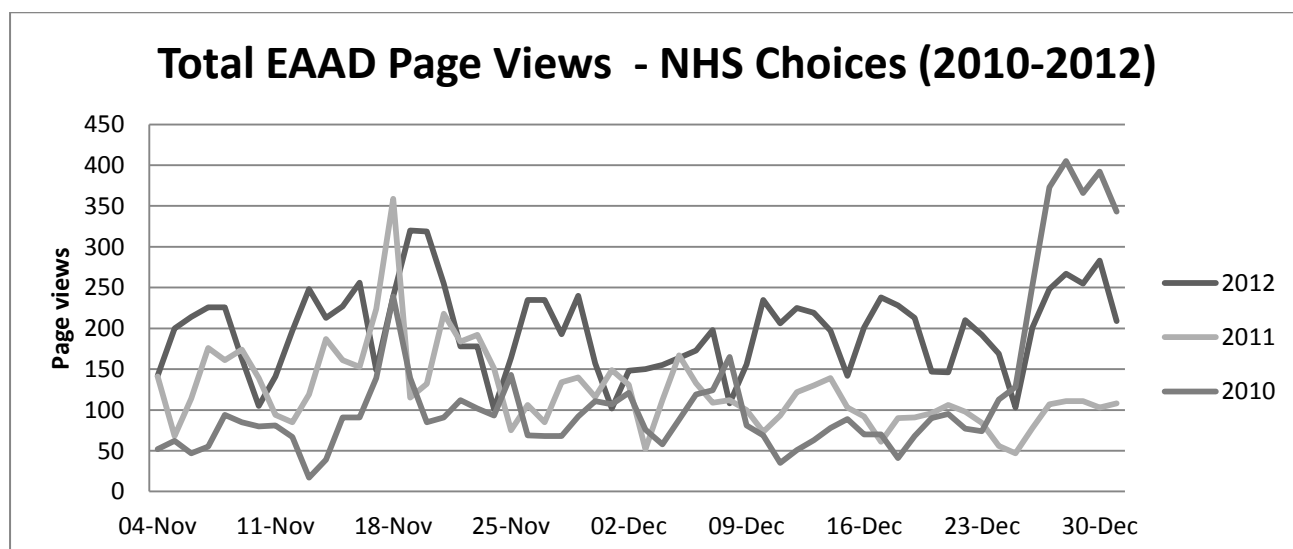
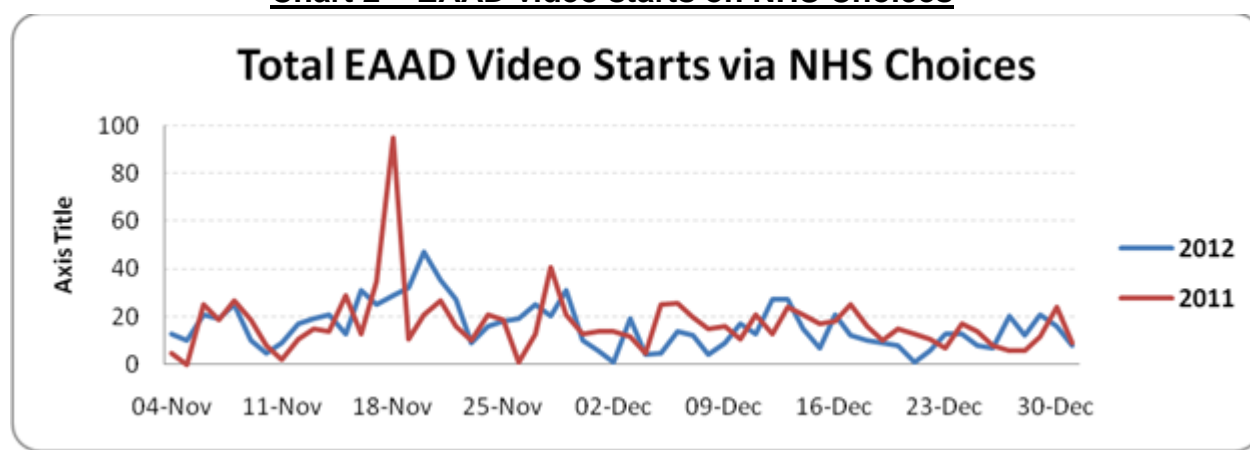


Chart 2 – EAAD video starts on NHS Choices



<http://www.patient.co.uk/health/health-protection-agency-antibiotic-leaflet>

550

<http://www.patient.co.uk/doctor/hpa-antibiotic-prescription>

365

<http://www.patient.co.uk/blogs/sarah-says/2012/11/antibiotics---what-s-wrong-with-just-in-case>

3200

<http://www.patient.co.uk/directory/antibiotics>

140

Annex 9

Televised News Links

The televised news items are available to watch:

BBC news: Interview with the Chief Medical Officer Sally Davies on antibiotics available to watch via <http://www.bbc.co.uk/news/health-20353684> ; This televised item received at least 444 comments on the BBC news website

Sky News - <http://news.sky.com/story/1012134/antibiotics-resistance-a-growing-health-threat>

ITV News - <http://www.itv.com/news/story/2012-11-16/antibiotics-nhs-cough-cold-flu-routine-infections-resistance/>

Life Channel Patient Evaluation

Life channel evaluation

Aims

1. To determine if patients recall the key messages from the life channel animal videos
2. To determine if patient's attitude to antibiotics use has changed as a result of seeing the videos

Methods (see surgery and patient selection flow chart attached).

A pilot questionnaire was tested on a small focus group of four individuals and modified accordingly. It was assumed that video screening in all surgeries was repeated every 20minutes. 9 surgeries in the Birmingham area fell under the following selection criteria

- Showing the life channel videos
- Patient population $\geq 6,000$
- DMI score $\geq 40.1\%$ to include social classes C, D and E.

These surgeries were placed in a random order and approached by life channel until 3 surgeries agreed to participate. Each surgery was visited during normal working hours with the aim of obtaining 151 completed questionnaires by people who recalled seeing the videos. Where appropriate, patients self-completed the questionnaires.

Surgery Observations

- The videos were not played once every 20minutes as was previously assumed or even at regular intervals.
- In some surgeries, the TV wasn't switched on until the interviewers requested. Some patients also commented that the TV is rarely on.
- Patients were seated facing a different direction to the TV.
- Patient calling digital display was placed above the TV therefore interviewers were unsure if patients were actually watching the TV or waiting for their name to be called.
- In one surgery a TV was on but there was no sound

Results

3119 patients in total were observed in 3 surgeries during the research visits. 145 of these patients (4.6%) who appeared to be watching the videos were approached to take part in the study. Of the 145 132 (4.2% of the total 3119 patients observed) actually remembered seeing the video and completed the questionnaires. The results of their questionnaire are summarised in the tables.

Discussion

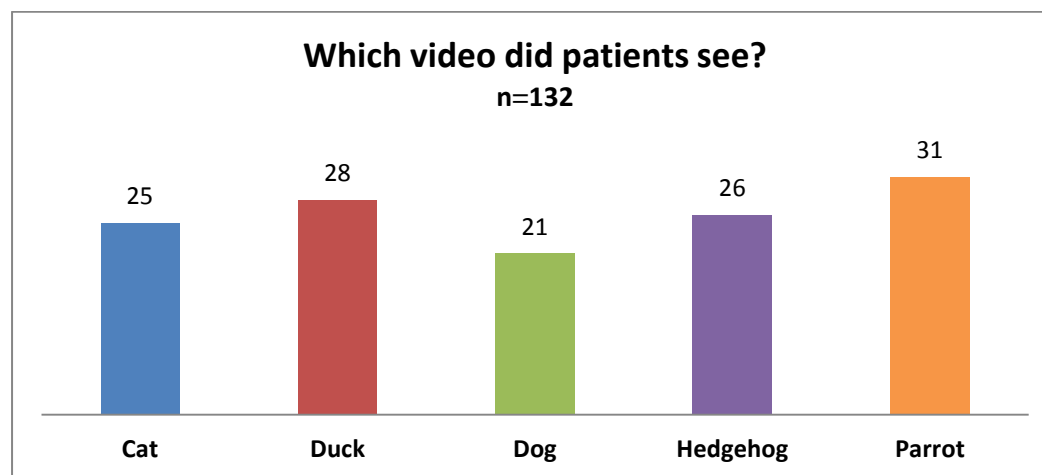
- The results of a very small percentage (4.6%) of patients observed (3119) suggests that about 50% remembered the key messages and almost 60% said that watching the video would positively change their attitude towards seeing a GP for coughs and colds or asking the GP for antibiotics. However, less than 30% stated that watching the video would positively change their attitude towards seeing a GP for coughs and colds or asking the GP when it came to their children.

Based on the results of patient evaluation of the Life Channel Videos, we will not be using Life Channel as part of EAAD 2013, however the educational videos will remain on the Department of Health's website, YouTube and other sources and be available for download.

Participant Information

Sex	Male	74
	Female	58

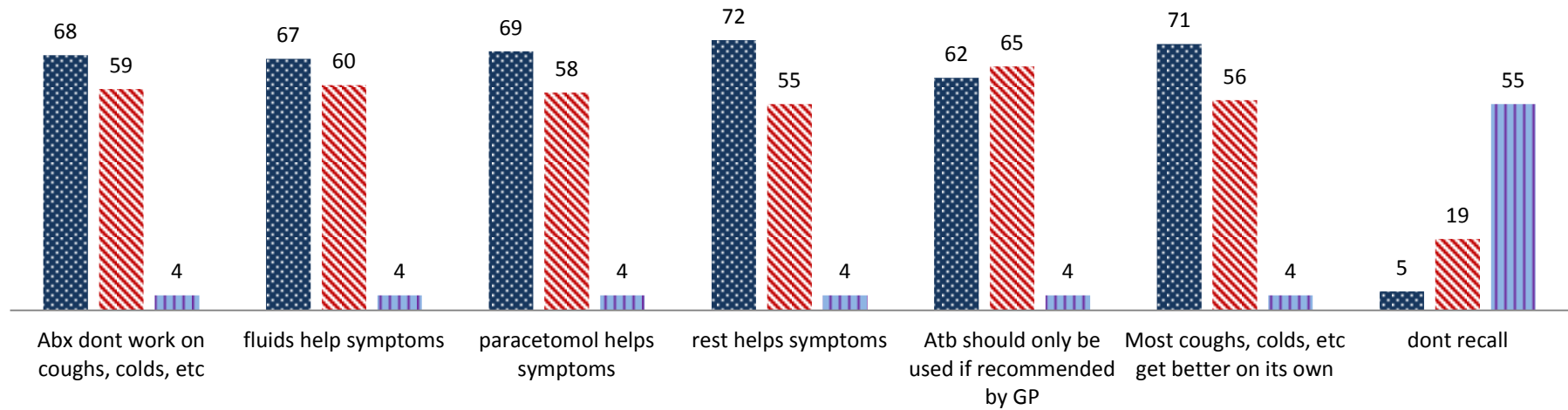
Age	16 – 24	25 – 44	45 – 54	55 – 64	65 – 74	75+	Unknown
	11	44	44	18	8	2	5



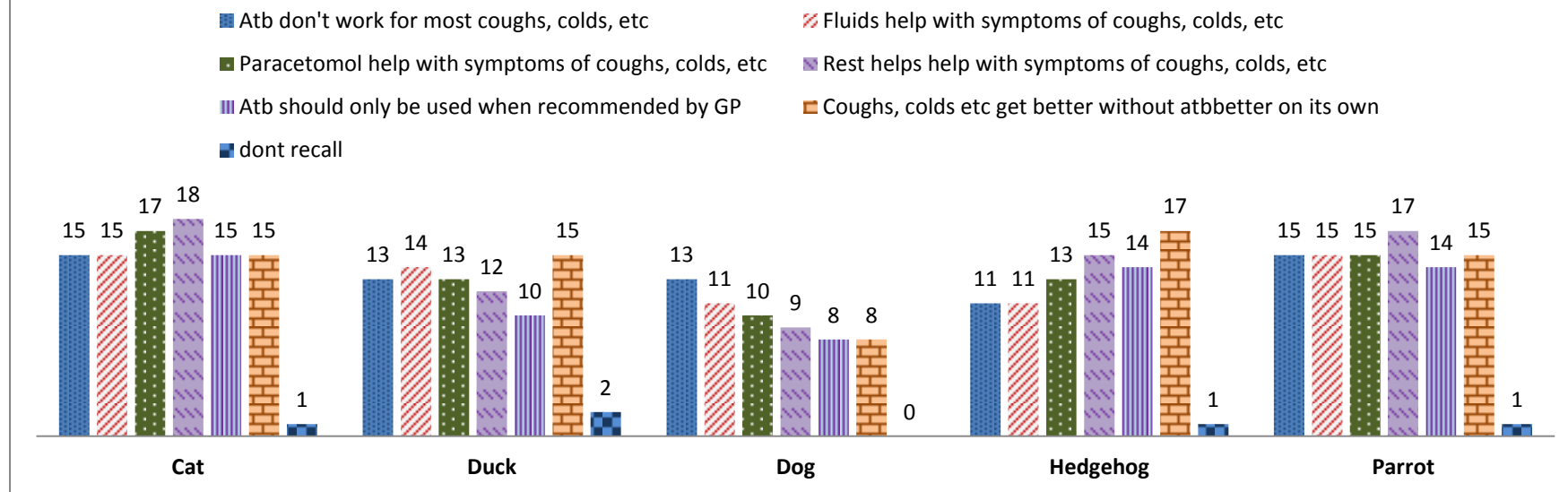
Did patients remember any of these key messages after watching the video

n=132

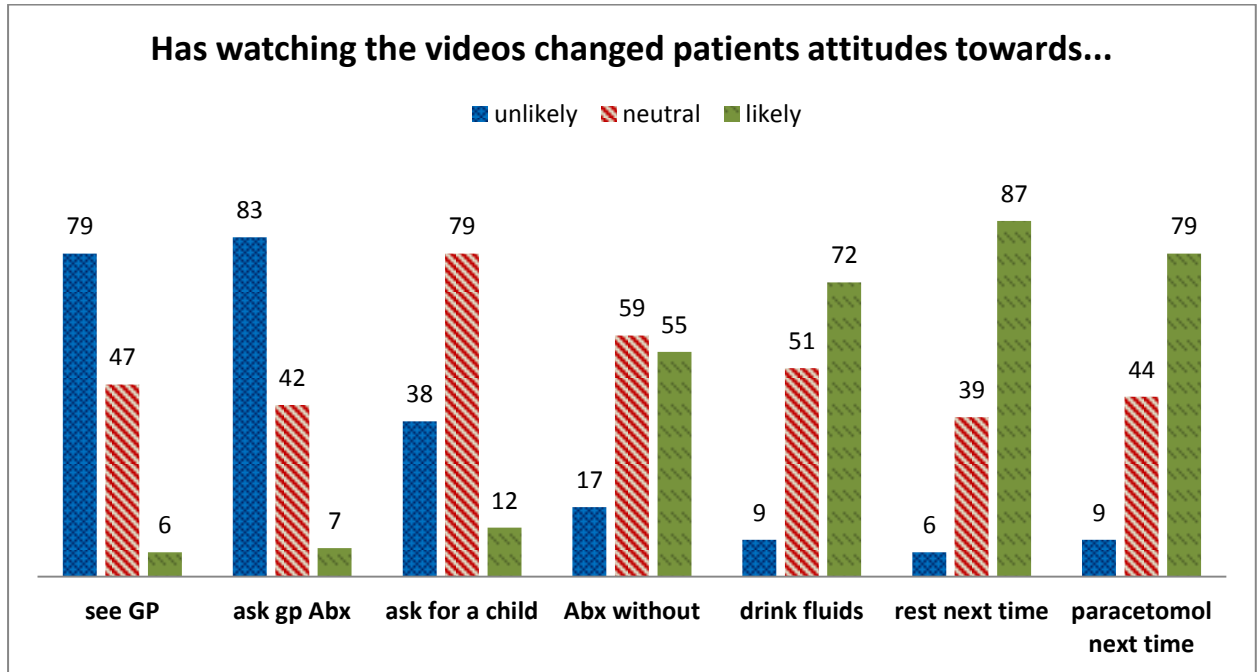
■ yes ■ no ■ blank



Key messages obtained from watching each of the videos, n=132



- Cat : *Don't get scratchy if your doctor doesn't prescribe an antibiotic, antibiotics aren't always the answer. Take a cat nap, paracetamol and plenty of fluids.*
- Duck: *If you have a cough cold or sore throat, don't ask for antibiotics. Use antibiotics only when recommended by a doctor. With rest, paracetamol and plenty of fluids getting better can be like water off a ducks back.*
- Dog: *If you think antibiotics will help with a cough, cold, flu or sore throat, your barking up the wrong tree*
- Hedgehog: *Don't get prickly if your doctor won't prescribe you antibiotics, they don't work for many coughs, colds and sore throats. Try plenty of fluid and paracetamol and curl up and rest.*
- Parrot: *A little bird told me that mst coughs, colds and sore throats nearly all get better on their own. Try rest, plenty of fluids and over teh counter remedies such as paracetamol instead. You should be sitting pretty in no time.*



How can video be improved	no response	105
	bigger screen	9
	bigger text	2
	higher volume	11
	it was boring	5
	add music	1
	make longer	1
	play more often	1

ANNEX 11

Results of Survey on EAAD 2012 Activities

A survey to capture EAAD 2012 feedback was sent out in December post EAAD activities, to the ARHAI antimicrobial pharmacist network and professional bodies/organisations.

The straw poll of the ARHAI antimicrobial pharmacist's network revealed the following results:

Chart 1

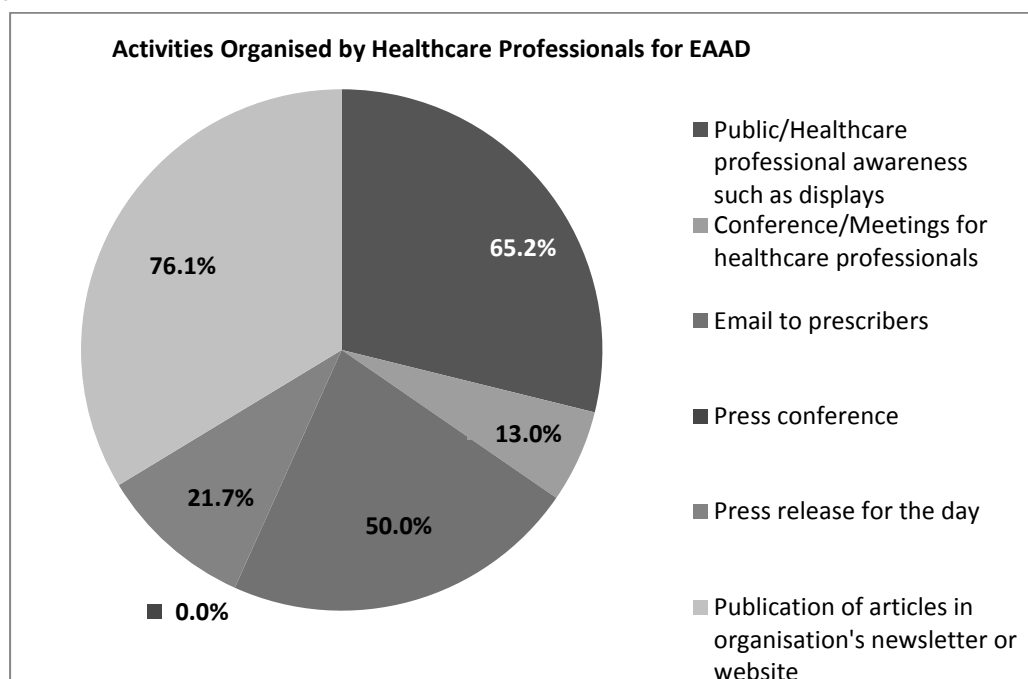
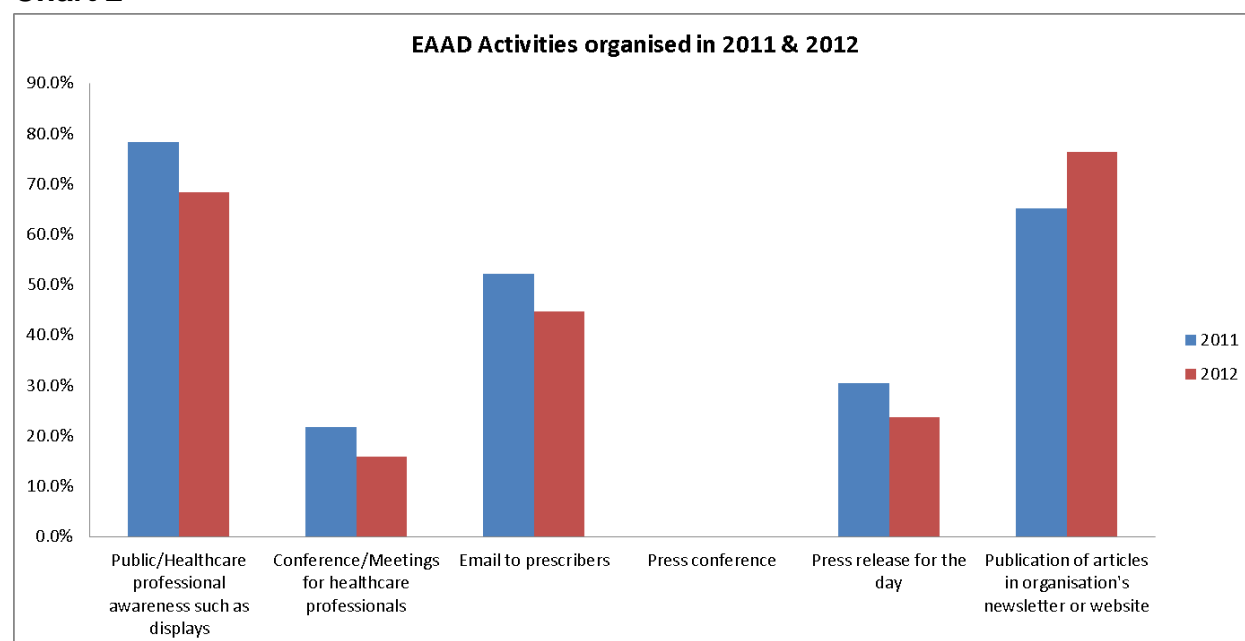


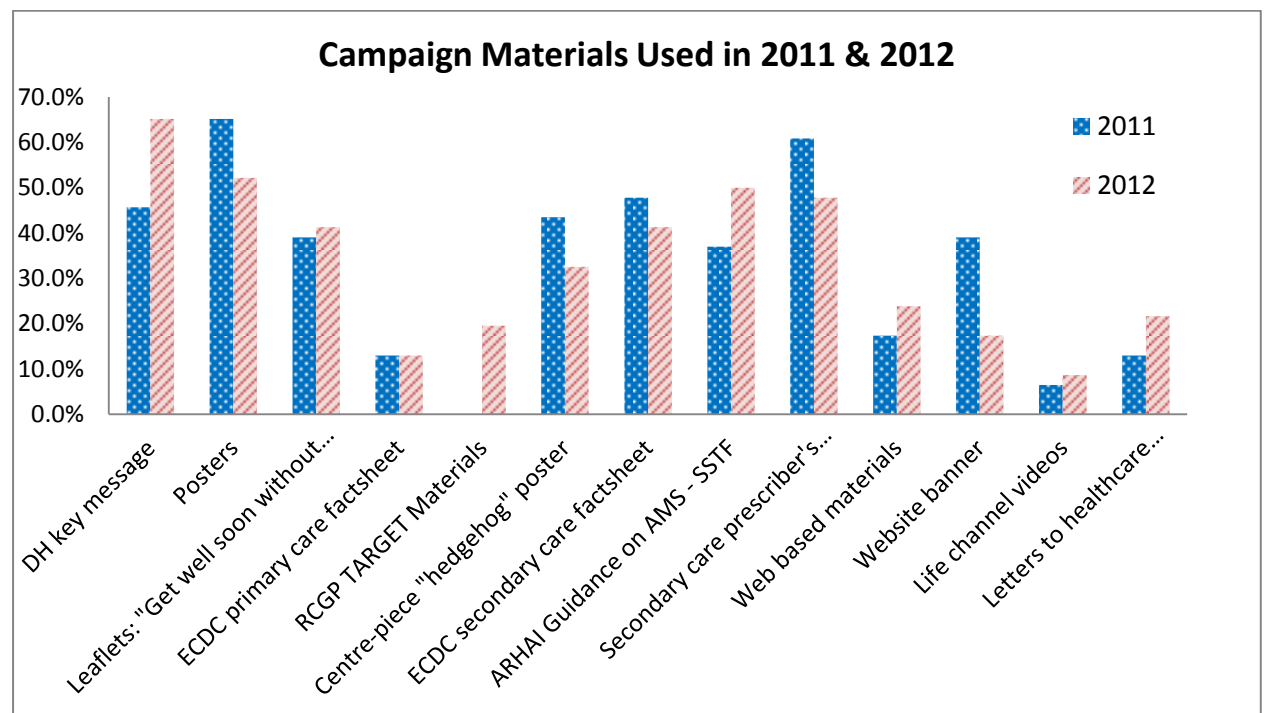
Chart 2



Other activities that were carried out include:

1. Notice on intranet Microbiologist/pharmacist walk around on key wards
2. Launch of new prescribing guidelines and penicillin allergy alert poster
3. Email to network IPC members
4. However a number of veterinary organisations produced a press release or other publication e.g. poster, regarding EAAD and to highlight it. It is anticipated that in 2013 a greater number of activities will be undertaken on the veterinary side to further highlight EAAD.
5. Use hospital electronic prescribing system to raise awareness of key messages of the day and display stand in main foyer.
6. Visit to all acute wards, short presentation delivered an antibiotic stewardship
7. Antibiotic Quiz
8. Screensaver
9. Emailed pharmacists to promote awareness
10. Social media activity leading up to and on the day of launch
11. Presentation to healthcare professionals, display in hospital foyer for public and staff.
12. Mail drop of promotional materials (posters and PIL's) to 97 local chemist contractors and 121 local GP practices. Presentation at local GP clinical forum (TARGET), presentation to acute hospital prescriber clinical forum (START SMART THEN FOCUS)
13. Competition quiz for MKCHS staff, special newsletter to all prescribers in primary care with links to TARGET on RCGP website, educational evening event for pharmacists and their staff, packs given to IPC link people with DoH posters and leaflets to display in patient areas.
14. Videos playing on monitors in in public and staff areas. Display stands manned throughout the day. Leaflets distributed by hand to clinicians and nurses on all wards. We did items for two in-house newsletters, but didn't get around to public press release. Last year we had press in taking photos of our display and interviewing. Note that our stand in hospital atrium was manned by Antibiotic Specialist Pharmacists and Consultant Microbiologists
15. Resources promoted to GPs via lunchtime meeting (arranged with practice anyway.) PHW organised resources for other GP practices.
16. website links. Editorial in Journal of Infection
17. Sent out an antibiotic crossword to all Trust Users
18. Competition for local schools to design a poster. Winning entries displayed at hospital main entrance. Follow-up session in class of winner's school
19. Additional ward rounds Consultant led medication safety ward rounds targeting antibiotic use
20. All information linked on the website for members to use, local branches disseminated information to members. Article published in the November issue of Journal of Infection Prevention

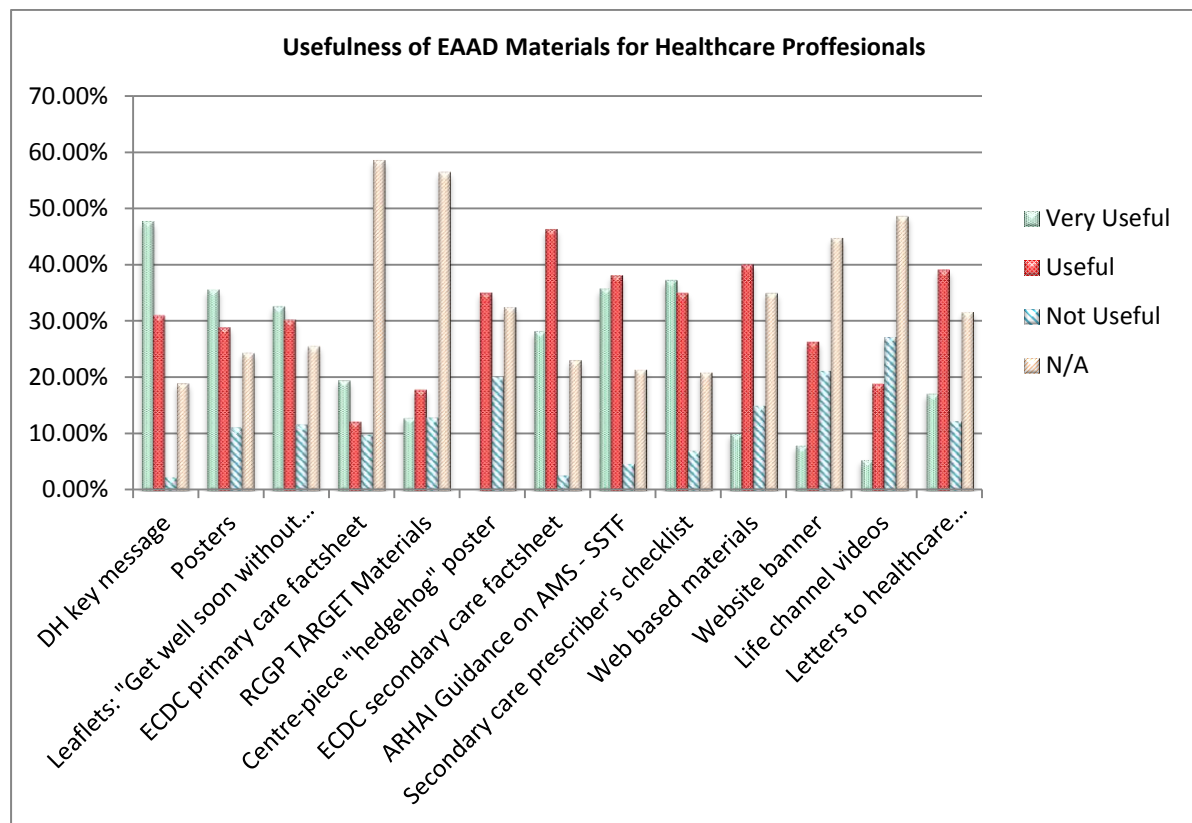
Chart 3



Materials developed locally:

1. Our Comms team produced an article for our weekly newsletter and used a variety of campaign materials - we are a mental health trust so we are somewhere between primary and secondary care so we used both!!
2. Used article in Journal of Antimicrobial Chemotherapy Advance Access effectively and Poster: 'Antibiotics -Worn out wonder drugs?'
3. Resources used were from the Welsh Government website as they must be in dual language to be given to patients. We would have used many more of these resources, including the videos if they were available bi-lingually. We have a Welsh Government version of the secondary care prescriber's checklist in widespread use and didn't overly promote that on the day to avoid biasing the results of our point prevalence study which was going on at the same time. SStF is very useful for organisational direction and explanations but for individual clinicians the checklist is more user friendly.
4. EAAD computer screensaver
5. We created our own posters and have been doing a number of initiatives according to issues encountered during ward rounds and audits

Chart 4



(Order of bars from: very useful → useful → not useful → N/A)

ANNEX 12

Expected Outcomes – EAAD 2012

The evidence gathered as part of this evaluation indicates the extent to which the objectives for EAAD 2012 were achieved. The plan to deliver a 10% increase in all outputs from 2012 was exceeded

Expected Outcome	Achievement
<i>Uptake of online and hardcopy materials to promote antibiotic resistant messages at a local level in line with last year, with an increased emphasis on online materials.</i>	<i>Achieved</i> ✓ - of 86420 leaflets and 9258 posters were disseminated via DH publications between September and December, demonstrating an increase of more 8% in use of leaflets but a reduction in the use of posters compared to the previous year. - 78% of survey respondents used both hardcopy and online DH materials for public and healthcare awareness displays, 65% published articles in newsletters or websites using the online materials and 52% sent emails to prescribers to encourage and inform them about prudent antibiotics awareness using the materials.
<i>Increased public and enhanced professional understanding of when antibiotics are not appropriate, especially in key primary care settings</i>	<i>Achieved</i> ✓ - Life channel was broadcasted in 1, 881 GP Surgeries (20.8%) in England. Reaching over 9.9million viewers each month. This year the antibiotic videos were shown for four weeks compared to two weeks in 2011. Regional PCT data has previously showed the prescribing rates of cephalosporins and quinolones were lower in Brent (Life Channel screened) than Harrow (Life Channel not screened). Results also indicated that quinolone prescribing rates had decreased in Brent from the previous year but no changes were seen in Harrow. This possibly indicates delivery of the message screened by Life Channel to both public and professionals. - The new <i>Start Smart then Focus</i> guidance published in 2011 was evaluated and highlighted that the use of antimicrobial stewardship toolkit leads to reduction in inappropriate prescribing in hospitals - More than 95% of hospitals and PCT's within England promoted antibiotic awareness locally as a result of the national drive.
<i>Reduced national levels of inappropriate/imprudent prescribing</i>	<i>Achieved</i> ✓ - National data from NHS Business Authority showed that the prescribing of quinolones had decreased by 1% and cephalosporins by 20% from the previous year (see <i>Annex 10</i>).
<i>Articles in at least 13 key journal publications</i>	<i>Achieved</i> ✓ - 18 articles were published in key journals and bulletins around EAAD 2012.
<i>EAAD activities from at least 10 key professional bodies</i>	<i>Achieved</i> ✓ - EAAD received wider coverage through promotion by a greater number of organisations compared to last year. The total number exceeded 10.
<i>Over 2,500 visits to the Antibiotic Awareness pages of the NHS Choices</i>	<i>Achieved</i> ✓ - From 4 th November to 31 st December 2012 there had been 7,139 page views on the EAAD pages on the NHS Choices website, representing a 13% increase from the previous year.

ANNEX 13

Proposed Resources for EAAD 2013

Based on the evaluation, feedback and to provide a more streamlined approach the following will be used for 2013¹:

Resources for Primary and Secondary Care:

- Key messages on antibiotic resistance by DH and ARHAI
- Leaflets - Get well soon without antibiotics (available on line)
- Poster (a refresh of the Hands poster with new logos – “No amount of antibiotics will get rid of your cold”)
- Antibiotic awareness videos – available for download via DH website, YouTube and in QTV format (via Dropbox). These are Short video clips providing a light-hearted way of reminding people to take care, not antibiotics for use in GP surgeries and other waiting areas.
 - Video: When you're ill you'll do anything to feel better
 - Video: Sick as a parrot?
 - Video: Download Looking for a purrfect remedy for your cough
 - Video: Don't get prickly if your doctor won't prescribe you antibiotics
 - Video: Download Feel like a lame duck?
- Centre piece poster – A centre piece poster (with logo) that can be used for public awareness display boards in hospitals, GP surgeries and clinics.
- Quizzes and Crosswords for healthcare professionals, patients and the public

Specific resources for healthcare professionals in primary care

- Website banner for primary care – this promotes the ‘TARGET antibiotics’ website
- The Public Health England and Antimicrobial Stewardship in Primary Care (ASPIC) Collaboration of professional societies ‘TARGET Antibiotics’ Toolkit is available on the Royal College of General Practitioners website
- Case studies (not yet available)

Specific resources for healthcare professionals in secondary care

- Secondary care prescribers checklist – A useful reminder for hospital prescribers of the main considerations for responsible prescribing
- Website banner promoting EAAD, especially Start Smart then Focus
- ARHAI guidance on antimicrobial stewardship: Start smart – then focus
- Antimicrobial prescribing & stewardship competences
- Case studies (not yet available)

Other useful links will also highlighted:

- Letters to the NHS, Primary care and Local Government
- E-Bug – the educational tool about infections for schools
- European Centre for Disease Prevention and Control
- NHS Choices website which provides information for patients and the public
- Patient.co.uk which provides some useful information on antibiotic
- Health Education England
- National Prescribing Competences (hosted by NICE)

¹ Correct at time of publication – August 2013